TRADE AND FINANCE FOR DEVELOPMENT

SOUTHERN PERSPECTIVE

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

With India's emergence and development transformations a new narrative on sustainable economic growth; inclusive development; and global governance and associated economic issues is taking shape in India. Therefore, it is felt to share the ensuing ideas of this unique narrative with fellow developing countries. Keeping this objective in view, RIS has remodelled the different ITEC programmes with significant changes in their contents and pedagogy.

These new features include: greater exposure to field experiences; ensuring appreciation for India's development efforts and their relevance for fellow developing countries; and emphasis on documentation of country level development experiences as well as their experience with the global governance architecture. This Report is the outcome of this understanding.

While RIS has been conducting this flagship Capacity-Building Programme on International Economic Issues and Development Policy (IEIDP) under the ITEC/SCAAP programme of the Ministry of External Affairs, Government of India since 2001, the new changes in the course design and modality are reflected in the fact that the current Report is only the 3rd in the series. We are hopeful that this transformation would be further deepened in terms of introducing new aspects in this course. In the recent past, special efforts have been made to engage with the participants even after the programmes through conference participation, academic contribution, network building and social media.

In the current phase of ITEC programme, the participants enthusiastically engaged in technical sessions and group discussions. They identified critical areas to deliberate upon and eventually came up with status papers highlighting regional and global contexts and country experiences. Based on their individual areas of expertise and inclination, they formed six thematic groups as follows: Free Trade Agreements; Trade Negotiations; International Financial Architecture; G20 & BRICS; STI & SDGs; and Renewable Energy.

I take this opportunity to thank my colleagues Mr Rajeev Kher, Dr P K Anand, Mr Krishna Kumar, Dr Priyadarshi Dash, and Mr Subhomoy Bhattacharjee for mentoring the group activity. RIS is pleased to publish this short Report comprising of contributions from each group. I am sure the Report will be found interesting and useful by scholars, policy makers, and practitioners from developing countries.

RIS is grateful to the Ministry of External Affairs, Government of India for their support and guidance in conducting this course. Thanks are also due to my colleagues Dr Sabyasachi Saha, Ms Prativa Shaw and the team led by Mr M. C. Arora for their efforts in organising this course.

Sachin Chaturved

I

Effects of FTAs on Balance of Trade and FDI

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Effects of FTAs on Balance of Trade and FDI

Abstract: The objective of the paper is to find out if free trade agreements (FTAs) have impact on the balance of trade and Foreign Direct Investment (FDI) of the countries involved in the agreement. It presents the case of South Africa and European Union (EU) trade agreements on the one hand and Association of Southeast Asian Nations (ASEAN) as a region plus its corresponding FTAs on the other. Descriptive statistics particularly the use of graphical trends pre and post integrations have been used in analysis, and data for South Africa-EU were sourced from Trade Map, South Africa Reserve Bank and Trading Economics and for ASEAN and its corresponding FTAs were collected from the ASEAN Statistical Yearbook. The analysis though showed, negative trade balance of South Africa in bilateral free trade agreement before 2012 when the agreement came into operation; there were not any difference after a few years of FTA. Besides, the trend of FDI of South Africa did not show any positive effect of FTA either. For the ASEAN, the analysis showed that regional-wise both intra and intra trade rose; however the growth of inter-trade appeared higher than intra-trade. In terms of market shares, after 2010 ASEAN has become the largest market for both exports and imports. However, in both exports and imports, non-members of the region has been occupying the majority of the share since 2010; and this signifies the role played by ASEAN-FTAs with the third party economies. As opposed to imports that has remained intact, the composition of traded commodities in exports has slightly changed in the case of Indonesia, Malaysia, Vietnam and Cambodia, and with some gains to Singapore. FDI inflows to the ASEAN economy have also been observed high from non regional members. The paper concludes that besides South Africa-EU agreement, FTAs tend to boost both trade and FDIs if all strategic arrangements are made as in the case of ASEAN-FTAs.

Key words: ASEAN; Balance of Trade; FDIs; FTAs

Introduction

Nearly all the countries in the world today are engaged in the international trade. The fact is the system of closed economy or autarky is no longer in vogue. To make the trading process easier and to maximize gains from these international trades, countries and even regions have devised many ways of collaborations and economic integrations, which culminated in their signing some agreements like custom unions, free trade agreements and many more. Therefore, this paper aims in finding out if free trade agreements enhance positively trade balance and Foreign Direct Investment (FDI) of the countries involved in those agreements. The remaining part gives the background of this study where FTA has been defined and explained. In the two succeeding parts, effects of the FTAs on both bilateral and regional trades are looked into, followed by conclusion.

Over the years, there has been an argument on whether Free Trade Agreements (FTAs) affect positively trade balance and Foreign Direct Investment (FDI). As defined by Driesen (2000) "trade free of burdens, a broad laissez-faire principle", FTAs still pose conundrum on different contexts, ranging from distribution of benefits to economic multiplier effects.

Regional free trade agreements in particular, have proliferated in the recent years (Robinson and Thierfelder, 2002). About 60% of world trade now takes place within Free Trade Agreements or among countries that have decided to achieve free trade by a certain time (Bergsten, 1996). One may ask why some countries (mostly smaller countries) try to develop a common market through regional/bilateral economic integration by signing Free Trade Agreements. Balassa and Stoutjesdijk(1975) considered common market and economic integration as one of the policy options available to developing countries and as part of their overall strategy for economic development. According to the data from World Trade Organization (WTO), during 1948-2019, there have been 471 FTA that in force and notified to the WTO.

This proliferation of FTAs is largely explained by lack of confidence to achieve trade benefits under multilateralism. According to Michalopoulos(1999),developing countries did not observe General Agreement on Tariffs and Trade (GATT) as an institution responsive to their needs, hence, their preference was for the United Nations Conference on Trade and Development (UNCTAD) to promote their trade interest. This may be the reason why their representation in the GATT during the formation of the WTO was passive. This lack of faith in the global trade body may be the reason why the developing nations are opting for Regional and Bilateral Trade Agreements to boost trade rather than Multilateral Trade Agreements; achievable through WTO.

Under multilateral trade system, both GATT article XXIV and GATS article V details the provision from which territorial countries can establish trade agreements. This, however, has not been free from the debate whether it would pave way to more global openness or would act as restrictive measure to world liberalization.

Meanwhile, there are also some consequences that are very pronounced when several countries have agreed to form FTA. The consequences are both positive and negative, making overall impact to be decided by the net effect from the two. According to Viner (1950), the impact of trade agreements depends on the degree of trade liberalization and nature of the earlier existing trade pattern. These are the main factors, which determine the extent of trade creation and trade diversion as the consequences of FTAs (Plummer*et al.*, 2010). Trade creation refers to a shift of product origin from expensive domestic producers to more efficient producers which are the members of trade agreement. Trade diversion on other side occurs when a member country transfers its imported goods from an efficient producing country that is outside trade agreement to

a member country within the trade region (Feenstra and Taylor, 2008). Trade creation is associated with welfare improvement while trade diversion is welfare reduction.

FTA also creates long-terms effects (dynamic impact), they are important to be analysed because the dynamic effect is more substantial and widespread (Plummer*et al.*, 2010); it is vital to consider FTAs effects to country's development. Some of the important dynamic effects in FTAs to consider are: economies of scale and variety; technology transfer and foreign direct investments (FDI); structural policy change and reforms; as well as competitiveness and long -run growth effects.

Economies of scale are defined as the decline in average costs due to increased output. It will happen due to a development in technical efficiency in a large-scale production, a better ability to allocate administrative costs and diminish overhead cost over a larger operation, dealer´s bulk discounts or better logistic systems as the production volume increases. Economies of scale occur in the production of some agricultural, natural resource intensive, manufacturing, and service sectors. Due to the establishment of the FTAs, the greater market that is created allows firms to take advantage of a larger customer base in domestic and foreign markets. Firms will be able produce at a lower average cost, so the final price islower, or has "cost reduction effect" (Plummer *et al.*, 2010). As a result, the firm has a higher competitiveness in both domestic and foreign markets.

The establishment of FTAs creates a more united marketplace and a larger risk- sharing investment flow. The term "investment creation" indicates that the multinational corporations are concerned in investing more into FTA members due to the dynamic of having a larger economy. An FTA may encourage more FDI flows into the region by working with other multinational countries, located outside the region. However, if the multinational company chooses to invest in the member country not because of an increase in dynamism but because it will now have preferential access to the FTA market, then it is called an "investment diversion." Although investing in an outsider country might have higher costs, the multinational company diverts investments to the FTA because of the regional agreement.

Several policy adjustments have occurred as the result of the establishments of FTAs. The adjustment associate to some of the following aspects such as, quality standards, corporate and public governance laws, customs procedures; the national treatment of partner-country investors, competition policy, the reform of state-owned enterprises, and other "sensitive sectors" which have an significant

Table 1: Existing ASEAN bilateral trade agreements

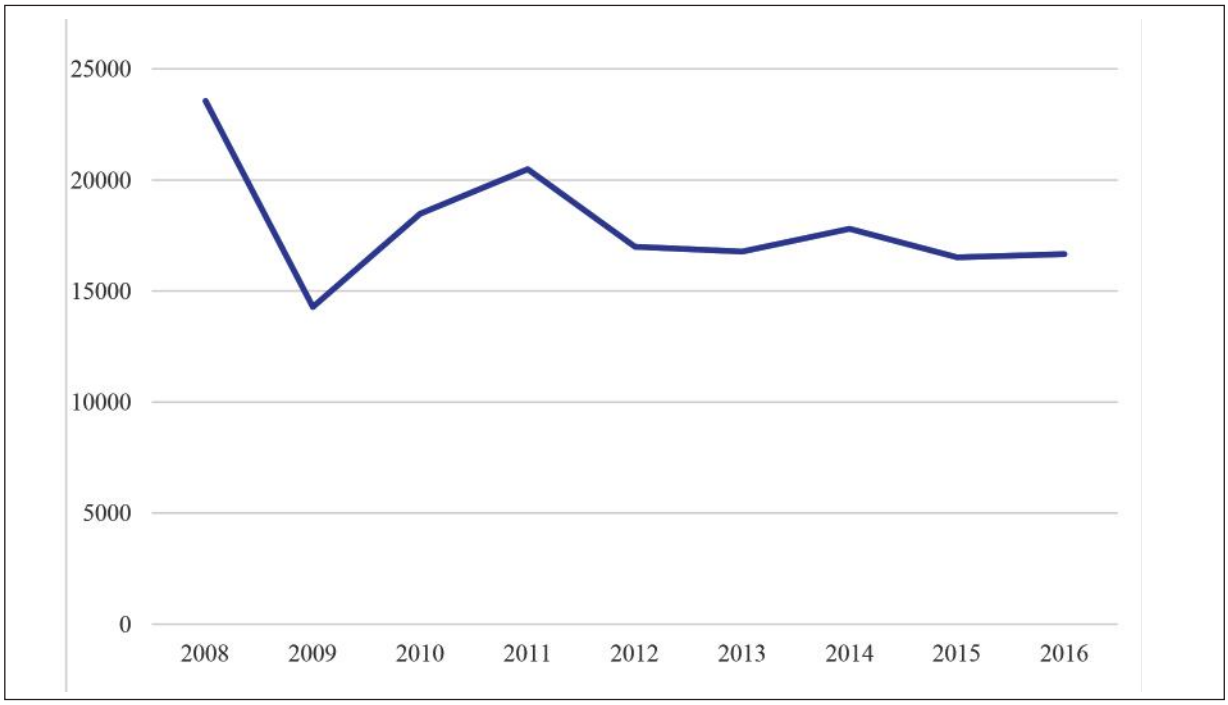
No.	Agreements	Signed	Entered into force
1	ASEAN – AFTA (AEC)	1992	2015
2	ASEAN-China FTA (ACFTA)	First signed:2002	2005
		Modified: 2015	2016
3	ASEAN-Korea FTA (AKFTA)	2006	2007
4	ASEAN-Japan Comprehensive Economic Partnership (AJCEP)	2008	2009
5	ASEAN-Australia-New Zealand FTA (AANZFTA),	2009	2010
6	ASEAN-India FTA (AIFTA)	2009	2010
7	ASEAN – Hong Kong, China FTA (AHKFTA)	2017	-

Source : Asean Secretariat (2018)

impact on the economy. Inclusion of these different areas in the FTAs shows the extent to which FTA are shaping and harmonizing the member country´s policies. Generally, member country will respond for joining an FTA by improving business environment through cost reduction, extending opportunity to join the FTA to foreign investors, and by pushing policy reforms to encompass best practices (Plummer *et al.*, 2010).

This paper is aiming to find if truly, Free Trade Agreements have positive effects on country's balance of trade and FDI by using two different trade agreementswith Association of Southeast Asian Nations (ASEAN) and South Africa – European Union as being the case study. The South Africa – European Union is a Trade Development and Cooperation Agreement (TDCA) ;signed between South Africa and European Union in 1999, and became effective in 2004; while some provisions were started from year 2000. One of the areas that TDCA covered was Free Trade area; trade liberalization which completed in 2012. On The ASEAN 10 countries(Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Viet Nam, Lao PDR and Myanmar, and Cambodia) were with over 640 million people and a combined gross domestic product (GDP) of more than USD 2.7 trillion in 2017. ASEAN is a major global hub of manufacturing and trade[1]. This area has been said to have well integrated into a global economy and is getting benefited from this integration. The ASEAN Free Trade (AFTA) agreement itself was established in 1992 and the network of member countries has grown steadily since then. The FTA network has been further enlarged through its integration with the AFTA. This development would lead ASEAN to become an important hub of FTA networks in Asia.Non-ASEAN countries such as Japan; which has both multilateral and bilateral FTAs with each ASEAN country. Furthermore, ASEAN member countries can have both multilateral and bilateral FTAs with many other countries in Asia—for example Singapore with Japan, Korea, China, New Zealand and India.

Figure 1: South Africa's Export to the EU (2008-2016) in million US$



Source: Trade Map (2019), accessed on March 2th, 2019

Empirical Evidence

South Africa and European Union Trade Agreement

This paper studies the effect of free trade in particular, between South Africa and European Union, attempting to assess if there are significant changes in the trade balance and FDI during 2008-2016, representing four years of trade before the operation of the Free Trade Agreement in 2012 and four years after the agreement. To conduct this analysis, time series data from Trade Map for the balance of trade and from South African Reserve Bank for South Africa's FDI were employed.

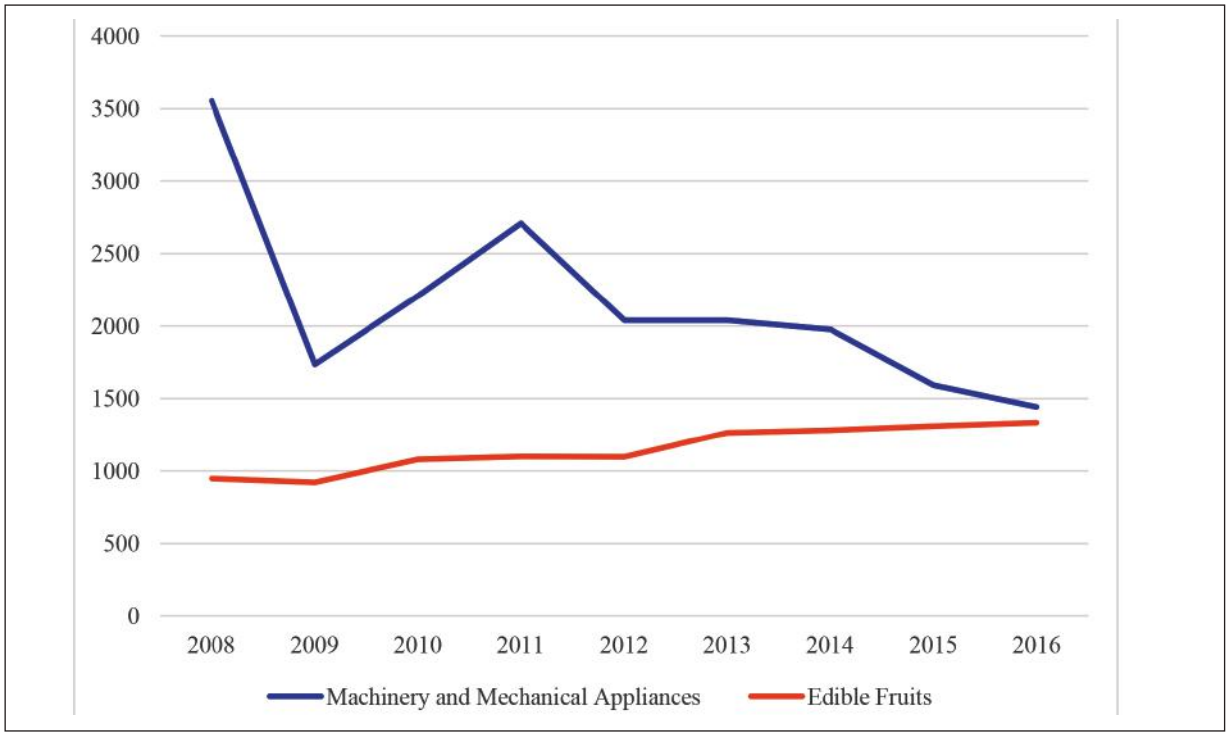
Trend of South Africa's Export to the European Union Between 2008-2016

Four years before the FTA showed that South Africa's export to the EU was rippling (Figure 1). In 2008, the total value of export was above US$23 billion, and dropped to less than US$15 billion in 2009. There was an increase afterwards until 2011, then nosedived in 2012. Total values of exports in the later years were relatively stable and didn't show any increase; nullifying any hope that the signed FTA can pose any threat to country's economy.

Sectoral Export Performances

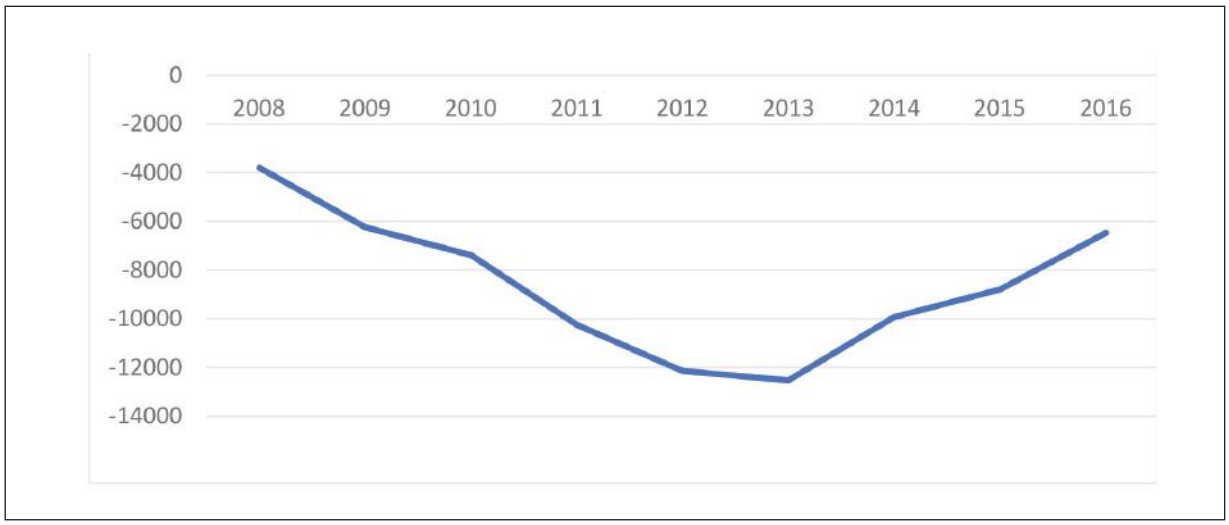
One thing about FTAs is that, it cannot favour all sectors at the same time. The reason is that, some countries have some advantages which can make their exports cheaper and more efficient after FTA's operation. However, this cannot be said of the sectors where the country lacks in these advantages. Therefore, exports in these latter sectors would drop in favour of partner(s) in the FTAs, which enjoy such advantages. Putting this factor into consideration, two mostly traded export

Figure 2: South Africa's Exports in Machinery/Mechanical appliances and Edible fruits to the EU in million US$



Source: Trade Map (2019), accessed on March 2nd, 2019

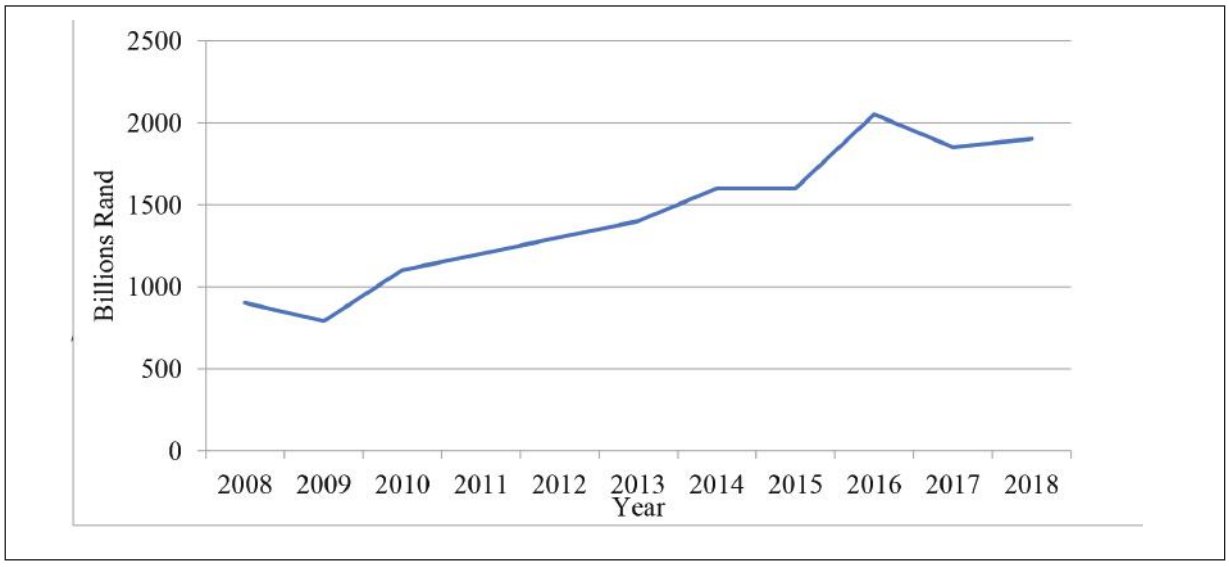
Figure 3: South Africa's Trade Balance with the EU in million US$



Source: Trade Map (as in 2019)

products of South Africa were selected and tried to find out how they fared before and after the agreement. Though, South Africa's export in Machinery/Mechanical appliances undulated between 2008 and 2011, a steady decrease could be noticed in the export after 2012 the FTA took effect(Figure 2). The reasons behind this may possibly be that EU's machineries are becoming cheaper and more efficient as well as easy to maintain compared to the ones imported from the South Africa. However, despite the decline in the value of export in other sectors, exports in agricultural products like edible fruits were on the lower side but steadily increasing. Factors responsible for this may be EU's preference for South Africa's fruits, cheaper price and probably, varieties and seasonal differences in harvest times.

Figure 4: FDI inflows to South Africa from EU



Source: South African Reserve Bank (2019)

Effect of the FTA on Trade Balance

The FTA which started from 2012 is expected to have some positive effects on the trade balance of South Africa. Nevertheless, the figure 3 below shows a sharp increase in the deficit in the trade balance between 2008 and 2016. The deficit declined steadily two years after the FTA began.

Trend of South Africa's FDI between 2008 and 2016

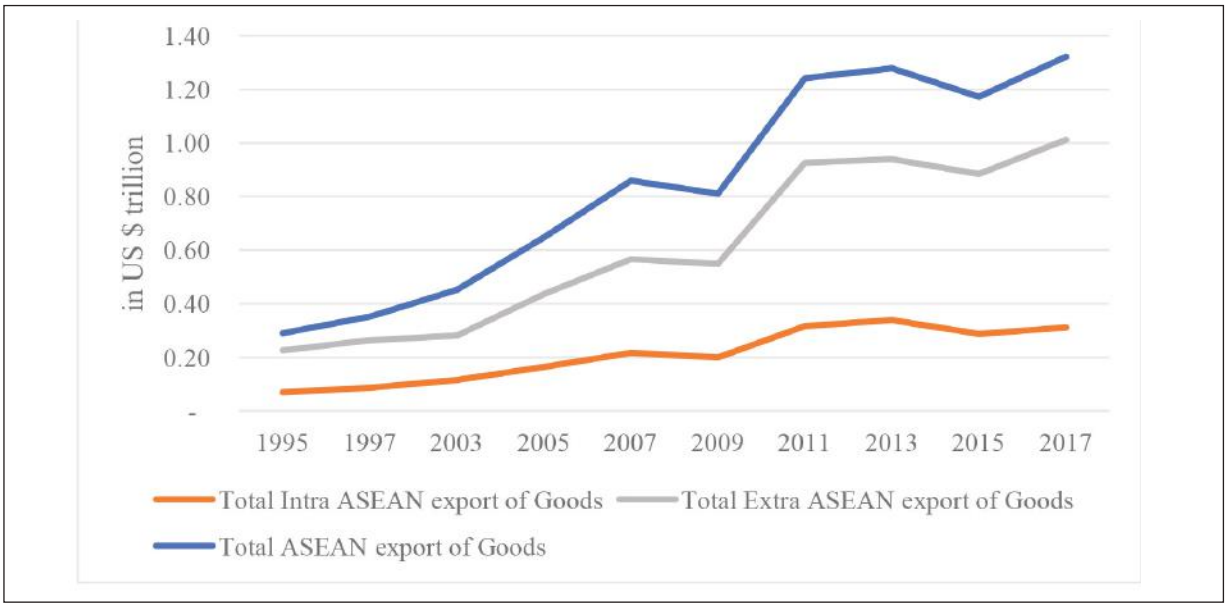
South African economy was expected to attract more investors, most especially from the continent of Europe after 2012; leading to higher FDI. The figure 4 below shows South Africa's annual FDI in billion South African Rand. It can be seen from the graph that there has been a steady rise in the FDI from 2009 to 2014, when it stalled for a year, before reaching its peak in 2016. The FDI may be on the increase but the increase may not really be attributed to the effect of FTA, as there has been a steady rise since 2009.

ASEAN exports have continued to increase. However, they have gained a significant improvement since 2005. The increase in intra-export, as indicated in figure 5 below, has not been dramatically as much as the regional trade with the rest of the world (extra export). The rate of extra export was maintained around 76% in total regional export from 1995 to 2017. The figure indicates that goods from the ASEAN economies still rely on external markets at aggregate level more than within the region. However, as it is in table 2 (in section 2.2.2) below, after disaggregating data on individual partner's level, trade within the region has picked up since 2010.

ASEAN trade performances with partner countries

Even though inter-regional trade between ASEAN and rest of the world accounts for higher trade than intra-regional, as is in figure 5 above, disaggregated data among the partners show that trade within ASEAN stands at the highest since 2010. Until 2010, eighteen years after signing of ASEAN, USA was the major importer of the ASEAN commodities. This could be explained by the fact that by then the regional agreement was not in force; which

Figure 5: Trend of ASEAN Export of Goods, 1995 - 2017



Source: ASEAN Statistical Yearbook (2018)

happened in 2015. Surprisingly, however, the share of intra-regional trade picked up five years before ASEAN came into force; of which intra-regional trade contributed around 25% of the total trade as of 2010. The signing of ASEAN in 1992 actually paved the way for quite a number of FTAs amongst member countries, such as South Asian Free Trade Area (SAFTA) in 2004, Laos-Thailand Preferantial Trade Agreement in 2004, among others. This spearheaded trade in the region even before ASEAN came into force. This data therefore signals an important information; that even though intra-regional market share has improved dramastically since 2010, still its explanation is largely based on available FTAs within the regions. It also entails that the power of ASEAN–FTA (AEC) to influence trade amongst members is outweighed by ASEAN bilateral agreements with its non-member trading partners. During 2010 to 2017, for instance, the major importing countries of ASEAN commodities were non-regional member economies with India and Australia taking advantage of Singapore and Thailand that were the only members constituting the club of major importers by 2000. Generally, similar pattern has been traced for the ASEAN imports, that non-members such as Japan, China, EU-28, USA, Hong Kong, Republic of Korea and others had higher shares. Again as in exports, both Singapore and Thailand which were in the top ten list of exporting countries to ASEAN by 2000, their corresponding shares were largely cut and replaced by the likes of India and Australia.

The shares of products composition exported from the ASEAN region have changed slightly. As in table 3, products that belongs to wood and article thereof, articles of apparel and accessories, not knitted and articles of apparel and accessories, knitted, which occupied the first top ten spot by 2000 ,were replaced by vehicle (not railway, tramway, rolling stock, parts and accessories, natural pearls, precious stones and metals) as well as organic chemicals in 2010.This means, Indonesia and Malaysia (countries in the world top ten exporters of wood and articles of wood; charcoal) together with Vietnam and Cambodia (countries in the world top ten exporters of Articles of apparel and clothing accessories, knitted or crocheted) have all been disadvantaged from export product substitution as the result of the existing FTAs. On other hand Singapore (country in the world top ten exporters of natural or cultured

Table 2: ASEAN Export market shares (by percentage)

No.	2000		2010		2017	
	Country	Share (%)	Country	Share (%)	Country	Share (%)
1	USA	11.2	ASEAN	25	ASEAN	23.5
2	Japan	10.7	China	10.6	China	14.1
3	Singapore	8.1	USA	9.4	USA	12
4	Taiwan	3.2	EU – 28	10.7	EU – 28	10.8
5	UK	2.8	Japan	9.6	Japan	8
6	Hong Kong	2.7	Hong Kong	3.1	Hong Kong	6.7
7	Republic of Korea	2.4	Republic of Korea	4.2	Republic of Korea	4.2
8	Netherlands	1.8	India	3.4	India	3.4
9	China	1.8	Australia	3.3	Australia	2.7
10	Thailand	1.7	Taiwan	1.5	Taiwan	2.6
	Top 10 shares	46.4	Top 10 shares	80.8	Top 10 shares	88
	Others	53.6	Others	19.2	Others	12
	Total	100	Total	100	Total	100

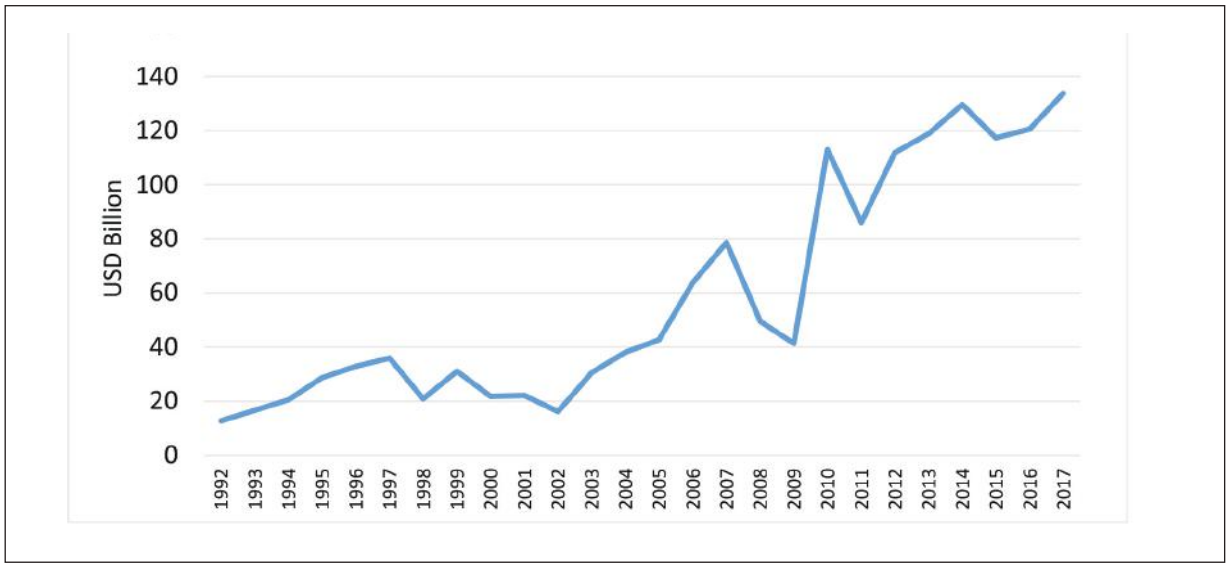
Source:ASEAN Statistical Yearbook (2001, 2012, 2018)

Table 3: Major ASEAN Export Commodities

2000		2010		2017	
Export Commodities	**Export share (%)**	**Export Commodities**	**Export share (%)**	**Export Commodities**	**Export share (%)**
Electrical machinery, sounds equipment, etc	27.2	Electrical machinery, sounds equipment, etc	19.4	Electricalmachinery, sounds equipment, etc	19.4
Nuclear reactors, boilers, etc and parts	19.1	Mineral fuel, oils, waxes, & products,etc	14	Mineral fuel, oils, waxes, & products,etc	14
Mineral fuel, oils, waxes, & products,etc	10.1	Nuclear reactors, boilers, etc and parts	11.8	Nuclear reactors, boilers, etc and parts	11.8
Wood and articles thereof	3.5	Rubber and articles thereof	3.4	Rubber and articles thereof	3.4
Rubber and articles thereof	2.9	Animal or vegetable fats and oils, fats, waxes, etc	3.2	Animal or vegetable fats and oils, fats, waxes, etc	3.2
Articles of apparel and accessories, not knitted, etc	2.1	Plastic and thereof	2.7	Plastic and thereof	2.7
Animal or vegetable fats and oils, fats, waxes, etc	1.9	Vehicle (not railway, tramway, rolling stock); parts and accessories	2.7	Vehicle (not railway, tramway, rolling stock); parts and accessories	2.7
Natural pearls, precious stones, and metals, etc	1.7	Natural pearls, precious stones, and metals, etc	2.2	Natural pearls, precious stones, and metals, etc	2.2
Articles of apparel and accessories, knitted, etc	1.6	Organic chemicals	2.2	Organic chemicals	2.2
Plastic and thereof	1.6	Optical photographic measuring instruments, etc	1.9	Optical photographic measuring instruments, etc	1.9
Top-ten major items	71.7	Top-ten major items	63.4	Top-ten major items	63.4
Others	28.3	Others	36.6	Others	36.6
Total	100	Total	100	Total	100

Source: ASEAN Statistical Yearbook (2001, 2012, 2018)

Figure 6: ASEAN Foreign Direct Investment (FDI) Flow 1992-2017



Source: UNCTAD (2019), accessed on March 2nd, 2019

pearls, precious or semi-precious stones and precious metals as well as organic chemicals) has gained from new trade arrangements.

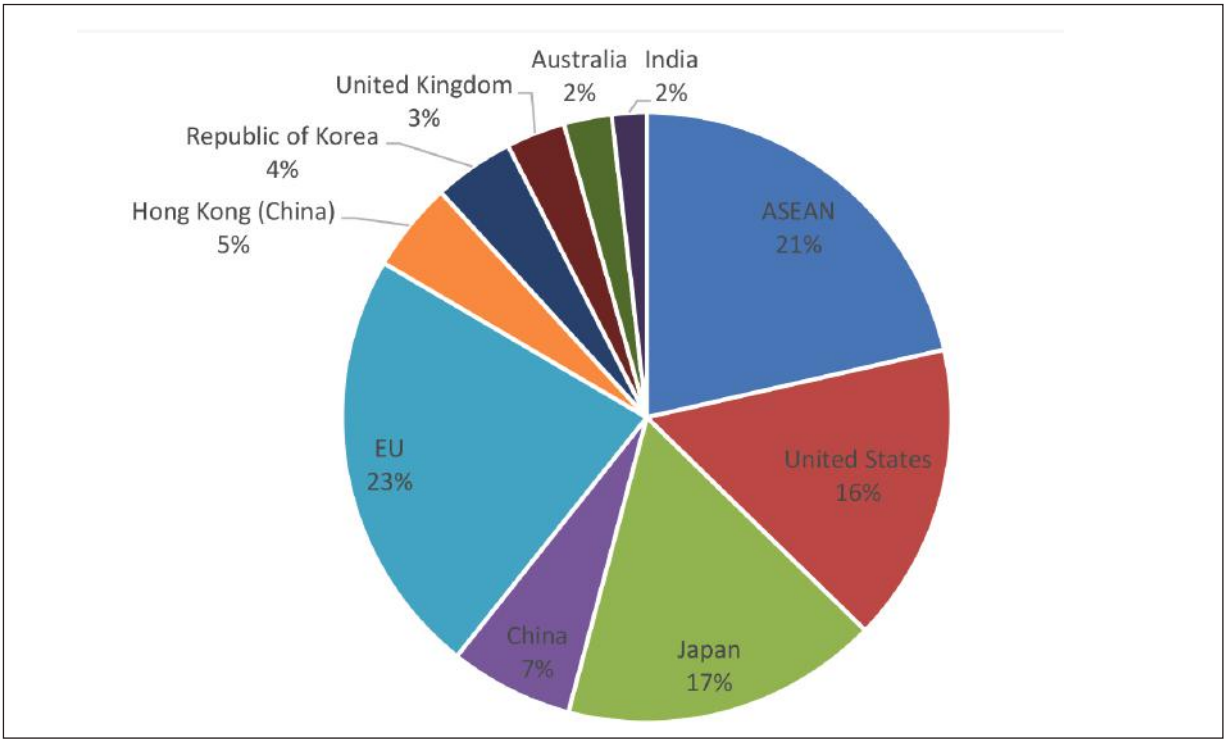
The regional import composition of commodities has largely remained the same, and the club at the top ten mostly contained similar commodities as in exports. Meanwhile, the imports also share the same top three commodities as in exports with only difference in market share. In general, the top-ten export and import items have not changed much, and after 2010, the export item structure is still being maintained. In general, ASEAN main import structure appears to be stable from 2000 - 2017. FTAs have not affected on import commodities. The figures has illustrated that most of commodities are production materials. This also implies that ASEAN continues to rise towards the global value chains.

The Impact of FTAs on Investment in ASEAN

ASEAN Member States (AMS) established Framework Agreement on the ASEAN Investment Area (AIA) in 1998 to attract more investment flows in the region both from members and non-members. The framework was the next step of the ASEAN Free Trade Agreements (AFTA) which was established in 1992. There are several requirements for the AMS to join this framework; one of which is an obligation that the member countries should eliminate or reduce regulations which act as barriers to investment flows and the operation of investment projects in the region. The agreement on AIA is based on three pillars— co-operation and facilitation, promotion and awareness, and liberalisation. The agreement on AIA was then transformed into ASEAN Comprehensive Investment Agreement (ACIA), which came into force in 2012.

Based on the data from ASEAN Statistics, since the establishment of ASEAN Free Trade Agrreements (AFTA) in 1992, inflows of FDI to ASEAN has grown nine times from USD 12.7 billion in 1992 to USD 137 billion in 2017. The inflows of FDI showed a positive trends except in 2007-2009 owing to global financial crisis. During 1998-2011, when AIA was established, the inflows of FDI to ASEAN grew 3 times larger, and in 2012-2017, ACIA came into force, the FDI inflows reached 19% growth. The figure below show the inflows of FDI to ASEAN.

Figure 7: Top 10 Investors in ASEAN, cumulative 1995-2017



Source: Authors' compilation based on ASEAN Secretariat, ASEAN FDI Database (accessed on March 2nd, 2019)

Figure 8: ASEAN Inflows of FDI from Partners 2010-2017

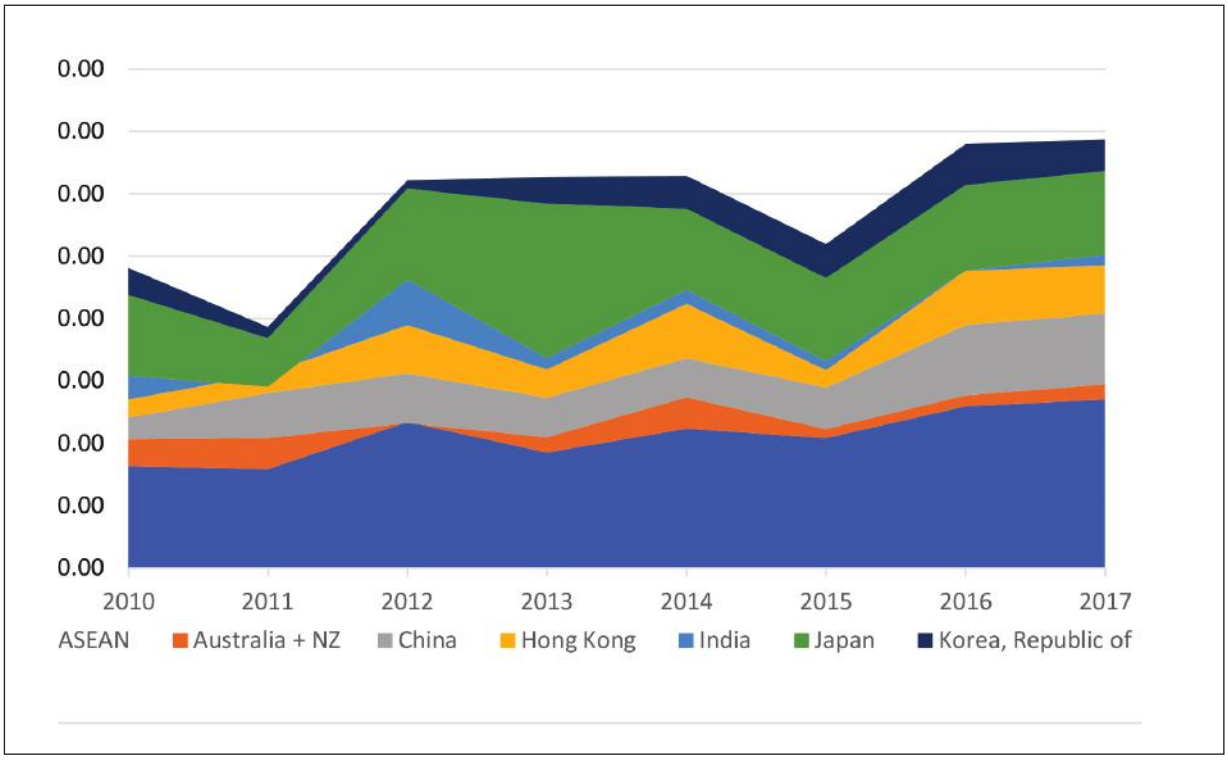
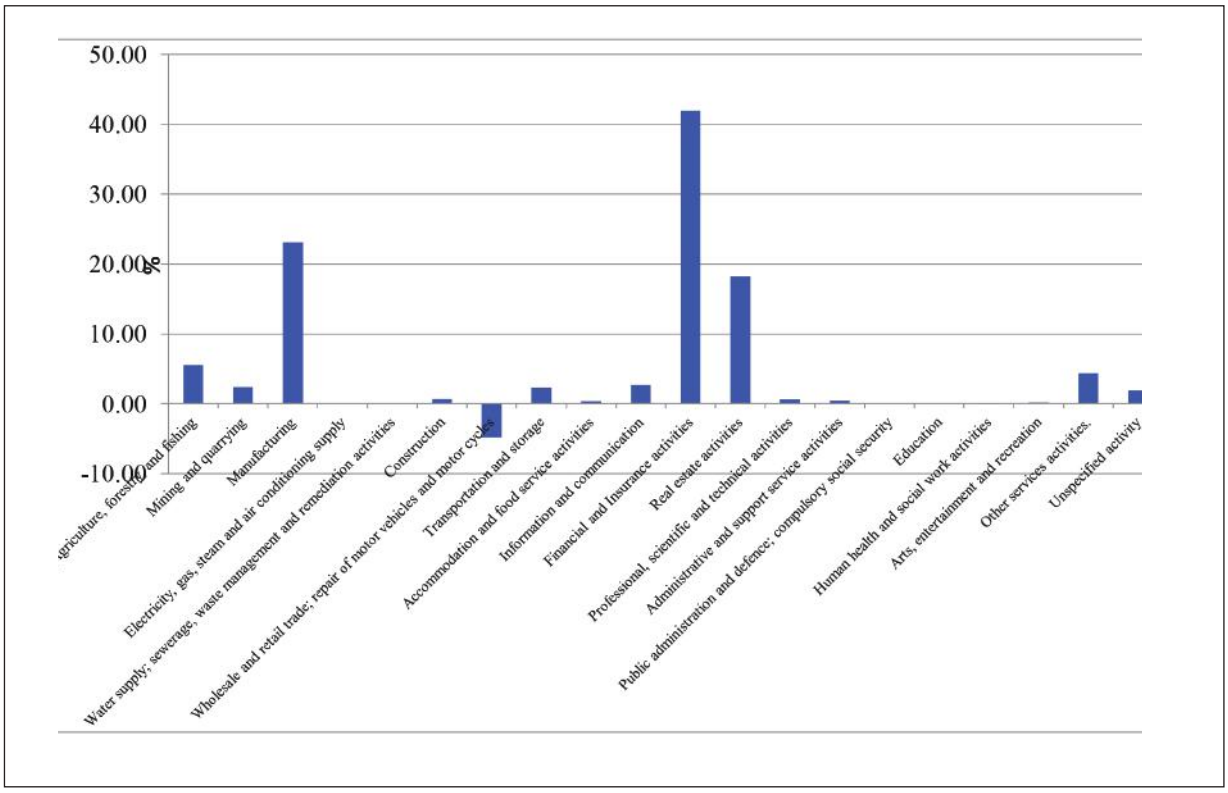


Figure 9: ASEAN Foreign Direct Investment, by Sectors, 2012



Source: Authors' compilation based on ASEAN Secretariat, ASEAN FDI Database (accessed on March 2nd, 2019)

ASEAN has attracted the investment from various countries. However,ASEAN members were major source of FDI inflows; ASEAN itself contributed 21% with total value of investment USD 233,249 millions cumulatively from 1995to 2017. The top four sources of external FDI inflows to the region are the European Union, USA, Japan, and China at 23%, 16%, 17% and 7% of ASEAN total FDI inflows, respectively. China and Japan established free trade agreement with ASEAN in 2005 and 2009.

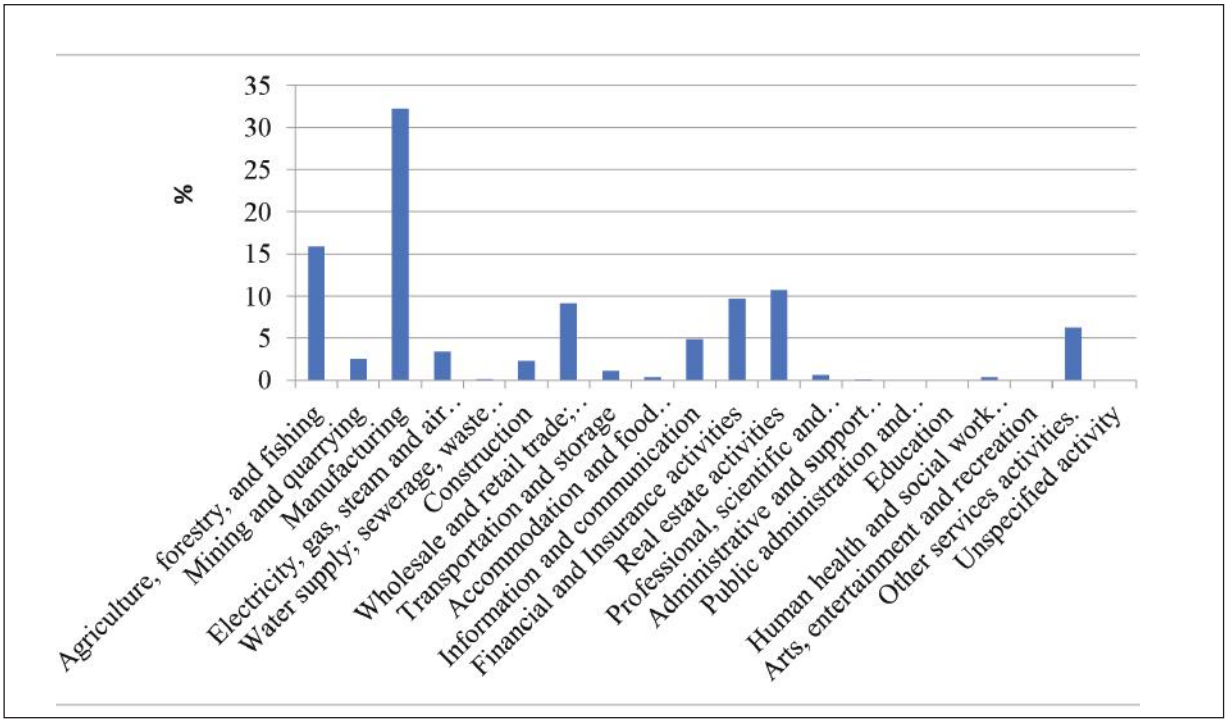
Figure 8 shows the inflows of FDI from ASEAN Partners, namely Japan, China, Australia and New Zealand, Hong kong, South Korea and India. The value of India's investment to ASEAN showed fluctuative trends; the highest investment was in 2012, the value reached USD 7.3 billion. The economic relation between ASEAN and India had started from October 2003. The Framework Agreement on Comprehensive Economic Cooperation, functions as the legal basis to complete further agreements, including Trade in Goods Agreement, Trade in Services Agreement, and Investment Agreement that formed the ASEAN-Indian Free Trade Area (AIFTA). The ASEAN-India Investment Agreement was signed in November 2014.

Manufacturing sector was the largest recipient of FDI inflows in the region with a share of 33% in2017 that increased from 21% in 2012, while financial and insurance sector contributed 10% in 2017,which declined from 39% in 2012. As in Figure 8, Other key FDI recipient sectors were real estate activity,with a share of 11% in 2017 down from 18% in 2012. (accessed on March 2th, 2019)

Overall Implications in ASEAN

FTAs have had good impact on ASEAN imports and exports. While ASEAN had trade deficit

Figure 10: ASEAN Foreign Direct Investment, by Sectors



Source: Authors' compilation based on ASEAN Secretariat, ASEAN FDI Database (accessed on March 2nd, 2019)

with China and Korean in an increasing trend; it by contrast had surplus trade balance with Australia, New Zealand, India; and it narrowed the gap of trade balance with Japan. It implies that ASEAN has chosen good trade partners to sign FTAs, to increase their strengths and improve their competitive advantage.

Conclusion and Policy Implication

Bergsten (1996) stated that about 60% of world trade now takes place within free trade agreements. Judging from this statement, it can be deduced that FTAs among countries have proliferated over years. This paper aimed to find out, if truly these agreements affected positively on balance of trade and FDI of the countries involved in the agreements. The paper made use of the bilateral free trade agreement of South Africa and EU and alsothe ASEAN as the region as well as its corresponding FTAs in several non-member countries as case studies. In the case of bilateral FTA between South Africa and EU, analysis did not show any significant difference in the balance of trade of South Africa after 2012 when the FTA was effective. On FDI, it was also noticed that the trend did not follow any particular order, leading to conclude that the FTA did not have much impact on the FDI.

In ASEAN, however, few interesting findings were noticed. First, using the aggregate trade flows within and outside the region, the bloc appeared to have an increasing trend of trade performance with third part economies than intra-trade. However when disaggregating the data into destination countries, much of the trade (around 20%) seemed to have been going on within the region. The data also revealed that apart from intra-trade, non ASEAN countries still remain important as their shares stand firm at the top. On the course of products compositions, these arrangements have resulted in slight changes on the commodities of exports while insignificant substitutions was observed in imports. These changes of exports, as expected have led to both losers and gainers;

of which the former comprises countries such as Indonesia, Malaysia, Vietnam and Cambodia and the latter involves Singapore. FDIs inflows to ASEAN countries on other side were observed to be highly fluctuating with the region itself contributing around 21%. Meanwhile, the region still remains dependant on global heavyweight such as EU, USA, Japan and China for FDIs inflows, which contribute on an average of 63%. However, as most of the inflows move to manufacturing sector, followed by financial and insurance markets, the regional economy looks to have been on right track.

Endnote

1. Source: https://www.businesstimes.com.sg/asean-business/asean-ftas-an-overview

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II

Bargaining Power of Developing Countries in Trade Negotiations

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Bargaining Power of Developing Countries in Trade Negotiations

Abstract: The bargaining power of a country plays an influential and impactful role in trade negotiation. The final trade agreement is the result of the background negotiation among the contracting countries in a bilateral, regional or a multilateral arrangement. This paper has attempted to explore main strategies often exercised by the countries in trade negotiation and identifying factors that, in one way or the other, determine the bargaining power, particularly, of the developing countries. The data gathered from secondary sources are qualitatively analyzed. As strategies, the principle of reciprocity (negotiation based on a 'give and a take' policy) and prior preparation (conducting the negotiation process with full prior information, research finding and analysis), have been identified. Furthermore, the basic factors for building or relinquishing bargaining power particularly from the developing country's perspective have been discerned as market, commercial intelligence, capacity to control others and resource. As trade cooperation is becoming an unavoidable and inescapable phenomenon in the entire world, developing countries are advised to make themselves ready to play well the trade negotiation game by improving their bargaining power and byexploiting maximum possible out of that. There is no trade deal that is wholesale good or bad; it rather depends on how the country negotiates.

Keywords: Bargaining power; Trade negotiation; Developing countries.

Introduction

Trade cooperation and integration through various modalities is becoming the current trend. However, managing successfully this complex and rapidly evolving mass of economic arrangements, alongside the global political tension and dynamics, requires thorough attention and comprehensive technical skills. UNCTAD (n.d) states that "understanding the changes occurring globally, the impact of trade in national development interests and priorities and fostering consensus on addressing trade barriers and commitment to more open and fairer international trade."

Trade negotiation is the process to set in advance rules that facilitate, guide and regulate trading among countries. In addition to the active participation of the negotiating countries, it invites direct or indirect involvement of the private sector and other interested groups. When countries come together for a certain trade deal, they stand for their own respective interests that most often contradict to each other. Trade negotiation is thus a very complex process which goes through a series of tradeoffs. Sometimes, the process takes decades together. The outcome of any trade negotiation depends on the relative strength of negotiating countries. Such strength of the countries is commonly referred to as bargaining power. Bargaining power of countries in trade negotiation can be interpreted and expressed in different ways.

The objective of this paper is to explore and discuss main issues involved in a trade negotiation particularly from the perspective of developing countries. This piece comprises five sections. The first section is introductory, followed by the section for the definition of bargaining power in trade negotiation. The third section highlights steps of how trade negotiation should be conducted. Having done these, the main determinants of trade negotiation have been discussed under the fourth with developing countries in focus. Lastly, main points have been summarized as conclusion.

Understanding Bargaining Power in Trade Negotiations

The term 'power' has been understood in different ways with positive and negative undertones. The power of negotiating states in trade negotiation may be acquired from legitimate sources and applied in a fair manner. But the opposite is not also uncommon. Power is thus analyzed both theoretically based on the conception arguments' reflect and its specific association and usage. Under this section, both views have been attempted.

Basing on the neorealist approaches and different alternatives, international relations between states take place within a constant state of anarchy (McGlinchey, Walters & Scheinpflug, 2017). Each state tends to protect its national security as well as securing its survival by means of military and economic capabilities within this anarchy. In so doing, states try to accumulate as many military and economic resources as much possible (Bailer, 2010). According to McGlinchey *et al.* (2017), this forms a basic ingredient of power in these relations as they dominate in relations between states. Henceforth, the basic emphasis of this theory is thus on the attributes of the actor (the state) itself. Approaches of structural realism validate this by relating it to a theory of balance of power whereas such balance may be attained by arms races and by factors of "economic capabilities" and "military strength" as well as alliances (ibid).

On the other hand, social constructivists emphasize the importance of the system in which the state interacts itself as a social process influences policy outcome. This process for example in the social environment generates identities; reputations; perceptions and ideas of the actors (Malik, 2013). Thus, international relations may not necessarily be influenced only by states' material capabilities and structures

in which interactions take place. Ideas and the perceptions of the actors should not be ignored as they tend to play an important role. Henceforth, the ability to influence such ideas or creating and controlling such perceptions may form an ingredient of the power in international relations. How could such power be obtained and exercised? Ability to shape the opinions that other states have over these capabilities is crucial as well. According to Bailer (2010), controlling perceptions of the future capabilities of development are important in order to be in such a position. One way that developing countries may obtain such power would be to exercise practices that aim to create an image of them as important emerging markets (Drahos, 2003). A good example of this may be drawn from the summits of the BRICs. When a developing country enters into negotiation with a developed country, it tends to face the challenge of unequal bargaining power (ibid). However, even in a multilateral trade agreement, bargaining power still functions to favour developed countries, and developing countries do not always gain powers from numbers (Page, 2002).

In Bailer (2010) statement, the term 'bargaining power' means "the ability of a person, group, or organization to exert influence over another party in a negotiation in order to achieve a deal which is favorable to themselves." In this sense, bargaining power refers to the relative capability of the parties to a negotiation that would culminate in a binding deal. In other ways, it is a measure of the capacity of one negotiating party to influence another. Parties with higher bargaining power are able to leverage their circumstances to strike more desirable deals with others. The term 'bargaining power' thus comes to the picture in any type of negotiation and between whatever entity of natural or of artificial in character.

Note that the parties in unilateral, bilateral, regional and multilateral negotiations are sovereign countries. For the purpose of this paper, 'bargaining power in trade negotiation' does mean the capacity of one country to dominate the other due to its influence, power, size, or status, or through a combination of different persuasion tactics. In other words, trade negotiation is a bargaining game between countries with competing objectives and bargaining power is the strength of one negotiating country to influence another negotiating country to obtain an advantage out of the final agreement. However, if both the parties are on an equal footing in the negotiation, they will have equal bargaining power which is known as perfectly competitive (Lundgren, Bailer, Tallberg & Tarlea, 2017).

For negotiations to succeed, each one of the negotiating countries must give up something in exchange for reciprocal concessions of equal or more value from the other negotiating country. If countries on both the sides of the negotiation just focus on their own respective needs and interests irrespective of the needs and interests of countries on the other side of the negotiation, it is highly improbable to come to consensus though there are countries in the negotiation with huge bargaining power. However, the undeniable fact is that the more a country has a bargaining power, the more likely it can influence other negotiating countries for its own benefit, and the *vice versa*.

The factors that determine the level of countries` bargaining power in trade negotiations are different depending on the stage of the negotiation, the subject matter of the negotiation, the existing domestic affair of the negotiating country and the prevailing global economic and political landscape. A country which has a good bargaining power today may not have the same power tomorrow or a country with a significant bargaining power with respect to a certain good or service may have insignificant bargaining power in a trade negotiation for some other goods or services at the same time. Furthermore, bargaining power is measured on a comparative basis, i.e., by comparing the strength of one country with that of the other. Because of these, the existence

of high or low bargaining power is not per se visible during negotiation. It rather requires some comprehensive comparative investigation and analysis regarding potential of all the negotiating countries and the international environment.

Though there is no uniformity in the understanding of what a developing countryis, and countries which are categorized under this title have some common features and defining characteristics. A developing country may be defined as a country with a low level of human development index (HDI), gross domestic product (GDP) and industrialization (Nordqvist, 2018). A developing country is less developed than a developed country. It is also known that the economy of developing countries is dominated by agriculture. The bureaucracy in particular and the governance system of developing countries, in general, are accused of rampant corruption, human rights abuse and absence of transparency. These common features put developing countries at (almost) similar position during trade negotiation, given the fact that the particular situation of these states makes a difference. Because of their contextual situation, the determinants of bargaining power from the side of developing countries are similar.

The Process of Trade Negotiation and the Making of Trade Agreements

Trade negotiation is a pathway to trade agreements where the parties on both sides of the agreement are bound by the terms and conditions thereof. The outcome of trade negotiation is a binding instrument called agreement, convention or treaty regarding that specific aspect of trade. By entering into an enforceable trade agreement, a country imposes on itself an obligation most probably with the expectation of some benefits from other contracting countries. Under Article 2(1) of the 1969 Vienna Convention on the Law of Treaties, a treaty is defined as "an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation." It must be noted that the free consent of the contracting countries is always at the center of any agreement, including trade agreements. Regarding the making of a treaty, article 1(1) of the 1969 Convention reads:

> *"The consent of a State to be bound by a treaty is expressed by the signature of its representative when: (a) the treaty provides that signature shall have that effect; (b) it is otherwise established that the negotiating States were agreed that signature should have that effect; or (c) the intention of the State to give that effect to the signature appears from the full powers of its representative or was expressed during the negotiation."*

Treaties will acquire their binding status pursuant to the provisions of the agreement itself and in accordance with the domestic (constitutional) law of negotiating countries. A trade agreement is thus an international legal instrument born out of negotiation on a specific aspect, i.e., goods or services or the facilitating environment, between the countries that are parties to the agreement. In other words, it is the negotiation process that gives content and shapes terms and conditions of the agreement. In order to be the winner, or at least not to be a loser, in such a tough process of trade negotiations, countries across the world have developed many principles, strategies or approaches that are of significance to developing countries. Some of which are discussed hereunder in this section.

Informed Decision Making: there is a common maxim – 'information is power.' Yes, information is power. When a country negotiates and entered into a certain trade agreement, it makes a decision. To exploit the maximum possible advantage from the existing condition, the negotiating state shall be well aware of that. The outcome of any bargaining game depends on wherefrom negotiations start. Trade agreements are no exception. The policies

that each country will adopt if no agreement is reached provide a reference point - or a 'threat point' - for the negotiations (Sampson, 2016). Countries will make concessions starting from this reference point. In such a manner, the final outcome depends on the initial point, i.e., the existing condition. For most trade negotiations, the reference point is the status quo. The reference point for negotiations determines what countries bargain over and, consequently, the outcome of negotiations.

The Principle of Reciprocity: the main purpose of trade agreements is to make all the contracting countries better off by preventing governments from adopting policies, such as import tariffs or foreign investment subsidies, which benefit their own economy only because they hurt other countries (ibid). Sampson (2016) argued that "the potential gains from trade agreements are larger when countries are willing to make bigger concessions and give up more policy control". The more a country makes itself ready to give, the more it will be positioned to take from others. Trade negotiation should therefore follow a give-and-take approach or a win-win approach.

In the current interdependent world, no single country is fully self-sufficient to whatever degree it advances economically, politically and technologically. It should not be forgotten that the effects of the trade policy of a country are not limited to its national borders. Sampson (2016) further stated "in the language of economics, trade policy generates international 'externalities;` and frequently these externalities lead to 'beggar-my-neighbor' effects, which make other countries worse off."

Trade policy externalities operate through three main channels. First, there are terms of trade effects. Each country can use trade policy to improve its terms of trade by raising the price of its exports relative to its imports. For example, OPEC countries improve their terms of trade by restricting the supply of oil to drive up its price. But one country's exports are another country's imports. Consequently, a country can only improve its terms of trade by making imports relatively more expensive for the rest of the world. A high oil price benefits oil exporters, but hurts oil importers.

Second, there are production location effects. Countries compete to attract investment from internationally mobile firms. Policies designed to attract foreign investment include reducing tariffs on intermediate inputs and providing production subsidies through tax breaks or loan guarantees. Ireland has been very successful in using investment incentives to attract multinational firms. But while Ireland benefits from increased investment and employment and from obtaining access to new technologies, other countries lose out. Location decisions are a 'zero-sum game'.

Third, even when firms are immobile, trade policy can be used to raise profits of domestic firms at the expense of their foreign competitors. This profit-shifting effect lies at the heart of the decade's long battle between the United States and the EU to capture a greater share of aircraft industry profits by subsidizing Boeing and Airbus, respectively (Sampson, 2016).

Taking into consideration of these externalities, when a country sets its trade policy unilaterally, it must assure the policy would not affect other trading partners. This behavior of controlling externalities would entitle the country with a privilege to claim more concessions. Put another way, unilateral trade policy is beneficial only if the other countries do not respond by changing their policies. In trade wars, everyone loses. This is why trade agreements are needed. By negotiating trade agreements, countries can internalize externalities resulting from international interdependencies, avoid damaging trade wars and in a way make all countries better off (ibid). That is the foundation for sustainable trade deal which in turn maximizes benefits for both the parties.

The Main Determinants of Bargaining Power in Trade Negotiation: Developing Countries in Focus

The issue of bargaining power arose most often in negotiations between developed and developing countries. Drahos (2003) illustrates that "it is even presumed that, when a developing country negotiates with a large developed country it generally faces the problem of unequal bargaining power." Trade negotiation is very sensitive and highly influenced by the bargaining strength of the negotiating countries. The Trade Negotiations Committee (TNC), an organ mandated for assisting developing countries in trade negotiation, was set up by the Doha Declaration, which in turn assigned it to create subsidiary negotiating bodies to handle individual negotiating subjects. In particular, the mandate of the TNC is indicated as quoted from WTO (2001):

> *"The overall conduct of the negotiations shall be supervised by a Trade Negotiations Committee under the authority of the General Council. The Trade Negotiations Committee shall hold its first meeting not later than 31 January 2002. It shall establish appropriate negotiating mechanisms as required and supervise the progress of the negotiations."*

United Nations Conference on Trade and Development (UNCITAD) has also an initiative to improve bargaining power of developing countries in trade negotiation. UNICTAD`s endeavors focuses on trade negotiations and commercial diplomacy to enhance policy, productive, institutional, regulatory and human capacities in developing countries and enable them to trade and participate beneficially in the international trading system. To achieve this, it offers analysis, builds capacity and promotes consensus and partnerships on various sectors, including trade negotiation. The simple implication of all these is how trade negotiation is a serious issue where developing countries are mostly prone to be jeopardized.

Under this section, the common indicators or factors on the basis of which the level of bargaining power of the developing countries would be weighed and analyzed are presented hereunder.

According to Grossman (2012), bargaining power in the context of trade negotiation has three basic sources. Firstly is the market power a country has at its command, secondly is the state's 'commercial intelligence networks', and thirdly is the capacity of a country to control others, both state and non-state, in a coalition.

Market Power of a Country

Control over a large domestic market tends to give countries a powerful tool in trade negotiations (Draho, 2003; Braunstein and Epstein, 2002; Karayanidi, 2011). Apparently, a country with a relatively large domestic market is in a better position, can make credible threats and/or promises to countries which want access or already depending on that specific market. The capacity to make such threats is viewed as among the critical determinants of a trade negotiation (Draho, 2003). For example, during the Uruguay Round, developing countries had enjoyed the benefit of duty-free trading privileges in the US under the Generalized System of Preferences (GSP). After the US amended its Trade Act of 1974 by linking the grant to the provision and enforcement of adequate intellectual property standards, a number of developing countries were threatened with the suspension of GSP privileges for failing to enact adequate standards of intellectual property protection (Drahos, 2003; UNCTAD, 2010)

Commercial Intelligence Networks

According to Draho (2003), these are networks that gather, distribute and analyze information relating to a country's trade, economic and business performance as well as those of other countries. The more integrated the network is the more effective it is likely to be in trade negotiations. Developed countries have over

time developed sophisticated networks to attain such powers (Draho, 2003; Karayanidi, 2011).

Capacity to Control Others

A third source of bargaining power may be the capacity of a country to control other countries, both state and non-state, in a coalition (Braithwaite & Drahos 2000). Non-state actors in the shape of business actors have often been crucial in the international trade negotiations. The declaration on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and Public in Doha was the product of an alliance between developing states and influential NGO actors, like the Oxfam and Consumer Project on Technology, Médecins Sans Frontières (Draho, 2003; Drahos & Mayne 2002).

Bargaining power, therefore, may be analyzed in two facets. Firstly, the structural power of a country, which may be determined by the capacity of a country as well as her strength in negotiations. In the second facet, the procedural power, which is based on bargaining skills, resources and tactics as well as the ideational power that depends on ideas and norms (Elsig, 2006). The sources of bargaining power can be found on these different levels, and the discussion of which falls hereunder.

For the purpose of identifying specific indicators of bargaining power in trade negotiations, establishing taxonomy of facets of power in the multilateral trade regime is of primary concern. In the same vein, Elsig (2006) proposed taxonomy based on structural, procedural, ideational as well as institutional power as key facets of bargaining power in a trade negotiation.

Structural power

Malik (2013) divided structural power into two major elements. The capacities of the negotiating party are on the one hand. These refer to the neo-realist concept of power; indicating that power depends on attributes of the country itself, such as economic and military capabilities, its population and size. Henceforth, the analysis of bargaining power in trade negotiations offered in this paper lays a focus on the part of economic resources and capabilities. It is apparently clear that in a negotiation, bargaining power depends on what an actor actually has to offer. As multilateral trade negotiations are about economic concessions, the market size and other economic capabilities of each actor are important (Elsig, 2006). Considering the principle of reciprocity in trade negotiations, larger relative market size increases leverage. In order to determine economic capabilities, it is imperative to establish country's economic profile (Elsig, 2006; Malik, 2013). For a case in point, market size merely translates into structural power in tariff negotiations if the referred market is protected by tariff barriers, which can then be used as bargaining chips. Accordingly, the prevailing barriers to market access which may be used as concessions in the negotiations have to be included as well (Bailer, 2010; Elsig, 2006). Such an economic analysis may relatively be sufficient to identify what an actor has to offer economically. The positional strength is, on the other hand, the second element. This is determined by relative losses that negotiating countries would have to suffer by not concluding the deal (Elsig, 2006). As a result, the famous concept of Best Alternative to a Negotiated Agreement (BATNA) arises. BATNA is often mentioned as among the fundamental elements of bargaining theory (Elsig, 2006; Spangler, 2012). The actor in the negotiation with the less profitable BATNA is more inclined to offer larger concessions to conclude the deal. According to Spangler (2012), the majority of the developing countries have relatively weak BATNA.

Procedural Power

Procedural power depends on skills as well as resources of negotiators (Elsig, 2006). This power can be used to offset irregularities in structural power and can therefore relatively affect the bargaining power of an actor. In

technical negotiations, countries with highly qualified and experienced negotiators on the issues are more likely to be influential. This is particularly true for highly technical rules-based topics such as anti-dumping negotiations (ibid). As Odell (2000) points out, the use of different tactics may affect the outcome of negotiations. A factor that determines bargaining power would therefore be the use of the relevant tactics in a certain situation in negotiations. The effect of a domestic ratification constraint on the bargaining power of an actor largely depends on tactics within the negotiations. A hard bargaining strategy can be justified by a weak autonomy of the negotiator or a large ratification constraint (Karayanidi, 2011). For example, different aspects of developing country's' foreign and trade policy can be interwoven in different fora to maximize bargaining power within them.

Ideational Power

Ideational power is a result of influences of ideas and normative power in multilateral trade relations (Orbie & Khorana, 2015). In particular terms, literature suggests that these ideas, values and norms are important in negotiations and multilateral institutions (Elsig, 2006; Finnemore and Sikkink, 1998; Karayanidi, 2011; Page, 2002). Three types of norms can be distinguished in this course as suggested by Finnemore and Sikkink(1998). Firstly, general norms, for example in the case of the European Union, include support for democracy, the rule of law, human rights and good governance. Secondly, framework norms which determine the underlying approach to market regulation. Thirdly, specific norms which are specific regulatory provisions defined by a country's laws. Henceforth, by leading the process of implementation of norms, a country can exert power through its own interpretations of these norms. This can therefore serve as an example and thus influence behaviour of other actors (Woolcock, 2012). Individual countries can also cooperate with civil society actors, such as NGOs, to increase their ideational power (Malik, 2013). Henceforth, ideational power can also be used as a tool to determine policy problems or solutions in the negotiations. This is particularly relevant during the earlier stages of multilateral trade negotiations such as the agenda-setting phase (Tussie and Saguier, 2011).

From this analysis of bargaining power, it is apparently clear why the developed countries tend to have relatively strong bargaining power and developing countries comparatively weak bargaining power; true even in a multilateral forum like the WTO. This brief review of the state of bargaining power implies that much remains to be done. Researches so far have taken place in the realm of voting power indices, which according to Elsig (2006) have failed to account for many facets of negotiations. Studies that incorporate additional bargaining power resources are limited to certain periods and measurement challenges.

Furthermore, the bargaining power of particularly developing countries is affected by the availability of alternatives in the sense of availability of options to choose trading partners or the fact that the negotiating country is not in an urgent need of the deal. Secondly, the creditworthiness of the country —,that is the past history of the negotiating country in the performance of its international obligations and commitments – is also an asset to attract the confidence of other contracting parties. Whether there are concessions or gaps in the existing legal framework to developing countries is another factor that contributes for expanding or lowering down bargaining power of the developing countries in trade negotiation. Fourthly, the expertise of negotiators representing developing countries, such as their skill to analyze and differentiate the pros and cons of the deal based on preliminary survey, to exploit concessions and legal gaps, to understand and to be understood, and other skills of negotiation play significant role to rate the bargaining power of the developing countries in trade negotiation.

Lastly, the obvious factor that determines such bargaining power of countries is its comparative advantage which can be interpreted in terms of resource availability – including land and human resource, the environment for smooth trading – such as legal & policy frameworks, the bureaucracy and infrastructure, and market access.

Conclusion

No country can exclude itself from trade cooperation and integration through the instrumentality of trade negotiations that most often result in binding agreements and non-binding memorandum of understandings (MOU). However, developed and developing countries have not been able to play on an equal degree in the process of coming together and negotiations. The imbalance of bargaining power in trade negotiation between developed and developing countries causes tilted and unfair trade relation among them. Although the factors that negatively affect the bargaining power of developing countries in trade negotiation generally depend on their relative economic strength, political condition, infrastructure and resource of the negotiating country; some of the factors have been discussed in this paper on the basis of the common feature and characteristics of the developing countries. Pragmatically, the principles of informed decision making and reciprocity are recognized as the best trade negotiation strategies that the developing countries should be accustomed to. There is no concession without a reciprocal tradeoff. Parallel to addressing the factors that determine their bargaining power (in trade negotiation), adoption of these strategies is advisable for developing countries to improve their position, influencing capacity and realize a win-win outcome. As entering into a binding trade agreement brings about cross-generational consequences, it should be conducted thoughtfully and cautiously. Moreover, improving the bargaining power of developing countries would be an endless project so as to equitably utilize world`s resources.

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III

G20 and BRICS Shaping Current Global Economic Governance: Perspectives from Developing Countries

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G20 and BRICS Shaping Current Global Economic Governance: Perspectives from Developing Countries

Abstract: This paper explores effectiveness of G-20 and BRICS as the informal group in promoting public goods for selected developing countries, particularly— Brazil, Indonesia and Sri Lanka. The selected countries represent a mix of member and non-member countries of both groups which are located in three main regions— Latin America, South East Asia, and South Asia. In this paper, the perspective of each country may help assess roles of both groups in promoting public goods for developing countries,and it aims to provide a theoretical framework and an empirical evidence to address a main question on how global economic governance has been shaped by the presence of both G-20 and BRICS, and their effectiveness in generating public goods to tackle several issues on financial and economic problems.

Keywords: Global Economic Governance; Public Goods; Developing countries; G-20; and BRICS

Introduction

The world politics has been shaped by regimes and international institutions since the end of World War II in 1945. Some have called it as the liberal international order (Keohane; Nye, 2001), wherein states would address transboundary issues such as trade and finance. As there has been advancement in globalization and the countries have become much more connected and, arguably, interdependent, the need for institutions to advance their goals have become imperative (Karns; Mingst, 2015).

However, in line with this process of institutionalizing countries address common issues, the post-war order, saw the emergence of a growing number of not only newly independent states, but also of new actors such as non-governmental organizations as well as civil societies. As countries joined the existing institutions, crafted in terms of equality and consensus, their membership and capacity of addressing issues became more complex(Keohane; Nye, 2001)

As the result, international economic institutions, such as the World Trade Organization (WTO) and the International Monetary Fund (IMF), faced some challenges in their governance both in terms of capacity of addressing their issues and breaking gridlocks stemming from divergent interests among members (Falkner, 2016; Karns; Mingst, 2015).

In this sense, some scholars have argued of a crisis in the global economic governance, which countries attempted to resolve by crafting new social contexts to manage emerging challenges of the international order (Falkner, 2016; Karns; Mingst, 2015). On one hand, the G-20 was formed to discuss and provide policies to address financial issues. And on the other, a group of four large emerging countries got together to voice an alternative view of the world, and BRIC was formed (later BRICS with the inclusion of South Africa). To date, over a decade has passed since both groups have started working to tackle many issues in global governance.

In this context, the paper aims to understand how global economic governance has been shaped by the presence of the both G-20 and BRICS. To address this question, the paper will empirically survey some members and non-members perceptions of these coalitions.

Subsequently, this paper would be structured in four sections. First, would be the theoretical framework which would provide understanding of the global governance, club and minilateralism models, ensued with a brief description of two groups. Second, would cover some critical assessment of G-20 and BRICS to global economic governance by reviewing its effectiveness and efficiency of international economic institutions (IEIs). Third, coversempirical-based perception of the members and non-members countries of G-20 and BRICS. Fourth, a conclusion would provide a stand point of where we stand today in global economic governance.

The Theoretical Framework

In this paper, the concept of governance will be addressed as traditional and as new global economic governance. The first is understood in terms of legal bindingand international governmental institution-based approach. And the second is a variant to the first one, but conceived as flexible, non-binding and minilateral. Each one will be studied in terms of benefits and challenges it poses to solve cross-border issues among countries.

At first, it is important to indicate how global governance is understood here: '*the sum of the many ways individuals and institutions, public and private, manage their common affairs [...]. It includes formal...as well as informal arrangements that people and institutions have agreed to or perceive to be in their interest* (Commission on Global Governance, 1995, p.2 *apud*Karns; Mingst, 2015).

According to Dingwerth and Pattburgh, the analytical and conceptual utility of a global governance perspective is the ability to identify

and describe "*transformation processes*" in world politics [2006, p. 196]. Global governance has been defined in a variety of ways like other complex phenomena. There are several definitions which have emphasized the role of collective goods as "*the various institutionalized modes of social coordination to produce and implement collectively binding rules, or to provide collective goods*" (Risse, 2012, p. 700).

Even though the definition provided by the Commission already covers and encompasses both formal and informal manners to solve global issues, it is argued that the main difference in approach is the fact that informal institutions, that shall be studied here, are of minilateralist nature.

World politics has been dominated, for roughly 50 years, by international regimes '*managed by an international organization with a specific headquarters and a secretariat* (Keohane; Nye, 2001, p. 2). At first, these institutions were designed as clubs, where a group of countries would seat and negotiate issues. However, the club model was challenged by the growing number of membership, which naturally distorted its nature (small group of actors). At the same time, the addition of new members to institutions, conceived in terms of consensus-based approach to their decision-making process, posed a challenge as to how address the issues stemming from the dynamic of the international system (Keohane; Nye, 2001; Falkner, 2015; Karns; Mingst, 2015).

That was the case of trade regime, which witnessed growing institutionalization and increasing membership (to almost becoming truly universal). This provided a legitimate space for policy debate, as each member was entitled with one vote and power to veto decision; as consensus was the main procedure of decision-making. However, this formula reached a gridlock in delivering results to new demands of the world, which resulted in a crisis of global economic governance (Falkner, 2016).

Consequently, countries, or a small group of them, decided to reconvene in informal club-like meetings to bring back effectiveness of global governance, what has been called as minilateralism. Falkner (2016) argues this is one of the many possible innovative approaches to global governance. In his view: '*by creatively reshaping the composition of international forums to better reflect global power realities, minilateralism thus promises a more realistic scenario for developing global policy responses* (p. 3).

This view of '*global power realities*' captures, albeit unequally, the distribution of relevance of states in the international system. Unlike in the immediate post-war period, when governance was conceived and run by most advanced rich countries of the North, the end of the 20th century witnessed emergence of new powers, the presence of middle powers and a large group of developing nations. This new reality has shaped the new membership of informal fora (Karns; Mingst, 2015).

Minilateralism, according to Falkner (2016), allows for greater political dialogue and bargaining, as it enables state leaders to '*build mutual trust and explore how to find common ground without the expectation of reaching a formal agreement*' (p. 6). As a result, this allows for an increased chance of compromise among members, which boost efficiency, understood in terms of advancing agenda, stalled in organizations.

The very same nature of this formula, the small number of countries participating, poses the biggest challenge to it: legitimacy. Keohane and Nye (2001) highlighted 'if international institutions are to be legitimate, therefore, their practices and the results of their activities need to meet broadly democratic standards' (p. 11).

Scholarly research (Keohane; Nye, 2001; Falkner, 2015; Karns; Mingst, 2015) talks about institutitions' practices as 'input legitimacy' while results as 'output legimacy'. As such, legitamacy is understood not only in terms of membership scope, agenda-setting and

the decision-making process internally to the organization but also to its effectiveness in addressing its mandates, shaping and solving issues challenging any aspect of governance.

Issues in global economic governance will be understood here as public goods, which, consequently, mean topics of trade, finance and security that countries work together to find common and mutual beneficial solutions to them.

G-20 and its importance in global economic governance

The Group of Twenty (G-20) is a forum for advancing international cooperation and coordination among 20 major developed and developing or emerging countries. Its members include Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom, the United States, and the European Union (EU), which cover about 85% of global economic output, 75% of global exports, and two-thirds of world's population(Nelson, 2018).

The establishment process of the G-20 started in mid-1970s when leaders of five developed countries(France, Germany, Japan, the United Kingdom, and the United States) –then so called as the Group of Five (G-5) - began to meet annually to discuss issues on international economic challenges, including oil shocks and collapse of Bretton Woods system. In mid-1980s, the G-5 was broadened to the Group of Seven (G-7) by including Canada and Italy. Later on, in 1998, Russia agreed to join into the G-7 which then created the Group of Eight (G-8). This group actively discussed several issues, not only related with macroeconomic policy but also covered global or transnational issues, such as: climate change and environment, transnational crime, drugs, AIDS, and terrorism(Wnukowski, 2016).

Since the occurrence of Asian Financial Crisis in 1997-98, this group started to notice the importance of developing countries in maintaining global economic and financial stability. That was the case as some economic and financial turbulence affecting developing countries created some serious spillover effects to developed countries. Consequently, in 1999, the G-20 was established as an international economic forum for promoting coordination between developed and developing countries (Rana, 2014)

Due to the occurrence of Global Financial Crisis in 2008-09, G-20 became a premier forum for international cooperation to discuss several issues on international economic and financial systems, sustainable development, food security, gender issues, environment while supporting the United Nations' agenda on climate change (Nelson, 2018). In this sense, G-20 got transformed its role as a crucial hub for global governance networks and a steering committee for the world economy.

BRICS and its importance in global economic governance

The BRIC is an acronym for Brazil, Russia, India, and China, which was coined by Jim O'Neill (the Chief Economist of Goldman Sachs) in 2001. As the largest emerging economies, these four countries were expected to grow faster than the developed countries and to play an increasingly important role in the world. As predicted, over the last decade, BRIC's nominal gross domestic product (GDP) became similar to that the EU or US and would likely overtake both in the coming few years(Craig, 2018).Later on, BRIC was transformed into BRICS with the inclusion of South Africain 2010.

The BRICS is most accurately viewed as an informal forum where they do not have to contend for air-time and agenda setting with Western powers and intellectual frameworks, and which provides possibility to have an impact symbolically, rhetorically and programmatically on the world scene (Cooper, 2014). One of these examples is the establishment of the New Development

Bank (NDB) as the first project fully owned by the non-OECD countries. The NDB is an independent financial capacity to finance BRICS sustainable development, and is projected as a major regional development bank.

Relationship between G-20 and BRICS

The G-20 and BRICS are both self-selected grouping of countries with divergent interests and governance systems. Practically, BRICS's countries are members of the G-20; thus the G-20 has become the only mechanism of global economic governance wherein all BRICS countries have participated in as founding and core participators. In this sense, the G-20 and BRICS have worked comprehensively across all governance functions and subjected to provide continuous global governance in a world of increasing vulnerability, connectivity and capability shifts (Kirton and Larionova, 2015).Therefore, BRICS's participation in the G-20 not only helps improve BRICS' influencing through forming alliances but also provides a platform for them to express their stance on certain global issues. As the result, BRICS has used the G-20 summits as a locus to convene leaders meeting where their agenda mostly discussed common issues, including tax, transparency, infrastructure, regional security, the international financial institution (IFI) reform, the health-related MDGs and terrorism (Kirton, 2017).

The Critical assessment of G-20 and BRICS to Global Economic Governance

The effectiveness of e G-20 and BRICS in providing public goods

G-20. This group has worked well for almost a decade due to its success in implementing some changes and initiatives in the present global economic situation, but currently its existence hasbecome less effective and suffers from both "input" and "output" legitimacy.

First, regarding the "input" legitimacy, there were two serious issues on its efficiency and representation. In terms of efficiency, the G-20 is facing some internal problems which was mostly caused by two factors— (i) no permanent staff of its own and its chairmanship rotates annually between nations divided into regional groupings; and (ii) no formal votes or resolutions on the basis of fixed voting shares or economic criteria. In terms of representation, it consistently represents dominance of the US and Europe where the economic rise and political power of emerging markets are neglected. The absence of the United Nations in the design was the primary critic on G-20, along with the lack of broader representation from the developing countries (Kawai *et al.*, 2009).

Second, regarding the "output" legitimacy, it is related to its ability to strengthen international cooperation and come up with effective solutions. In this context, it seems that Western countries continue to control the IEIs. Thus, an effective global governance system requires additional governance reforms in the IEIs, implementing reforms.

To some extent, the G-20's phenomena on "input" and "output" legitimacy can be assessed by using the Economic Theory of Clubs. Regarding the "input" legitimacy issues (specifically on efficiency and representation issues), it can be said that the inefficiency problems occurred because IEIs – specifically the G-20 - are clubs which produce goods that are at least partially non-rivalrous (more than one user can consume) and excludable (users can be denied access to them). In correlation to this, Kawai *et al.* (2009) has come up with the conclusion that the application of club theory to IEIs leads to create an inflexible institution where the club charters are usually designed to maintain firm control in the hands of founding members and those who share their preferences.

Buchanan and Tullock (1962) addressed some reasons behind the imbalance and limited representation in the G-20. It is because a large

number (or heterogeneity) of members or representations may create more difficulties in reaching some common agreements and create opportunities for the membership's majority to take advantage of the minority (what Buchanan and Tullock called the external costs of collective decision making). Moreover, regarding the "output" legitimacy issues on its ability to generate the effective solutions, Kawai *et al.* (2009) argued that there are exceptions to the rule (e.g., closed union shops) where clubs solve these problems voluntarily (voluntary association, voting-with-the-feet) rather than coercively. Consequently, when the club was associated with others members who were like-minded (in the sense of having similar demands for club good provision) ,then it became more difficult to make some decisions or solutions which were not beneficial to them. Despite its success, the G-20 has several shortages in promoting global governance owing to its lack of leadership in consolidating a global economic recovery.

BRICS. Countries have gradually become aware that they share mutual interest in international affairs and have actively participated in international multilateral cooperation. Therefore, the financial and economic cooperation of BRICS has served as a new and innovative model for achieving further South–South Cooperation, as the NDB is a good example. Despite its success, since 2013, structural problems in BRICS' economies have also been significant, including large income gaps, lack of financial transparency and infrastructure deficiencies.

In a similar fashion as G-20, it can be argued that BRICS suffers from some inefficiencies. These can be seen in terms of 'input' and 'output' legitimacy as well. First, unlike G-20 who tries to keep coordination flow by the troika, BRICS chairmanship rotates and each country sets the incoming agenda, which not necessarily is a continuation of the previous one. Second, even though the leader declaration keeps a track and is built up from the previous one, some of the initiatives discussed in the technical level may lose momentum. As the result, this may signal a lack of coordination to the outside world, whereas, in reality,it is a reflection of the dynamism of how the group operates.

There is much for BRICS to achieve, from jointly promoting global trade growth to enhancing transparency of regional trade agreements. With their increasingly comprehensive power, BRICS countries will definitely have the capacity to contribute more to international public goods (Armijo, Leslie Elliott and Roberts, Cynthia; 2014).

The needs to develop a decentralized system to re-shape a new global economic governance

As the G-20 is expected to secure regional economic and financial stability, a rules-based, stable and predictable world order does not exist; thus currently the G-20 is facing a "governance trilemma", as mentioned by Kawai *etal.* (2009). There is broad agreement that G-20 needs to become: (i) more democratic; (ii) more effective in delivering public goods; and (iii) universal by accepting all countries that apply for membership. These requirements add up to a trilemma; because while achieving any one or two objectives makes achieving the others more difficult. For example, the United Nations (UN) is democratic and universal, but suffers on effectiveness. Similarly, the IMF and World Bank are universal and effective but not democratic.

In this sense, there is a demand for a minilateral institution - the national, bilateral and regional - to be able to work closely with more senior global institutions by rules and regulations, as well as to enable pioneer alliances that at the same time support an inclusive, multilateral institution system. It means that develop an international economic architecture which would move incrementally toward a more decentralized system, a preferable option.

However, on the other hand, it also creates a big challenges since regional decisions need to be made globally coherent to act as building blocks of the global system. This requires paying close attention to connections within a decentralized system to make sure they complement each other and the global system.

The Empirical Evidence

This section would provide some perceptions of member and non-member countries of G-20 and BRICS, as well as their critical assessment on several areas.

Perspectives from members and non-members

Brazil. Among the countries analyzed, Brazil is the only country to participate in both BRICS and G-20. The country was a founder member of both institutions, reflecting both regional and international systemic relevance of it. In addition, as rightly put by Doctor (2015), Brazilian approaches to these two fora are pragmatic, looking for increased influence internationally and avoiding 'sticky alignment'. This strategy allows for not only policy space and autonomy but also room to navigate among different sets of groups of countries without unnecessary labels.

Brazilian pragmatic approach is, arguably, the best concept to understand its policy towards BRICS. From the very outset, the country realized the differences of member countries, consequently it has decided to focus on what can be discussed, cooperated together rather than giving room to topics they disagree on. That is precisely why the Ministry of External Relations of Brazil has indicated that '[...] health, science, technology & innovation and energy for the consolidation of the multi-sectoral cooperation are a priority for Brazil. Coordination in these areas can produce concrete results' (Brazil, 2019)

In addition to pragmatism, Brazil`s strategy towards G-20 is also driven in terms of influence. Doctor (2015) frames these two elements in terms of country`s desire to be seen as a representative of the developing world, responsible stakeholder that, therefore, can be trusted, and influence actors to allow for reforms in institutions, such as the International Monetary Fund and World Trade Organization.

Indonesia. In 1999, Indonesia was honored to be inaugurated as the G-20 member. Within that, Indonesia has been placed as one of the key players in shaping and determining global economic policy framework. In this sense, Indonesia is presuming itself as a provider and a generator of global governance to promote and generate public goods (Schiavon and Dominguez, 2016) in the respective regional and international systems. This membership has shaped Indonesia's leading role as "bridge-builder" (Santikajaya, 2015) which has carried out two significant roles in both regional and international systems. First, as the only representative from ASEAN countries, Indonesia is expected to strengthen its leadership position in the region and become a bridge for collective interests of other ASEAN countries. Second, as the representative of developing countries, Indonesia is expected to build coalition, foster multilateral institutions, promote reform in the world's economic architecture. To date, several working groups (WGs) have been co-chaired by Indonesia, such as: (i) WG on the reform of the multilateral development banks; and (ii) WG on anti-corruption. Moreover, by presuming the G-20 as a civilizational powerhouse, Indonesia – as a muslim-majority country which politically applied democracy system – has a responsibility in promoting compatibility between democracy and Islamic value.

In this context, Indonesia has acknowledged importance of the G-20 as an effective instrument to distribute and divert global resources to be optimally utilized by the international community, specifically in developing countries.

Sri Lanka. There is significant potential for regional cooperation to improve development

prospects across South Asia. The rationale behind regional cooperation in South Asia lies in the opportunities it offers to its member states from the enlargement of markets and the management of shared resources. These benefits could then be employed towards development goals. Economic cooperation through trade and intraregional investment is central to the future of regional cooperation in South Asia. At present, intraregional trade between SAARC members lies at a paltry 5.7% of the total trade in the region. A common small country like Sri Lanka critique of the G-20 is that it is non-representative. The only South Asian member country in SAARC Region is India in both G-20 and BRICS.

Improving G-20's overall communication and transparency is the key component of promoting more effective outreach. But it is also clear that just inviting smaller, non-member countries to be guests at the summit is not sufficient. They need more targeted assistance to understand G-20 and where their contribution can add value. Overall, while an active outreach strategy may be one response to concerns over the G20's legitimacy, the most effective response is for the G-20 to be effective and successful in achieving its objective of stronger, more sustainable and more balanced global growth. This would benefit all countries, G-20 members and non-members.

The perspective of Asian powers including China, India and Russia emerges partially when BRICS leaders talk about global issues, not necessarily Asian affairs. Generally speaking, the BRICS has strong Asian power membership but has a weak agenda so far on Asian affairs.

Critical Assessment on several areas

Brazil. It can be said that Brazil`s inclusion in both G-20 and BRICS has greatly increased its voice, status and relevance in the international system and among the large groups of developing nations. First, these two fora provide exclusively and uniquely place for both technical and high level meetings, which allow for useful insights on the thoughts and possible directions of global governance. Second, by participating and engaging with various actors, the country can influence and shape narratives by building bridges among different opinions and be seen as the reasonable voice. Third, it benefits from intensive leaders` diplomacy, as they meet no less than twice a year.

On the other hand, as one diplomat once said: 'Brazil is good at reacting'. This reflects t country`s not consistent approach overtime to proactively propose new initiatives within BRICS and G-20. This can be a reflection of the domestic dynamics of the country (status of the economy and president's ambition), but also, for instance, a less intensive dialogue between government and academia.

Indonesia. By participating in the G-20, Indonesia has successfully promoted its economic development by advancing its national interest in several main areas. First, related with trade, Indonesia has been committed to implement the Automatic Exchange of Information (AEoI) in a timely manner and the Development Agenda 2030 as a part of Indonesia's national priorities by establishing a National Coordination Team which would be led directly by President Joko Widodo. Second, related with finance. Indonesia has received a Deferred Drawdown Option (DDO) from the World Bank, ADB, Japan and Australia for poverty alleviation and infrastructure programs, as a part of this GESF model. The General Expenditure Support Funding (GESF) was an emergency fund for allowing middle-income economies or developing countries to secure cost-effective financing for infrastructure, creating jobs and achieving the targets set by the Millennium Development Goals (MDGs) by 2015, by giving them liquidity of funding from the IMF and the World Bank in times of crises. Third, related with investment. Indonesia gained the G-20 political support which helped it to invite foreign direct investment (FDI) and capital portfolio investment by increasing foreign

public confidence in Indonesia's promising future economic development.

Sri Lanka. As far as Sri Lanka is concerned, it is difficult to find scholarly evidence. However, non-G-20 low-income countries including South Asia (SAARC) wanted more resources for development through new concessional funds, a disproportionate share of IMF gold sales, and more liberal interpretation of the Debt Sustainability Framework. The G-20 has inadvertently weakened hands of reformers in non-G-20 countries. The massive interventions in key banks and industries, and the tactical use of trade tariffs, have been legitimized by G-20 in an atmosphere of coordinated connivance. These policies are damaging to non-G-20 countries economic and political interests. Although the strong influence was of large economies in global decision-making prior to the establishment of the G-20, small countries in South Asia were at least able to actively participate in the work of the multilateral institutions in a way that they now feel at risk. From Sri Lanka's point of view, it is also meaningful to analyze the potential role of BRICS in dealing with Asian affairs as Asian economic affairs have not been on the agenda of the BRICS summits as the 2008 financial crisis was mainly centred in developed countries. Indeed, all BRICS members value Asia's stability and prosperity, but that does not mean that they have set this as a priority, or have the capacity to achieve that goal. To the extent that small countries like Sri Lanka and other South Asian countries should organize themselves coherently around well-developed, insightful perspectives on the G-20 agenda, there should be an opportunity to shape G-20 agenda and discussions.

Conclusion

This section addresses the point of where we stand today and also some policy suggests for the work of the groups. As it is discussed, traditional governance faced a gridlock, with which countries found a way out using a minilateralist approach. Consequently, the world politics could see the emergence of two fora for policy coordination— G-20 and BRICS.

Scholars have examined two institutions in terms of legitimacy, effectiveness, relevance, and some have indicated that the two groups are not implementing concrete decisions or their performance is inferior to G-8 (Larionova; Shelepov, 2017). While this seems to be partially the case, it is also important to keep track of the symbolic and signaling dimensions of fora.

These two elements help to explain why G-20 and BRICS focus on coordination or aim to be considered as a steering committee. They are loci to discuss not only the challenges of today's governance, but also to provide a direction on how issues and their discussions should be framed, be it a narrative, be it a policy agenda, be it a legitimacy approach to topics (Kerckhoven, Sven Van; and Wouters, Jan. 2017).

That is precisely why some authors have elaborated on the combination role of BRICS individually and inside G-20 (Kirton, 2017), as they complement each other. At this point it is important to talk about two fora as agency and how, as policy suggestions, they can improve not only their internal governance, but also address global economic governance.

First, policy- makers, and especially at the technical level, need to take more advantage of the diplomatic tradition of drafting consistent narratives to address policy issues. In other words, items on agenda should not be there for advancing an isolated interest that may not have spillover effects or support the larger narrative. This would help increase alignment of goals among various agencies involved and a sense of belonging among members.

Second, inter-sessional work should be favored and increased not only in theory, as it is today, but in practical terms. Countries struggle to implement certain decisions to be adopted not necessarily because of bureaucracy operating at a slower speed, but rather due to

lack of momentum. If intersessional meetings, via electronic means, are to be scheduled frequently, then engagement will last longer.

Third, agenda-setting should be understood not as host's own policy interests, but rather as a continuum of the previous ones. This will also tackle the criticism regarding not high performance of these two fora.

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IV

Reforming International Financial Architecture and Scope of Innovative Development Finance

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Reforming International Financial Architecture and Scope of Innovative Development Finance

Abstract: Emergence of the reforming global governance rules and leadership mechanism in the international economic organizations has become the top priority of the international community agenda, especially after 2008 global financial and economic crisis. The global economy has changed dramatically in the 21th century, especially after the last wave of the digital revolution known as Industrial 4.0. Developing countries – especially LDCs — are lacking from sufficient financial sources (domestic and international sources) to meet their sustainable development goals. In this paper, the current development finance context and uprising calls for a new innovative development finance and an international financial architecture reform have been considered. This study has found that changes in the global governance during the last two decades are challenging profoundly the ability of developing countries to attain their development goals; and there is an urge need for rebuilding and reforming of Bretton Woods institutions and of the whole global financial system.

Keywords: International Financial Architecture; Official Development Assistance; Development Finance; Global Taxes; Bretton Woods Organizations ; Developing countries.

Introduction

Since 1990s, the world has been witnessing major global changes. The international economic and political system has changed significantly marking the beginning of the new era of globalization characterized by the emergence of new global powers like China, Brazil and India and international movement towards regionalism and integration in large economic blocks.

Economic globalization has given rise to frequent and severe global financial crises that have affected developed and developing and emergent countries in many ways. Moreover, advances and innovations in ICTs sector accompanied with a tremendous growth of global network connections have introduced "digital revolution" in the world, and shifted governments, businesses and markets focus towards a new globally digitalized economy (Adam, 2019). Accelerated growth of the multinational corporations (MNCs) and of the GVC has also played a major role in the new global economy in 21st century.

Climate change has also been one of the major global challenges facing humanity with its enormous implications. Developing countries are most affected; rather than the industrialized countries, which are the major source of emission of greenhouse gases. Although, the SDG Goal 13 calls international community to, "take urgent action to combat climate change and its impacts". And the developed countries, including world's biggest greenhouse gas emitters, hesitate accepting liability for climate impacts, fearing to be made accountable for compensation claims.

Table 1: Global Growth Outlook Projections (Percent change)

	2019*	2018*	2017	2016
World Output	3.7	3.7	3.7	3.3
Advanced Economies	2.1	2.4	2.3	1.7
Emerging Market and Developing Economies	4.7	4.7	4.7	4.4
Commonwealth of Independent States	2.4	2.3	2.1	0.4
-Russia	1.8	1.7	1.5	-0.2
-Excluding Russia	3.6	3.9	3.6	2.0
Emerging and Developing Asia	6.3	6.5	6.5	6.5
-China	6.2	6.6	6.9	6.7
-India	7.4	7.3	6.7	7.1
-ASEAN-5**	5.2	5.3	5.3	4.9
Emerging and Developing Europe	2.0	3.8	6.0	3.3
Latin America and the Caribbean	2.2	1.2	1.3	-0.6
-Brazil	2.4	1.4	1.0	-3.5
-Mexico	2.5	2.2	2.0	2.9
Middle East and North Africa	2.5	2.0	1.8	5.2
-Saudi Arabia	2.4	2.2	-0.9	1.7
Sub-Saharan Africa	3.8	3.1	2.7	1.4
-Nigeria	2.3	1.9	0.8	-1.6
-South Africa	1.4	0.8	1.3	0.6

* 2018, and 2019 are projections; ** Indonesia, Malaysia, Philippines, Thailand, Vietnam.

Source: IMF. (2019). Challenges to Steady Growth. International Monetary Fund. October 2019. Chapter 1. p.15

It is noticed that these new global changes haven't affected all countries in the same way. Some have been able to maximize benefits and achieve high economic growth rates. While others have suffered from not being able to adapt to the new global changes. Many developing countries – especially LDCs – have shown poor economic performance manifested by: low economic growth rates; high rates of unemployment; relatively high rates of inflations; chronic balance of payments deficits; and heavy foreign indebtedness.

International financial markets crises have continued affecting seriously developing countries in number of ways. The decline in commodity price, which started in 2011, has been the major factor for debt crisis across the developing world. For all developing countries, the ratio of debt service to export rose from 8.7% in 2011 to 15.5 in 2016, and in poorer developing countries debt service to government revenue ratio showed raiseup from 5.7% in 2008 to over 14% by 2017 (WEF, 2016).

Financing development for developing countries has been always a big challenge for multiple reasons. From one part, they are facing shortage of auto-financing abilities, lack of national resources and volatility in the international aid. And on the other hand, international organizations and developed countries conditionality have led developing countries to apply some policies (e.g. financial liberalization) too unwisely not in favour of their national markets and citizens.

In this paper, the current development finance context and uprising calls for a new innovative development finance and an international financial architecture reform have been discussed. It is structured into three main parts—firstly, by providing an outlook into different aspects of global economy in the 21st century; secondly, enlightening calls for a new innovative development finance to meet current global financing challenges; and finally, the urgent need for a new international financial architecture.

Global Economy Aspects in the 21th Century: Challenges and Opportunities

Changes in the World Economic Power

Global growth has been projected at 3.7 per cent in 2019 and 2020. The expectation of a steady growth is explained by the decline in advanced economy growth which would be offset by an upsurge in the emerging market and the developing economy growth. As it is indicated in table (1), growth rate in advanced economies has been projected to slow down to 2.1 per cent in 2020, while growth in the emerging and developing economies has been estimated to remain steady at 4.7 per cent in 2018–19.

Transformations in the International Trading System

Until 1800, global trade was characterized by a slow flow, but t this scenario started changing due to inventions and technological advances, which emerged during the 19th century (Ortiz-Ospina *et al.,* 2019). In particular, advances called 'First Industrial Revolution' such as mechanized transport, use of new energy sources, and specialization of labour that promoted trade out of national boundaries (WOT, 2011). This phenomenon was known as the 'first wave of globalization' (Ortiz-Ospina *et al.,* 2019).

The first wave of globalization stopped with the beginning of the First World War and then got reactivated, in a stronger form, after the Second World War. The second stage of globalization's main features were geographical fragmentation of productive processes and off shooting of industrial tasks —global value chain— (WOT, 2011), reduction of transactions costs, and, specially, a massive raise of technological advances in a short period of time (Ortiz-Ospina *et al.,* 2019) used for doing businesses instantly ,without much concern about distances.

All these factors, among others, marked the second wave of globalization by very fast and never ever earlier observed acceleration in worldwide trade (UNCTAD, 2018). This change in global trade patterns concentrated since 1986 with the 'Uruguay Round', which led to creation of the World Trade Organization (WTO) and enactment of regulation of trade between countries towards a liberalized trade and deregulated national financial markets. This proliferated free trade agreements (FTA's), bilateral investment treaties (BIT's) and the accession of new world economic powers, such as China and India (UNCTAD, 2018).

The analysis of international trade statistics showed rapidly increased worldwide merchandise export, measured in US$ trillion, from 1960 to 2017 (Figure1). The increase of trade in this sense started in 90's and exploded between 2002 and 2008, when the global financial crisis began in the United States. As the line in figure shows, since then the merchandise export have had a variable trend.

GVC networks are the most important driving force for globalization and the growth of international trade since the end of the 20th century. GVCs are still largely regional, despite the trend of increasing globalization before the recent global financial crisis. Developing economies are increasingly participating in GVCs through exports and imports of intermediate manufactured goods. And some emerging economies are upgrading along GVCs; for example, China tends to export more intermediate goods to other low-income downstream countries to support their final goods exports to the global market (World Bank, 2017)

Trade in intermediate goods contributed more than trade in final goods did to the growth of the total manufacturing trade in 2001–08 and 2009–14 and to its decline in 2000–01 and 2008–09 (Table 2). Trade in final goods contributed more to the growth of manufacturing trade during 1995–2000 and to its recent decline in 2014–15. (World Bank, 2017)

The effects of trade impacted directly on to the economy, and therefore on everything else. Those not limited to consumers, workers and businessmen from industries, but touched the entire population because of the interconnection of markets and general effects of economic changes in prices (Ortiz-Ospina *et al.,* 2019). World Bank statistics (Figure2) showed that in terms of percentage of GDP, trade has increased significantly in the world. Since 2000 trade as a percentage of GDP showed a raisefrom 51,1% to 71,7% in 2017. In the OECD countries, the growth of trade (as percentage of GDP) moved from 47,4% in 2000 to 55,2% in 2016. Though, regarding the least developed countries, trade growth rate has shown a downturn since 2008 when it sprang to 62.2%, and then started decreasing; reaching 50.4% in 2017.

The IMF forecasts a fall in world trade volume in 2019, with a slight increase in current account surplus of the advanced economies (0.9%) and a balanced current account of the emerging and developing economies.

Trade has the ability to work as a stimulus for human development and enhancing progress towards the Sustainable Development Goals (SDGs). However, that potential is undermined by the national trade policies, by and failure to tackle national inequalitiesand structural challenges that exclude poor people from trade gains. Doha Round had launched multilateral negotiations to make trade more effective force for poverty reduction and inclusive growth (UNDP, 2005)

Obviously, developing and emergent countries were negatively affected by global crisis. The major impacts of the global financial and economic crisis on them were basically as follows.

Sharp declines in commodity prices compounded the adverse impacts on many developing countries, especially economies heavily dependent on primary exports.

Slowing down was in trade (especially after the trade protectionism wave that raised after

the crisis), caused pressure on current accounts and balance of payment; significant slowed down in FDI inflows, slowed down in economic growth rate (Job losses, increased poverty) and caused more difficulties in meeting Sustainable Development Goals

The risk of an extended labour market recession (The ILO estimates that, because of the crisis, at least 50 million more people worldwide could become unemployed and hundreds of millions may be joining ranks of the working poor).

International development aid flows decreased and the volume of international remittances have fallen down

Innovative Development Finance to Meet Global Challenges

For many low-income countries, official development assistance (ODA) continues to be an important channel for financing development, particularly as they have low levels of domestic savings and limited access to private capital flows.

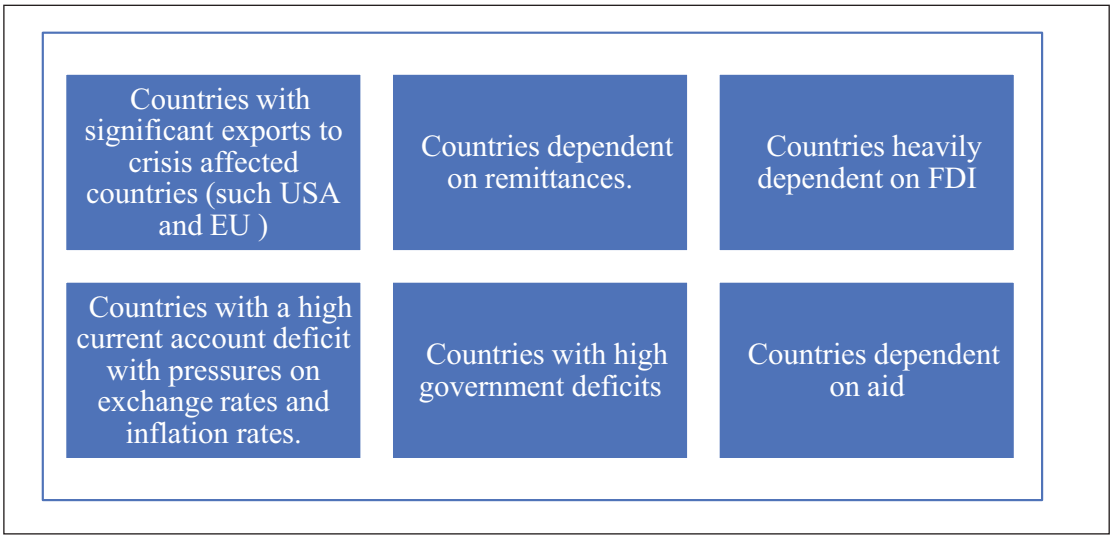
Official development assistance (ODA) refers to government aid designed to promote economic development and welfare of developing countries. Loans and credits for military purposes are excluded. Aid can be

Table 2: World Trade Volume (Percent Change)

	2019*	2018*	2017	2016
World Trade Volume	4.0	4.2	5.2	2.2
Imports				
Advanced Economies	4.0	3.7	4.2	2.4
Emerging and Developing Economies	4.8	6.0	7.0	1.8
Exports				
Advanced Economies	3.1	3.4	4.4	1.8
Emerging and Developing Economies	4.8	4.7	6.9	3.0

Source: IMF. (2018). Challenges to Steady Growth. International Monetary Fund. October 2019. Chapter 1. p.15

Figure 1: The most affected countries by the 2008 global economic and financial crisis



Source: Author's own construction

provided bilaterally or multilaterally. Aid includes grants, "soft" loans (where the grant element is at least 25% of the total) and the provision of technical assistance. A long-standing United Nations target is that developed countries should devote 0.7% of their gross national income (GNI) to ODA. Although ODA increased in absolute terms between 1960s and early 2000s, it declined as the proportion of the donor-country gross national income (GNI), thus moving away from, instead of towards the internationally agreed target of 0.7 per cent of GNI (UN, 2012).

Table 3: G7's Average Net ODA from 2000 to 2017

Year	G7's Average Net ODA	
	Volume (USD Million)	**Share (% of GNI)**
2000	7080.6	0.24
2001	7126.9	0.23
2002	7855.3	0.26
2003	8350.9	0.26
2004	8971.9	0.26
2005	12352.3	0.35
2006	11224.6	0.32
2007	9735.7	0.27
2008	11101.7	0.3
2009	11284.3	0.31
2010	12077	0.33
2011	12167	0.33
2012	11790.6	0.31
2013	12618	0.33
2014	12811.7	0.33
2015	13385.9	0.35
2016	15180.9	0.39
2017	15655	0.39

Source: OECD (2019), Net ODA (indicator). doi: 10.1787/33346549-en (Accessed on 01 March 2019)

For the G7 group of countries, their average Net ODA increased only from 0.24% in 2000 reaching 0.39% in 2017; that still needs nearly to be doubled to attain UN goal (figure 2).United Kingdom and Germany are the only two G7 countries above the G7's average Net ODA of 0.699 and 0.667, respectively. United States is the G7 countries that gave the lowest share (only 0.168%) of its GNI as ODA (OECD, 2019)

The analysis of the distribution of G7's Official development assistance (ODA) by economic sector indicated its complete change in 27 years (figure 3). In 2000, 50 per cent of G7's ODA was engaged mainly in two economic sectors: social infrastructure (33%) and economic infrastructure (17%). In 2017, G7 prioritized financing production sector, which accounted for 37% of G7's ODA. Social infrastructure (23%) and economic infrastructure (13%) both with the production sector represented 73% of G7's ODA in 2017 (Table 3).

Meeting 0.7% target of the UN by donors' countries seemed impossible, given the fiscal pressures that they were exposed to after the 2008 global and financial crisis. The ODA was not a very stable and reliable source of development financing. The urged need for additional and more solid funding has raised an international call to search for innovative sources of development financing to complement traditional ODA.

Although the international community is expecting industrialized and developed countries to raise their contributions to financing of development processes in developing countries. But developed countries are still far behind meeting their obligations towards developing world (Walde H. 2012). Thus, the calls for innovative development finance are rising intensively.

The World Economic and Social Survey 2012 (In Search of New Development Finances) defined IDF as mechanisms that are in the realm of international public finance and that have following characteristics— (i) official sector involvement; (ii) international cooperation and cross-border resource flows to developing

countries; (iii) an element of innovation in the nature of resources, their collection or governance structures; and (iv) as a desirable characteristic that resources are additional to traditional ODA. The Leading Group on Innovative Development Finance describes it as 'comprising mechanisms for raising funds for development that are complementary to official development assistance, predictable and stable, and closely linked to the idea of global public goods' (UN. 2019)

Innovative Development Finance represented a potential form of global collective action for financing global social, economic and environmental goals. This role encompassed two primary aims of public finance UN, 2012):

The first was a more efficient allocation of resources, either through public expenditures on goods not provided by the private sector (including public goods and public financing of private goods with major externalities), or through taxes and subsidies aimed at changing private sector behaviour. For example, taxation of carbon emissions aimed to reduce demand for goods with high carbon content by charging emitters (producers or consumers) for their contribution to global warming.

The second primary aim of public finance was redistribution of income in a socially preferred direction. Revenues from the carbon tax, for instance, could be skewed towards developing countries to support their efforts to invest in climate protection or in broader development efforts, which would be fair, considering their much lower (historical) contribution to global greenhouse gas emissions.

Over the past two decades, several innovative financing initiatives have been implemented by a number of countries and some of the examples are listed below:

Financing schemes of new global health programs

Many of these have been used to help finance new global health programs, such as the Global Fund to Fight AIDS, Tuberculosis andMalaria, UNITAID and the GAVI Alliance. More recently, there has been a proliferation of funds dedicated to combating climate change. Some in detail are as following.

Global Fund to Fight AIDS, Tuberculosis and Malaria: In social issues, the Global Fund to Fight AIDS, Tuberculosis and Malaria, founded in 2002, is a partnership between governments, civil society, the private sector and people to accelerate the end of these illnesses as epidemics. This entity manages resources of about US$4 billons per year to promote projects related with the goal. As a result of its investments, it has saved 27 millions of lives (Fund, 2019).

UNITAID: It is a global health initiative working with partners to end world's tuberculosis, HIV/AIDS, malaria and hepatitis C epidemics. Founded in 2006, the organization funds final stages of research and development of new drugs, diagnostics and disease-prevention tools, helps produce data supporting guidelines for their use, and works to allow more affordable generic medicines to enter the marketplace in low- and middle-income countries

GAVI Alliance: Created in 2000, GAVI is an international organization - a global Vaccine Alliance, bringing together public and private sectors with the shared goal of creating equal access to new and underused vaccines for children living in the world's poorest countries

Non- ODA

Non-Official Development Assistance (Non-ODA) represents the largest source of external finance for many developing countries. While private capital mainly flows to emerging countries, remittances are particularly important in poorer countries where they can represent over a third of Gross Domestic Product (GDP). Nowadays, remittance inflows which are funds that are sent by Diasporas to their respective countries are increasing significantly. This

has been a great source of external finance for developing countries especially to the poorer one's as it greatly helps them in their efforts to tackle economic and human crisis problems. Therefore, Non-ODA flows play a vital role for developing countries in their problems of financial sources (OECD. 2019)

New Multinational Development Institutions

Another example of innovative financial sources is the financing coming from the new multinational development institutions like the New Development Bank. This institution was created by the BRICS countries (Brazil, Russia, India, China and South Africa) in 2012 with the main objective to mobilize resources for infrastructure and sustainable development projects not only in BRICS but also in other emerging Economies. Since then, this bank has supported 27 projects in all member countries for a total amount of than US$6.7bln (NDB, 2019). In the same way, the Asian Infrastructure Investment Bank (AIIB) started its operations in January 2016 and currently has more than 90 countries as its members. The aim of this financial institution is to invest in sustainable infrastructure and improve social and economic outcomes in Asia (AIIB, 2019)

Sovereign wealth funds

Sovereign wealth funds (SFW's) have also arisen as a new financing alternative. Bahgat (2010, cited by Goergen *et al.,* 2017) defined that entities as "state owned financial vehicles that administer public funds and invest them". Some examples of SFW are: Government Pension Fund Global (Norway), Abu Dhabi Investment Authority, China Investment Corporation, Kuwait Investment Authority and SAMA Foreign Holders (Saudi Arabia).

Global taxes

Other proposals are with larger fund-raising potential, but have not yet been agreed on and implemented internationally (for political resistance reasons),such as taxes on financial and currency transactions and on greenhouse gas emissions, as well as the creation of new international liquidity through issuance by the International Monetary Fund (IMF) of special drawing rights (SDRs) for development purposes. For instance, many countries are not willing to support international forms of taxation, as these are viewed as compromising national sovereignty. National taxation of financial transactions or fossil fuel consumption already exists in a number of countries, but the revenues are almost used domestically, reflecting, in part, weak political will to dedicate more resources to global causes.

Social and development impact bonds

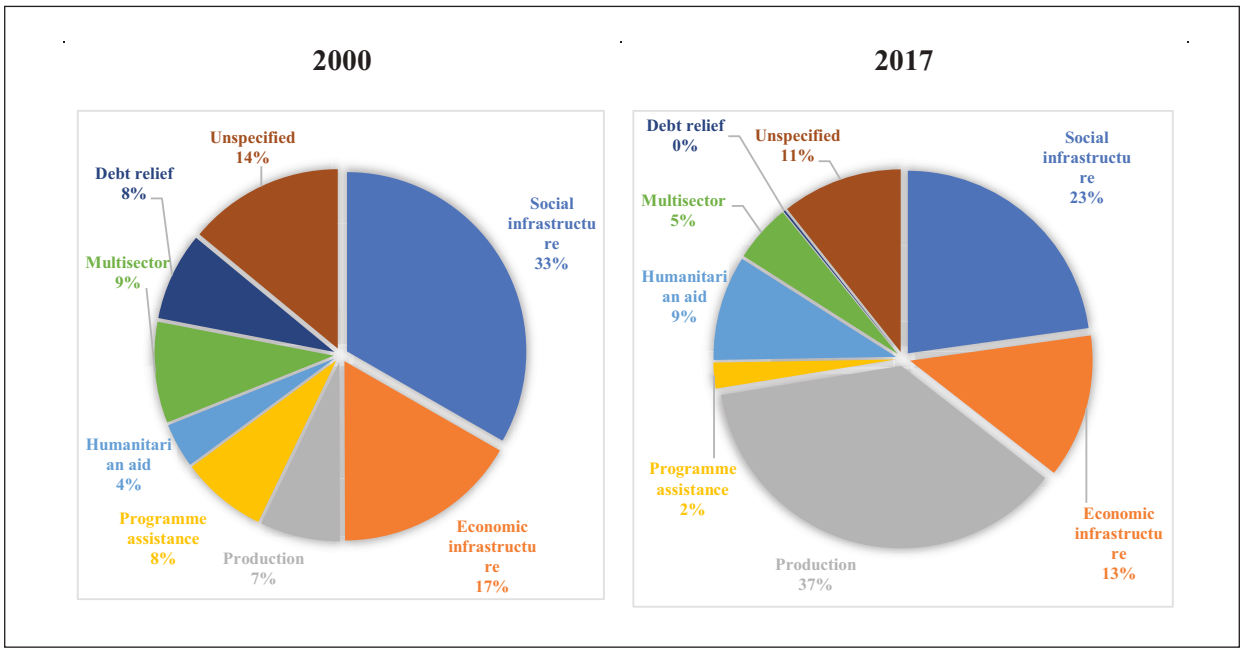
Social and development impact bonds (or what is so-called Results-Based Financing) are also another example of innovative development finance. UNDP (2019) defines social and development impact bonds as a public-private partnership that allows private (impact) investors to upfront capital for public projects that deliver social and environmental outcomes. If the project succeeds, the investors are repaid by the Government (Social Impact Bonds) or an aid agency or other charitable funder (Development Impact Bonds) with capital plus interest. If the project fails, the interest and part of the capital is lost. In the USA, social benefit bonds are also referred to as pay-for-success and as a social benefit bond in Australia.

International Financial Architecture Reform

The Global Financial Architecture is the "collective governance arrangements at the international level for safeguarding effective functioning of the global monetary and financial systems" (Elson, 2010).

The two main players in the present structure of the International Financial Architecture are the IMF and the World Bank Group. These two international organizations are now more

Figure 2: Distribution of G7's ODA by sector in 2000 and 2007



Source: OECD (2019), ODA by sector (indicator). doi: 10.1787/a5a1f674-en (Accessed on 01 March 2019)

than fifty years old and still working under the original charters established under the Bretton Woods agreement in the aftermath of World War II.

The World Bank (Originally the International Bank for Reconstruction and Development) was designed to assist European countries in their recovery after World War II, and the economic development of developing countries. The IMF had a main function to work as the world's central bank and it has been attributed sufficient resources to influence the global monetary system, issue its own reserve currency (SDR) and create international reserves as necessary. The IMF is using its financial resources to lend foreign currencies to members to tide them over during short-term balance of payments deficits. After the Global financial crisis in 2008, the IMF has become responsible (with the collaboration of the Financial Stability Board) to provide international community with Early Warnings about low-probability but high-impact risks to the global economy and to identify policies to mitigate them.

The criticism of the current international financial architecture can be summarized as the following points.

The international financial architecture is inconsistent and volatile with the requirements of development-oriented macroeconomic policy of developing countries; official development assistance doesn't meet sufficiently the needs of development finance and the UN goals.

The international organizations (IMF and World Bank) structural policy is based on conditionality (Washington consensus),which has become the target of intense criticism for two reasons: on the one hand, the IMF structural policy conditionality has economic and social costs on developing countries as it doesn't match their own social and political conditions. Since early 1990s, developed countries led by the United States applied pressure on the developing countries to adopt market-oriented

reforms. Although they were not prepared in the absence of an efficient system of financial regulation and supervision, they nevertheless proceeded with financial market opening (Chul Park Y. and Wang, 2001).And on the other hand, the international funding conditionality was considered as biased against developing countries as it asked developing countries only for structural reforms that it didnot ask developed countries.

The governance of the international financial system is inconsistent with the new international political and economic power,which is now including emergent and developing countries like G20 and BRICs group of countries. A few rich industrial countries control the decision-making process (which is not politically neutral) as well as the operations of the international financial organizations (IMF and World Bank)

Conclusion and Recommendations

The current structure of the international financial system, led by the IMF and the World Bank, and the dynamics of the change in world trade patterns after World War I, have indicated poor results for some countries, especially emerging economies and LDCs.

The international financial system is failing to deliver development financing in sufficient volume and with sufficient predictability to facilitate the kind of long-term investment and risk-taking needed to enable poor economies to achieve structural transformation.

Global governance of the international financial system should reflect on the changes in the world economy. Although emerging markets and developing countries have succeeded to become an engine of global growth and have a great impact on the global economy. But they are still not equitably represented in the global governance of the international financial system.

Nevertheless, the rise of the Fourth Industrial Revolution, or Industry 4.0, appears as a great opportunity for all economies and must be used by emergent and developing countries as a tool toward growth and welfare. In particular, these countries need to take full advantage of innovations surged in the digital revolution and create regulation that encourage private and public actors to create new jobs, develop new skills, compete in new forms through new business models and new markets, and innovate by creating new finance sources.

Besides, the technological improvements of the Industry 4.0 are tools for facing climate change and impacts not only in financial sphere but also in welfare in terms of human health, poverty, inclusion and natural resources.

To reform international financial system in a way to comply with the current global economic governance challenges, following are the recommendations.

Urgent need to reform the international financial architecture to reflect on the economic power of each country equitably to guarantee participation of emergent and developing countries in the decision-making process.

Emerging markets and developing countries must work on establishing joint action through partnerships and economic blocs to meet the global challenges and to improve their negotiating position in international organizations.

Developing countries have to take serious steps in their economic reform programs and adopt only the policies that suit their political and social specific circumstances. Applying ready-made Washington consensus policies must be avoided to make reform sustainable and feasible.

Developing countries must think about new innovative sources of development finance like global taxes, or social impact bonds.

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V

Science, Technology and Innovation (STI) for SDGs in Developing Countries

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Science, Technology and Innovation (STI) for SDGs in Developing Countries

Abstract : This paper analyses how developing countries have implemented the 2030 Agenda with particular attention on Science, Technology and Innovation (STI). This emphasis is due to the fact that STI are considered key drivers for economic development that enhance economic and social growth. The selected countries for this analysis are located in the following regions: South America (Colombia and Ecuador) Central America (Honduras), Asia (Syria) and Africa (Togo). It also offers a highlight of the importance that international cooperation has towards achieving the SDGs. In this regard, the selected countries offer national experiences related to STI that can serve as positives experiences and could be shared with other institutions and nations. Finally, this paper proposes a set of recommendations that developing countries could consider in regards to STI. For this purpose, the document includes the Indian case on how initiatives from and for STI can modify the reality of a nation and how this experience could also be a referent for nations with the proper adaptation to reality and context through international cooperation.

Key words: Sustainable Development Goals (SDGs); International Cooperation; Science, Technology and Innovation (STI); National Development Plans, 2030 Agenda.

Introduction

The Sustainable Development Goals (SDGs) are based on the Millennium Development Goals (MDGs) and aim to eliminate all possible forms of poverty. The new objectives are unique and global, for all countries, poor, rich and middle-income, in order to promote prosperity while protecting the planet. To achieve these objectives, governments must promote strategies that allow the economic growth and the satisfaction of social needs, such as education, health, social protection and employment opportunities, while addressing climate change and environmental protection (UN, 2015). Among the 17 objectives, particular attention has been given to SDG 9 considering that Science Technology and Innovation (STI) are considered key drivers for economic and social development.

During the Sustainable Development Summit of the United Nations, held in September 25th 2015, a total of 193 countries members of the United Nations signed the declaration on the 2030 Agenda and, thereby, committed to attain the 17 Sustainable Development Goals (SDGs) and 169 associated targets[1], by the year 2030.

Since then, countries have undertaken strategic decisions, guided by the 2030 Agenda and focused on their specific realities, priorities and challenges. By the end of 2018, most of the countries have presented at least once a report showing the advances made in order to attain each goal and target.[2]

The aim of this paper is to share experiences on how five specific countries in Latin America (Colombia, Ecuador and Honduras), Asia (Syria) and Africa (Togo), have implemented the 2030 Agenda with particular attention on STI not only as a goal in itself but also as a means to achieve other SDGs.

Therefore, this paper starts with a review of what developing countries have done regarding SDG 9 "*Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation*". Then, we will present specific successful plans, programs or projects undertaken by each country, in which STI have played an important role in areas such as education, health, infrastructure, finance, among others. Finally, as a conclusion, we will point out some policy recommendations by looking at India as a reference country, given its experience and expertise in the use of STI and the role of cooperation as a tool to potentiate the effects of STI.

Theoretical and Methodological Framework

According to United Nations Conference on Trade and Development (2019), STI are considered as key drivers for economic and social development. Empirical evidence shows that the increase STI has a positive impact on productivity, competitiveness, economic growth and job creation (UNCTAD, 2019).

Besides, given the fact that STI should not be as subjective matter, it is a relevant tool for the formulation of Evidence Based on Policy - EBP (Ciencia en el Parlamento, 2019). This allows not only designing public policies, assessing their implementation and evaluating their direct and indirect impacts but also controlling external influences, reducing uncertainty and empirical validation and possibility of replication. (UNESCO, 2012).

Also, we include the international cooperation arena since our countries cannot respond to global issues within the national borders, the approach must include global solutions and good practices that other countries have been applying for problems such as pandemics, climate change, food security, poverty reduction, cyber security etc. (AAAS, 2017)

In order to analyze how the SDGs have been implemented in Colombia, Ecuador, Honduras, Syria and Togo, in this paper we

use these countries as well as India's specific data and information regarding the role of STI in different successful plans, programs, projects and policies.

Implementation of the SDGs

During the Sustainable Development Summit of the United Nations, held in September 25th 2015, Colombia, Ecuador, Honduras, Syria and Togo, as members of the United Nations signed the declaration on the 2030 Agenda and, thereby, committed to achieve the 17 SDGs and 169 associated targets, by the year 2030.

According to the Global Innovation Index, GII 2018 (Cornell University, INSEAD and WIPO, 2018), it is important to keep in mind that the countries we are addressing in this document are ranked in the following positions: Colombia 63, Ecuador 97, Honduras 105 and Togo 125[3]. These countries are bellow the average, while those ranked in the top 20, except for China, are all developed countries. India, considered as one of the main emerging countries, is ranked 57 (Standard and Poor's, 2018), which suggests that there is a direct relation between social and economic development and the performance of the countries in terms of STI, supporting the theoretical argument in this regard (UNCTAD, 2019), and pointing out to the need of strengthening public policies focused on implementing STI in developing countries.

This index has 80 indicators that evaluate how a country encourages innovation and determines the position in which each country is located with respect to the others. The construction of this index considers the following: (i) institutions, (ii) infrastructure, (iii) business sophistication, (iv) creative results, (v) human capital and research, (vi) market sophistication and (vii) results of knowledge and technology (Cornell University, INSEAD and WIPO, 2018). All of which, can be used to assess the SDG 9.

According to the GII 2017 (Cornell University, INSEAD and WIPO, 2017), the only country among those here analyzed that has shown a better position compared to that in 2017 (65) was Colombia. This however, does not imply an improvement but rather a recovery. Honduras and Togo have maintained a stable position in the ranking (104 and 125 respectively in 2017). Ecuador, on the other hand, showed an important decrease with respect to 2017, when was ranked as 92. (Cornell University, INSEAD and WIPO, 2017)

It is important to direct attention to the Indian case which, different from the countries analyzed, has shown a constant improvement in the last years, going from position 66 in 2016 to 60 in 2017 and to 57 in 2018. This suggests that Indian policies and programs have been more effective in tackling STI issues than those implemented by Colombia, Honduras, Togo and Ecuador.

Since 2015, these five countries have undertaken strategic decisions, guided by the 2030 Agenda and focused on their specific realities, priorities and challenges. By the end of February 2019, Togo has already presented, at the *High Level Political Forum on Sustainable Development,* three national voluntary reviews for the years 2016, 2017 and 2018; Colombia has presented two reports for the years 2016 and 2018; and, Honduras, Ecuador and Syria presented their first report in 2017, 2018 and 2019 respectively. In what follows, we briefly review what each country has done in aims of achieving the SDGs.

Togolese Republic

In the case of Togo, the aim expressed by its authorities is the development of an economically, socially and democratically strong and stable middle-income nation, with solidarity and openness to the world.

To this end, a National Development Plan 2018-2022 (NDP 2018-2022) was approved in August 2018, which has as its overall objective

to transform the economy structurally, for a strong, sustainable, resilient, inclusive growth, creating decent jobs and inducing the improvement of social welfare.

The NDP 2018-2022 will enable Togo to better position itself on the path of structural transformation of the economy. The NDP 2018-2022 is based on three strategic axes, that take into account the implementation of SDGs 7, 9, 11 and 17 related to technological innovations as well as the transfer of competence within the framework of South-South Cooperation: (1) Set up a logistics hub of excellence and a first-class business center in the Sub-region, by the implementation of major investments in logistical and business infrastructure as the main field of short-term growth notably through improved infrastructure and multimodal connectivity and ICT (SDG 11); (2) Development of agricultural processing poles, manufacturers and extractive industries, areas of value added and significantly export–oriented and internal demand satisfaction, intending to support the long-term growth of the economy as well as the logistical and services activity (SDGs 7 and 9); and (3) Consolidating social development and reinforcing the mechanisms of inclusion, in order to strengthen the appropriate institutional and human capacities to meet the development challenges articulated to (1) and (2) (SDGs 1, 2, 3, 4, 16 and 17, etc.).

Implementation Roadmap of SDGs in Togo

In order to ensure the effective achievement of results, the Government, will set up an agency dedicated in particular to the implementation of the NDP 2018-2022. The objective is to have an integrated, focused and sufficiently effective tool to mobilize all stakeholders, including the private sector and civil society. Thus, among several projects planned, some of them are part of the line of innovations and transfer of skills. This are: (i) Food Processing project of Togo, Agropole de Vo-Zio, with Zhongmei society, as partner; (ii) Project to create a special economic Zone at the Port of Lomé ; (iii) Project for the creation of the Adetikopé Industrial Park, and (iv) Project of duplication of the national Road No. 1.

Monitoring and Evaluation

Togo will establish an innovative mechanism for monitoring the implementation of the NDP 2018-2022. The agency set up for the coordination of implementation will build on the existing structures[4] and will be responsible for:

- Conducting and regulate national household surveys;
- Managing the sectorial administrative information systems;
- Identifying priority information needs, availability of qualified human resources and economic resources to finance the statistical development programs.

The Government will set up a data center with advanced equipment. This new center will contribute to the digital transformation of the socio-economic life of Togo, which will take into account the acquisition of a new digital culture for citizens and the development of services with high added value for the economy. To do so, particular attention will be directed to capacity building and developing policies related to higher education in STI. Finally, the Government will implement a communication plan around the NDP 2018-2022 to facilitate its appropriation and implementation by all development actors.

Colombia

In Colombia, the incorporation of the SDGs began in 2015[5], which created the appropriate governance and institutions[6] which gave a step towards an inter-institutional arrangement, in order to promote the effective implementation of the SDGs through public policies, plans, programs and actions within the National Government. In this sense, the implementation was incorporated into the National Development

Plan 2014-2018 (NDP 2014-2018) and the Territorial Development Plans 2016-2019, together with the strengthening of intersectoral institutions aimed at fulfilling them and aligning the negotiations of the peace process.

On March 15, 2018, the National Government approved a public policy by means of document CONPES 3918[7] "*Strategy for the Implementation of the Sustainable Development Goals (SDGs) in Colombia*". This document projects a vision to 2030, which includes monitoring through national indicators, institutional responsibilities, quantifiable goals, as well as a Territorial Strategy Plan to maximize the usefulness of the SDGs, respecting the autonomy of territorial governments.

Implementation Roadmap of SDGs in Colombia

In CONPES document No. 3918, a roadmap was designed based on the prioritization of a set of indicators and goals, with a Statistical Strengthening Plan that includes a principle known as "*do not leave anyone behind*". It also defined guidelines for territorial work, with the promotion of integrality through intersectorial arrangements within the Government. Colombia bets on "*16 big goals*", selected for their potential to directly or indirectly mark progress in the Objective to which they belong. In this same route, the National Government contemplates the regionalization proposal, in order to close gaps and encourage progress in both urban and rural areas. These goals are accompanied by 156 indicators with estimated values at 2030.

Regarding the challenges. One of the main challenges that Colombia must face is the strengthening of national quality statistics to improve decision-making to eliminate information gaps in the new issues proposed by the 2030 Agenda. In this context, the Government establishes the construction of a Statistical Strengthening Plan, led by the National Administrative Department of Statistics (DANE) in order to advance in the production of national and territorial statistics.

The principle of "*do not leave anyone behind*" prioritizes the territorial approach to guarantee the benefit to the most isolated populations of the country. Thus, the National Government established measures to support the planning, implementation and monitoring of territorial entities. In addition, it seeks to promote the participation of all sectors of society to achieve alliances that allow the mobilization, financing and transmission of knowledge about the SDGs.

On the other hand, the implementation of the SDGs means for Colombia a change in the development model, which must be oriented towards green growth in order to achieve the social and economic well-being of the population in the long term, guaranteeing the conservation of natural resources, ecosystems and climate security. The concept of green growth was introduced to the NDP 2014-2018, transversally in three components: *1). Sustainable economic growth and low carbon, 2). Conservation of natural capital and improvement of environmental quality and, 3). Resilient growth and reduction of vulnerability to disasters and climate change.*

Advances in the SDGs in Colombia

In particular, progress has been made in the following SDGs: clean water and sanitation (SDG 6), affordable and clean energy (SDG 7), sustainable cities and communities (SDG 11), responsible production and consumption (SDG 12) and protection of terrestrial ecosystems (SDG 15), according to the priorities and challenges of the country. The Government has defined 41 indicators for the 5 Objectives, as well as the main public policy measures adopted.

However, Colombia has made efforts to strengthen the National System of Science, Technology and Innovation (STI) through the creation of the Science, Technology and Innovation Fund from the General Royalty

System (GRS), with the purpose of investing part of the resources coming from the harnessing of non-renewable natural resources in this sector. Thus, in 2015 a policy was approved to stimulate private investment in STI through tax deductions[8]. This measure has helped to increase investment in this sector, going from 0.48% in 2011 to 0.67% of GDP in 2017. On the other hand, the National Council of Tax Benefits allocated USD $ 178.5 million to 368 projects of different sectors, including the manufacturing sector that used 36.42%, through two tools: 1). iNNpulsa seed capital program to promote innovation and entrepreneurship in SMEs, and 2). the Aldea program that seeks build a community where entrepreneurs and innovative entrepreneurs can develop, market and distribute a good or service.

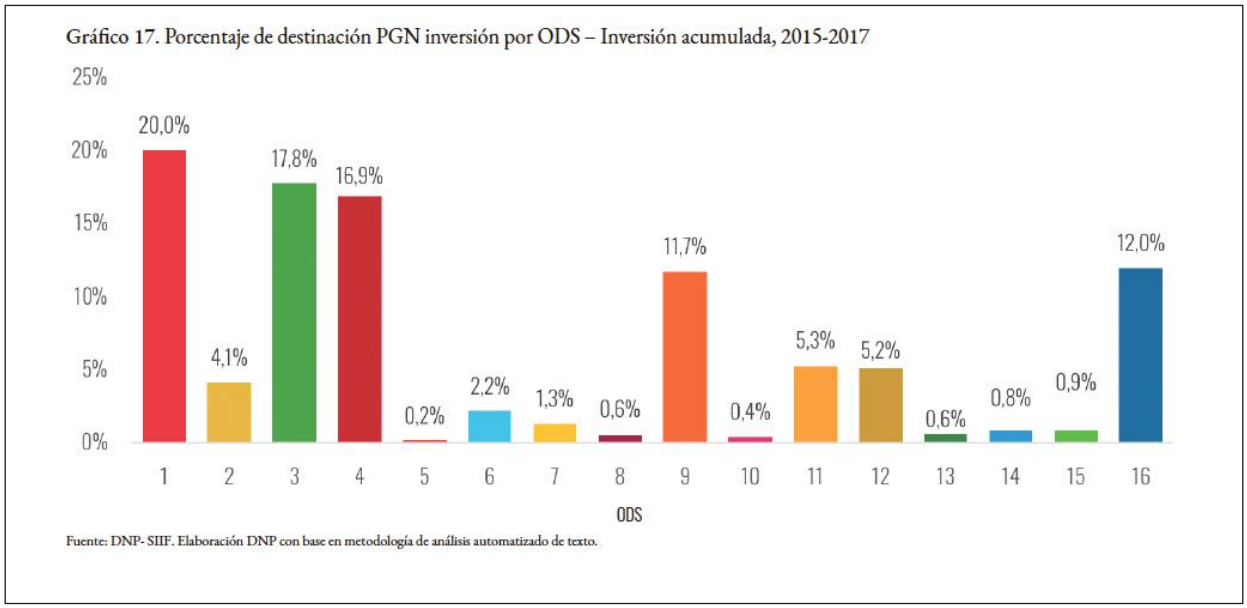
Furthermore, regarding the formation of human capital, the Government has advanced in terms of scholarships and non-refundable credits. In 2017, 2,078 scholarships, scholarships-credits and financed credits were awarded. In addition to this, a program known as "Scientific Colombia" has been created seeking to strengthen the quality of research through strategic alliances with R&D Centers, Higher Education Institutions (HEIs) and the productive sector, in topics specifically related to health, nutrition, society, bioeconomy and sustainable energies with a regional focus.

Thus, between 2015 and 2017, Colombia invested around USD $ 12,370 million annually from the National General Budget (see figure 1), equivalent to 4.07% of GDP to comply with the SDGs, specifically SDGs 1, 3 and 4 (education and health), with participation close to 55%. In the same way, Objectives 9 and 16 had 11.7% and 12% of the total investment respectively.

Honduras

Regarding Honduras, an executive order determined that the Secretary of General Coordination of the government (SCGD) would be in charge of follow up, monitoring and evaluating the implementation and execution of a national agenda for achieving the SDGs. In this context, a National Commission for the National 2030 Agenda (CN-ODS), as well of other institutions was created. (Diario La Gaceta, 2018; Government of the Republic of Honduras, 2018).

Figure 1: Percentage of Investment by SDGs of the General Budget of the Nation 2015 - 2017



Source: DNP - Elaboration DNP

To create a National Agenda (NA), a linkage between the objectives of the Vision of the country 2010-2038 (Government of the Republic of Honduras, 2018) and the SDGs was made. Because of this exercise, a selection of 11 SDGs was considered to be a priority in the National Agenda. These are: SDG 1, SDG 2, SDG 3, SDG 4, SDG5, SDG 6, SDG 8, SDG 9, SDG 15, SDG 16 and SDG17.

Socialization and Creation of a National Agenda

To define a participative and inclusive national agenda, a socialization process was necessary with the relevant stakeholders. These actors were: The government, private sector, civil society, academia, central governments, sectorial cabinets, local government, regionals councils, gremial organizations and international cooperation (Government of the Republic of Honduras, 2018; Government of the Republic of Honduras, 2017).

After this socialization and with the recommendations got from the different actors, modifications to the national Agenda were submitted (Government of the Republic of Honduras, 2018). However, it's important to highlight that the last version of the National agenda stills needs considerations and approval by other instances.

The consolidation of the National Agenda included objectives and indicators that were selected according to the following criteria (Government of the Republic of Honduras, 2018):

1. The selection of objectives and indicators with the greatest opportunities for application.
2. Prioritization to those objectives, goals, and indicators that are highly linked with the objectives of the Country Vision, The National plan indicators and the Government Strategic Plan.
3. Determine the feasibility of implementing the selected indicators, based on national resources and external cooperation.
4. Establish the source of generation of statistical information for monitoring the indicators, based on the current capacity of the national statistical system.

In specific, the Honduran objectives and indicators related to STI are the following (Government of the Republic of Honduras, 2018):

SDG 9 is included among the "Economic and environmental objectives and Indicators". The indicators established for this SDG are the following:

- A proportion of the rural population living less than 2 km from a road that can be walked all year round.
- A volume of passengers and cargo, by means of transport.
- Value added by manufacturing as a percentage of GDP.
- Employment in manufacturing as a percentage of total employment % of new loans for small businesses.

SDG 17 is included as part of the objectives and indicators of "security and governability". The indicators are: (i) percentage of people who use mobile phones, (ii) percentage of people with internet access (by type of technologies), (iii) percentage of foreign direct investment in relation to GDP, (iv) percentage of official assistance for development in relation to the income of the AC and (v) percentage of family remittances with respect to GDP.

Implementation Roadmap of SDGs in Honduras

Some of the next steps towards implementation include the following: (i) integration of the National Agenda in the national Planning system for development, (ii) evaluation of the finances for development, (iii) identification of programs that could become accelerators for the SGDs and (iv) implementation of guidelines for international cooperation and its effect on the implementation of the National Agenda.

Due to the complexity, that of implementation for a National Agenda considers, there are several challenges that Honduras is anticipating in this regard. These challenges consider the following: (Government of the Republic of Honduras, 2018):

- Planning and budgeting
- Framework for the implementation of the Agenda
- Monitoring and evaluation system of the 2030 Agenda
- Territorialisation of the Agenda
- International Cooperation for sustainable development

Ecuador

Ecuador, as a part of its country report towards achieving the SDGs, prioritized SDG 1, 6, 7, 11, 12, 15 and 17, focusing on eradicating poverty[9] by creating opportunities for the most vulnerable groups and by closing gaps in the access to social services. (SENPLADES, 2018) Accordingly, Ecuador ratified its commitment to the adoption of the 2030 Agenda as the driver for public policy and aligned its National Development Plan 2017-2021 (PND 2017-2021)[10] to it, by designating the institutions responsible for designing, monitoring and evaluating plans, programs and policies aimed to attain SDGs[11]. (SENPLADES, 2017)

In order to go from the SDGs to public policy it is important the availability of strong and reliable data and indicators, regarding which Ecuador and Latin America in general have shown an important performance in constructing methodological tools for statistical plans. This allows data production and country comparison through common indicators. Currently, the available data allows Ecuador to measure 72% of the SDGs indicators[12]. (INEC, 2017 and INEC, 2018)

The adoption of the 2030 Agenda and the SDGs have been established as binding by the Ecuadorian Parliament[13] and the public expenditure directed to SDG represents 48.5% of the national budget and 16,3% of the country´s GDP (SENPLADES, 2018). This points out to the commitment of Ecuador to achieving the SDGs.

Although Ecuador has not prioritized the SDG 9 in its country report (SENPLADES, 2018), a series of programs have been designed and undertaken in this domain, during the last decade. In what follows, we will focus specifically on the public policies designed and implemented by the country regarding STI.

Implementation Roadmap in Ecuador

Since 2008, the government shows an important role in planning strategies for developing the STI sector. In fact, the Constitution (2008), established STI as a priority for public policy and determined a compulsory budgetary pre-assignation to this sector.[14] This points out to the importance attributed to STI as a tool to go from a primary based economy to one based on technology and value added.

Also, a main role is attributed to: (i) academia in the recovery, strengthening and development of STI, in order to incentive national production, increase efficiency and productivity in strategic sectors; and, (ii) the linkage between STI and productive infrastructure so that there is a positive impact on competitiveness and investment attraction. (Constitution, 2008)

Thus, the National Development Plan 2009-2013 (PND 2009-2013) addressed STI as one of its main goals and enforced institutions to undertake programs and projects accordingly. In order to institutionally frame all policies regarding STI and higher education, the government created the so called *Secretaría Nacional de Educación Superior, Ciencia, Tecnología e Innovación* (SENESCYT). And, in order to legally frame them, two main national laws were issued, one focused on higher education[15] and the other on the economy of knowledge and innovation[16]. In this context, a series of public policies, programs and projects regarding STI were designed and implemented, some of

which will be addressed in section IV of this paper.

Syrian Arab Republic

In the case of Syria, particular attention must be given to the fact that, since 2011, it has been facing exceptional circumstances due to the effects of the war[17]. All of which severely damaged the infrastructure and the environment and affected the employment and resources available to address the consequences of these conditions.

Until 2010, Syria approached to achieve a number of the Millennium Development Goals (MDGs), including: (1) Eradication of extreme poverty and hunger, expressed in pre-war levels of food security and poverty rates; (2) improvement in health, during the first decade of the third millennium, with a marked improvement in life expectancy at birth and the decline in child mortality due to improved nutrition; and, (3) the successful pre-war educational system, with a high enrollment rates in education, especially female education.

After the war, the Department of International Cooperation works on achieving development plans as economic diplomacy through the holding of international conventions and treaties[18] by finding diverse sources to support the development process, searching for financing opportunities and developing mechanisms to manage and coordinate the distribution of available resources, through the following strategies:

- International cooperation
- Strengthening relationships with current partners
- Establishing cooperative relationships with new partners
- Building strategic partnerships
- Promoting knowledge transfer and localization
- Promoting the attraction of economic and development investment
- Building institutional and individual national capacities to ensure the quality of the implementation.

In this context, Syria released its First National Report on sustainable development in February 2019, prioritizing food security, agriculture promotion, poverty eradication, healthy lifestyles, good education, learning opportunities, gender equality, water supply, sanitation and sustainable energy, innovation promotion and combating desertification. The report aims to:

- Assessing the progress made by Syria in achieving the MDGs, between 2000 and 2010.
- Showing the impact of the war on the efforts of Syrian to achieve its MDGs indicators between 2011 and 2015.
- Using the results to prepare development plans in Syria after the end of the war.

Before the war, the infrastructure sector and the economic in general showed a significant improvement, especially due to private investment. The number of cities and industrial zones increased significantly; the banking, energy, transport and communications sectors, among others had expanded and this was directly reflected in the high economic growth rates. During the war, however, the infrastructure was destroyed especially in the electricity sector, causing the flee of a large part of the private investment. This situation has an effect on the development potential in the country, given that infrastructure is one of the most important elements of economic growth. Therefore, according to its National Report, Syria considers SDG 9 as one of the priorities for the government after the war.

The transport sector, in particular, passenger air transport and rail transport also suffered heavy losses in recent years. However, the road transport infrastructure, such as the main and secondary road network, has not suffered significant damage, and this sector is expected to regain its status and growth.

During the war, cities and industrial areas were repeatedly targeted by armed terrorist groups, causing a decrease in the number of establishments operating in the industrial branches during the years 2011-2014. Currently, the Syrian State is working on recovering and strengthening to promote foreign trade in others goods and services and particularly in the industrial sector.

Regarding the financial sector, Syria has undertaken several projects through institutions providing microfinance services with the support of the Syrian Development Secretariat and the Aga Khan Development among others. However, due to war and the movements of population displacement associated, the number of small-scale projects benefiting from lending and financing services decreased significantly, from 73,000 in 2011 to 28,000 in 2015.

Relevant Plans / Programs / Public Policies Regarding the use of STI

Togo

The Togolese Government intends to focus on agro-processing and the strengthening of infrastructure (road, airport and port) with a view to achieving a growth rate of 7.6% on the 2022 horizon.

Thus, the most important project concerns the food processing of Togo (Agropole de Vo-Zio). The Government of Togo have signed a partnership to achieve a modern agropole. The objective is to develop production on 800 hectares, and the capacity of processing and revenue of exports of chains of values such as rice, but, fruits, fish farming. The aim is to modernize the agricultural sector and create 5 000 direct and indirect jobs in Togo.

The project will improve the production and productivity of the sector, develop rural infrastructure and related services, and create a demonstration and training space for the transfer of skills and Technology. With a total cost of US $100 million, this project will be funded in the form of a private public partnership.

Colombia

Recently, in December 2018, three Colombian universities have joined to promote academic cooperation through research. The University of the Andes, Pontifical Javeriana University and University of the Rosario, signed a framework agreement in order to acquire specialized equipment and carry out research related to the Sustainable Development Goals (SDGs).

This agreement will promote the development of proposals to finance research initiatives, the development of short courses and seminars in areas related to training and research, strengthening of laboratories and equipment for the use of teachers and students from research groups of these universities. In this sense, the academy has advanced in the purchase of chemical equipment specialized in metabolomics[19], to make them available to the health and agricultural sectors.

With this equipment it will be possible to carry out analysis of chemical composition to organisms, compounds, among others. A clear example is the help to diagnose diseases such as cancer, which will allow to initiate early and personalized treatments. On the other hand, it will be possible to identify which nutrients could improve the productivity of the field.

Honduras

One valuable scientific experience that Honduras has implemented through the National Autonomous University of Honduras is the work that the Virology Research Group has been doing. This scientific group has been a pioneer in research on HIV related to early diagnosis in babies, resistance to antiretrovirals, and epidemiologic studies in Honduras and Central America.

These researches wouldn't have been possible without international cooperation.

Institutions such North West Medical Teem, PAHO, The Center for Global Infectious Disease Research of Seattle Children's Hospital, USA, Karolinska Institute, Sweden and University of Florida, USA have been counterparts for these investigations.

The results of these projects have been relevant for the national and international health reality, which has also has promoted other collaborative researches in the same areas with the Ministry of Health of the Government of Belize, CIENI Institute in Mexico, the CDC-Guatemala Group and the Division of Diseases Infectious, University of North Carolina, Chapel Hill, NC, US, among others (Murillo, 2018).

Ecuador

Ecuador undertook strategies mainly focused on: (i) building an appropriate infrastructure and accounting for high technology equipment in universities and research centers; and, (ii) developing capacities among academics and researchers.

Regarding infrastructure and equipment, one of the most relevant and iconic projects is *YACHAY,* a planned high tech based city in which academia, government and private sector get together in order to develop a STI ecosystem, in which applied research would develop by academia and applied by firms. Other relevant programs are *Arca de Noe*[20] and *Technologic ZEDES*[21]. (SENPLADES, 2007)

Regarding capacity building, one of the most relevant iconic projects is the so called *Prometeo* which double purpose (i) repatriate the human resources that were brain drained due to migration flows and (ii) attract international researchers who would engage in a as faculty members in local universities or as researchers in local institutes and institutions, in order to undertake specific applied research focused on STI. The *Scholarships Program* is also relevant given the fact that allowed more than 10.000 for national students to study in highly ranked foreign universities, prioritizing STI programs. Additional strategies were implemented in order to improve the quality of higher education.[22] (SENPLADES, 2007)

All these programs were designed from a supply perspective which resulted in a slight impact so far. In the case of YACHAY for example the main areas of research were established without the participation of the private sector and therefore the projects do not fully contribute so solve the specific needs of the demand. Similarly, when students finished their studies, the Ecuadorian labor market was not able to integrate them, given that their qualifications were not required by the companies.

The results of STI policies and programs, however, can only be assessed in the long term. This allows to adjust redirect strategies in order to achieve better results. The PND 2017-2021, presents new challenges in three axes: (1) rights for all during all their lives, (2) an economy in service of society and (3) social and state capacities to strengthen the society and democracy for common good. The challenges are now primarily focused on attaining an inclusive economy able to improve the productive system, going to an economy with aggregate value and a society with values based on solidarity and co-responsibility. (SENPLADES, 2017)

Syria

Development Plans and Programs are, in general, long term strategies. In the Syrian case, the particular situation that has been through has not allowed a continued implementation of such strategies and this assessing them would require an analysis that goes beyond the scope of this paper. However, Syria has shown this positive results in the following indicators:

- The number of research centers (37 institutions) that support the industrial sector remained stable during the war.
- The number of incubators increase from 2 in 2010 to 13 in 2015 and the number of

successful projects within these incubators rose from 15 to 25 during this period.

- The number of federations and councils (7) supporting the industrial sector remained stable.

Policy Lessons from India

India has played an important role in shaping the Sustainable Development Goals (SDGs). India has been effectively committed to achieving the SDGs even before they were fully crystallized. The expression "Sabka Saath Sabka Vikas," which translates as "Collective Effort, Inclusive Growth" and has been popularized by Prime Minister Narendra Modi, forms the cornerstone of India's national development agenda. To fast track this agenda, the Government of India has just released a draft Three-Year Action Agenda covering years 2017-18 to 2019-20. In parallel, work is in advance stages on a 15-Year Vision, which will also include a 7-year Strategy.

Regarding to the SGD 9 and SDG 17, India has implemented some interesting policies and projects as following:

SDG 9

All forms of transportation: roads, railways, civil aviation and waterways that are being rapidly expanded.

The Government has launched the Start-up India programme. Innovation and entrepreneurship is also being encouraged through initiatives like the Atal Innovation Mission.

SDG 17

- This is important because while efforts at raising resources domestically will help India move closer to the attainment of the SDGs, they are unlikely to result in sufficient revenues. Therefore, we reiterate that the developed countries have an essential obligation to provide financial assistance to the developing countries, especially for global public goods such as climate change mitigation and control of pandemics,
- For increasing the domestic mobilization of resources, a path-breaking tax reform agenda has been implemented. This includes direct tax reforms as well as the GST, a uniform and simplified form of indirect taxation. An innovative tax like the Swachh Bharat Cess (Clean India Cess) has also been levied for mobilizing resources for the Clean India Campaign.
- Additionally, implementation of the budget responsibility legislation is ensuring predictable and budgeting as well as long-term debt management.
- Enhancing development cooperation with neighbouring and other countries of the global South brings India's innovation and expertise to the service of these countries. For instance, launching of the South Asia Satellite to sharing of valuable data with neighbouring countries including Nepal, Bangladesh, Bhutan, Sri Lanka, Maldives and Afghanistan.

Also other initiatives like "ATAL Innovation Mission", STIP Lectures sessions by Research and Information System for Developing Countries (RIS) must be considered as part of the successful projects of India regarding STI.

Conclusion

All countries are focusing through their respective national plans to achieve the SDGs. Through this process, each country has focused on specific objectives, which include themes such as food security, quality education, poverty eradication, healthy lifestyles, etc. In the case of Togo, Honduras, and Syria, SDG 9 has been determined as the main focus to address in the national agendas. Regarding Colombia and Ecuador, although SDG 9 is not explicitly included in their National Voluntary Reviews presented at the High-level Political Forum on Sustainable Development on 2017 and 2018 respectively, as one of the priorities, a long term policy and related strategies have been undertaken during the last decade.

Some of the most common factors that slow down the process of innovation in developing countries are the promulgation of ineffective policies for the promotion of innovation (R&D), the lack of flexibility and agility of the system for the business development of diverse productive sectors and the incipient integration to international markets.

In this regard due to their social and economic characteristics, the countries included in this paper are doing efforts aimed to improve basic infrastructure. However, it is relevant that these countries include a greater emphasis on specialized components of STI, so in this way, they can correct and enhance development through economic and social policies and procedures aimed at facing the fourth industrial revolution.

The Ecuadorian experience regarding the implementation of STI programs and policies point out to the need of a strong relationship between policymakers, productive sector and academia in every stage so that they are designed and executed not only with a supply but also with a demand perspective. This will allow better results and impact of STI on economic growth, development and, thus, in achieving SDGs.

By having public policies from and for STIs in a sustainable manner, these countries could act with fewer degrees of uncertainty and catch up with the technological frontier.

In this framework, International Cooperation plays an essential role by promoting development through the transmission of good practices and capacity building. In this sense, the countries of the world enhance positive international relations that can impact on the creation of solutions to the global problems that we so urgently need to address.

The evidence observed in emerging countries such as India and China points out the importance for developing countries to focus on applied STI. This allows a quicker catching up by the adoption of good practices from different countries, drawing attention to the role of cooperation strategies in the field.

Endnotes

1. The SDG are accompanied by 304 related indicators.
2. Togo has already presented three country reports for the years 2016, 2017 and 2018, Colombia has presented two reports for the years 2016 and 2018 and Honduras, Ecuador and Syria presented their first report in 2017, 2018 and 2019 respectively.
3. Syria is not included among the 126 countries analysed in the construction of GII.
4. i) The National Development Council; ii) The strategic secretariat; (iii) the operational secretariat and; iv) Local and regional commissions.
5. Presidential Decree No. 280 of 2015
6. High-Level Inter-Institutional Commission for the Preparation and Effective Implementation of the Post-2015 Development Agenda and it is SDGs. This Commission integrated by the Presidency of the Republic, the Ministry of Foreign Affairs, the Ministry of Finance and Public Credit, the Ministry of Environment and Sustainable Development, Department of Social Prosperity, the National Administrative Department of Statistics, the National Planning Department, the Presidential Agenda of Cooperation and the Administrative Department of Science, Technology and Innovation.
7. The CONPES is the Council of Economic and Social Policy. It is the instance in the High Government where economic and social policy decisions of the country are made, through the study and approval of public policy documents.
8. CONPES Document No. 3834: "Policy Guidelines to Encourage Private Investment in Science, Technology and Innovation through Tax Deductions".
9. The national rate of multidimensional poverty, which measures education, work, social security, health, access to water and food, among others, reached 37,4% in 2014 and 34,6% in 2017.
10. Approved in September 22nd 2017.
11. By Presidential Decree No. 371, in April 2018, the Secretaría Nacional de Planificación (SENPLADES) was created as the institution responsible for monitoring and evaluation the SDGs. The Instituto Nacional de Estadísticas y Censos (INEC), according to the Presidential Decree No.77, has developed instruments to address the statistical production in order to generate relevant information regarding SDGs that will allow a proper EBP.
12. Using a methodological framework developed by CEPAL as well as the UN´s, it was observed that 2% of the indicators regarding SDGs are currently produced Latin America and this percentage could increase to 42% if we consider those indicators not yet reported. In Ecuador, 33% of them can be measured with the available data and 39% require some methodological adjustments so that they can be measured in the short term. The rest will be measured in the long term for which a statistical plan has been designed.
13. In July 20th, 2017

14. The Constitution of Ecuador (2008) eliminates budgetary pre-assignations with these exceptions: local governments, health, education, higher education and STI. The percentage assigned to each is established in the related laws. Other pre-assignations are prohibited.
15. Ley Orgánica de Educación Superior (LOES), issued on October 12th, 2010.
16. Código Orgánico de Economía Social de los Conocimientos, Creatividad e Innovación, issued on December 9th, 2016.
17. The war was financed by some governments and regional entities, as well as the operations of the illegal "*international coalition"* and the Turkish military aggression on Syrian territory.
18. Since the beginning of the war, most countries suspended their bilateral cooperation, assistance and programs with Syria. Most of the international missions that coordinated the implementation of these programs and assistance left the country with the exception of international organizations affiliated with the United Nations. And a wide range of States imposed unilateral coercive economic measures on Syria.
19. Metabolomics is the study and comparison of low-weight molecules present in a cell, tissue or organism at a given time. The metabolites are molecules of low and medium molecular weight that intervene in cellular processes and reveal to us how the metabolism is functioning in a specific organ or in a living being.
20. Arca de Noe is a information storage of the DNA or native species.
21. Zona Especial de Desarrollo Económico
22. the regulation related to the quality of higher education, university professors and access to higher education, giving particular attention to the investment on STI as well as the qualification of both faculty members and students so that the quality of education would increase.

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VI

Renewable Energy: Challenges and Opportunities with Reference to the SDGs

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Renewable Energy: Challenges and Opportunities with Reference to the SDGs

Abstract: This paper, explores challenges and opportunities that the developing countries (Bangladesh, Ecuador, Mauritius, Namibia and Vietnam) are facing to promote Renewable Energy (RE), a cleaner and more sustainable source of power, against the backdrop of the Sustainable Development Goals. These above-mentioned developing and emerging economies share many similarities. They face, to some extent, similar technical and financial challenges. This paper highlights what required efforts the Governments of the countries are deploying to promote the development of sustainable renewable energy sources in line with the United Nations Agenda 2030.

Keywords: Renewable Energy; Sustainable Development; Technology; Finance

Introduction

The present work aims at expanding and strengthening the knowledge about the challenges and the opportunities of the renewable energy in the development processes of these countries in the South. Development of renewable energy sources would contribute in alleviating poverty, fueling industrial production and transportation, expanding rural development and protecting health while promoting sustainability and environmental quality (Hostettler, 2015). Renewables account for approximately 20% of the global final energy consumption; with the most prominent growth happening in the power sector.

However, fossil fuels continue to dominate global primary energy consumption; with coal remaining the major contributor to the world's energy pool (REN21, 2014). Almost 1.3 billion people in the world, mainly in rural areas, live without the access to electricity and 2.7 billion without modern reliable energy services (UNDP, 2013; Alliance for Rural Electrification, 2014; IEA, 2014a). Global energy consumption is projected to rise by 56 per cent by 2040; with fossil fuels dominating the energy grid (US EIA, 2013).

Renewable energy technologies, which are a part of the low-carbon facet of global energy supply, are rapidly increasing in many countries of the world. The top five countries for total installed renewable power capacity by the beginning of 2014 were China, the United States (US), Brazil, Canada and Germany. In the European Union (EU), renewables represented the majority (72 per cent) of new electric generating capacity for the last several years (REN21, 2014). Renewables, however, are no longer dependent on the small number of the countries. Major renewable energy companies have become very keen in Africa, Asia and Latin America; where new markets are emerging on and off-grid.

In this context, currently the South is facing the challenge, but also the opportunity of deploying renewable energy sources to promote sustainable energy towards addressing problems of air quality and climate change within the Sustainable Development Goals framework. These goals reflect broadly linked principles, which establish related objectives and targets held together by their integrated and indivisible character. Due to this character, it is important to identify interactions between different objectives as a fundamental strategy for shaping new and innovative energy policies, while taking into consideration on how they would affect other objectives.

Finding points of convergence constitutes an opportunity to detect gaps in information that the scientific community and decision-makers should cover in the forthcoming years through science-policy dialogue as well. The paper attempts in establishing linkages between renewable energy sources (SDG7) and achievement of SDG 9 (infrastructure, industrialization and innovation); since its achievement implies establishment of reciprocal relationships among them; as compliance or non-compliance with even one objective would affect others.

Chapter I reviews renewable energy sector, both the current situation and its prospects in Bangladesh, Ecuador, Mauritius, Namibia and Vietnam. Based on lessons learnt from these country lessons and global setting, Chapter II discusses challenges and opportunities in the developing countries in general. Finally, by way of conclusion, several solutions have been proposed for furthering development of renewable energy worldwide, specially through enhancement of international cooperation in the Global South.

Renewable Energy in Bangladesh, Ecuador, Mauritius, Namibia, And Vietnam – Challenges And Prospects

Bangladesh

Sustainable social and economic development depends on the adequate power generation

capacity of the country. At present, Bangladesh's electricity generation capacity (as of February 27, 2019) has increased to 18,970 MW. Most of the electricity is supplied through gas-powered thermal generation. Nationwide, 95 % of the population could access to electricity till 2018. Bangladesh is currently producing around 560 MW(2.95% of total power generation) of electricity from renewable sources. For this the country has undertaken various programs for setting- up Solar Photovoltaic (SVP) panels across the country with the help of different development partners and private sectors to generate at least 10% of its energy (2000 MW out of 20,000 MW) till 2020 from the solar system. It is hoped that in this way Bangladesh would be able to ensure reliable and quality supply of electricity at an affordable price. ***(Source: Power Division, Bangladesh Power Sector: An Overview, September 2015).***

Challenges

Bangladesh has been facing challenges in the form of natural gas reserve depletion and biomass unavailability. It has been estimated that its natural gas reserves would begin to deplete in 2020. The uncertainty about reserves has limited development of gas-based power generation programs. Similarly, biomass is becoming scarce and expensive, and would negatively impact poor households relying on this fuel source.

Declining indigenous resources and increasing demand has caused Bangladesh to depend increasingly on the imported fuel oil for power generation to mitigate energy shortages. From 2009 to 2015, the share of oil-fired electricity increased from 5 to 20 per cent. This increase contributed to the fuel cost per kWh generated going up from 1.1 to 3.42 taka/kWh (US$ 0.014 to US$ 0.04) over the same period. And thus leaves its energy sector vulnerable to political and economic instability in nations from which it imports fuel, as well as generally rising prices.

Opportunities

The Government of Bangladesh is constitutionally committed to be developing modern and sustainable power supply architecture throughout the country for increasing and ensuring electricity access, enhancing energy security, reducing poverty and mitigating climate change. The Government fully recognizes the crucial role of the renewable energy in achieving these goals.

The Government has set a goal of total electrification by 2020, and has called for the development of domestic renewable energy resources to ensure that the share of domestic energy supply would remain over 50 per cent. Though Bangladesh has a negligible carbon footprint but remains one of the most vulnerable nations in the world owing to climate change; it recognizes importance of the renewable energy in reducing associated risks.

Government has been trying to mitigate these challenges by undertaking plans and programs to ensure supply of electricity according to the demand and to maintain a steady GDP growth rate of over 6%for the next few years. The Power System Master Plan, 2010 has set goals for fuel diversification with an emphasis on increasing the role of renewable energy in the power generation mix.

Policy landscape of RE in Bangladesh

In line with the Constitution of Bangladesh, its Government has taken several following steps for promoting RE and preventing Carbon Dioxide emission.

Membership and alliance

Bangladesh participated in the Founding Conference of the International Solar Alliance(ISA) in New Delhi, India on 11March 2018 and signed the Framework Agreement, and has also submitted the Instrument of Ratification. Bangladesh is also a member of the International Renewable Energy Agency (IRENA).

Table 1: Initiatives by Bangladesh on Renewable Energy

Initiative	Expected result
Renewable Energy Policy, 2008	10% of electricity(2000 MW out of 20,000 MW) to come from renewables by 2020
Bangladesh Climate Change Strategy and Action Plan(BCCSAP), 2009	Mitigation and low carbon development- one of the six thematic areas
Bangladesh National Building Code(BNBC)	RE and EE options are included in the revised BNBC
Power System Master Plan2016(up to 2041)	Guidelines for power sector development (35% Coal + 35% Gas + 10% RC + 20% RE & Others)
Bangladesh Energy Regulatory Commission (BERC)Act,2003	To act as regulator in the supply side.
7thFYP (FY 2016-2020)	Scalable generation from solar and wind is emphasized.
Sustainable and Renewable Energy Development Authority(SREDA) Act,2012	For promotion of RE in Bangladesh.

Source: Authors' compilation.

Incentives for the RE Sector investors

Bangladesh has opened its RE sector for the private sectors and foreigner investors as well. Private investors are getting various types of tax and surcharge waivers. The Solar Home System(SHS) installers are receiving subsidies in different forms from the government.

In this way, Bangladesh has already taken various important steps in terms of solar and hydro-electricity generation. Moreover, prospects as part of the country's development planning are in achieving the export of clean energy and turning the country into one of the regional leaders in this arena.

Ecuador

In the period 1992-2010, Ecuador experienced multiple episodes of shortage of electricity, owing mainly to the low quality of infrastructure. During this , about 46% of electricity production was obtained from non-renewable, highly polluting energy sources. Since then, the Ecuadorian Government has launched the Transformation Energy Matrix program, through which, since the last ten years, a series of large-scale hydroelectric projects have been designed and built. These projects seek to improve quality of the energy infrastructure to avoid electricity losses and improve coverage of services (IDB, 2017).

In this context, during the last decade, Ecuador has allocated an important investment in infrastructure for the development of approximately USD 26,256.87 million. This investment has prioritized in the areas of health, education, sports and security sectors with special emphasis on the transformation of the productive and energy matrix with social and environmental responsibility (SENPLADES, 2017).

This transformation has been guided by the programs of the last two governments in turn; the same ones that sought to promote an "ecological revolution" aimed at consolidating the change of the productive matrix and the energy matrix as the basis for the generation of employment and wealth. In this way, the aim is to reduce carbon emissions that intensify climate change to guarantee conservation and maintenance of country's natural heritage.

From this perspective, Ecuador conceives environmental policy as a fundamental tool that allows construction of the country that balances economic and social development processes with sustainable use of natural resources through efficient and sustainable diversification of energy matrix. In this regard, it is important for Ecuador to increase fuel savings by optimizing electricity generation and energy efficiency in hydrocarbons sector from 9.09 to 17.5 million barrels of oil equivalent (SENPLADES, 2017).

For Ecuador, one of the most important goals for the year 2021 is to be a benchmark in the sustainable management of natural resources, providing infrastructure and access to energy services, telecommunications, transport and quality public real estate.

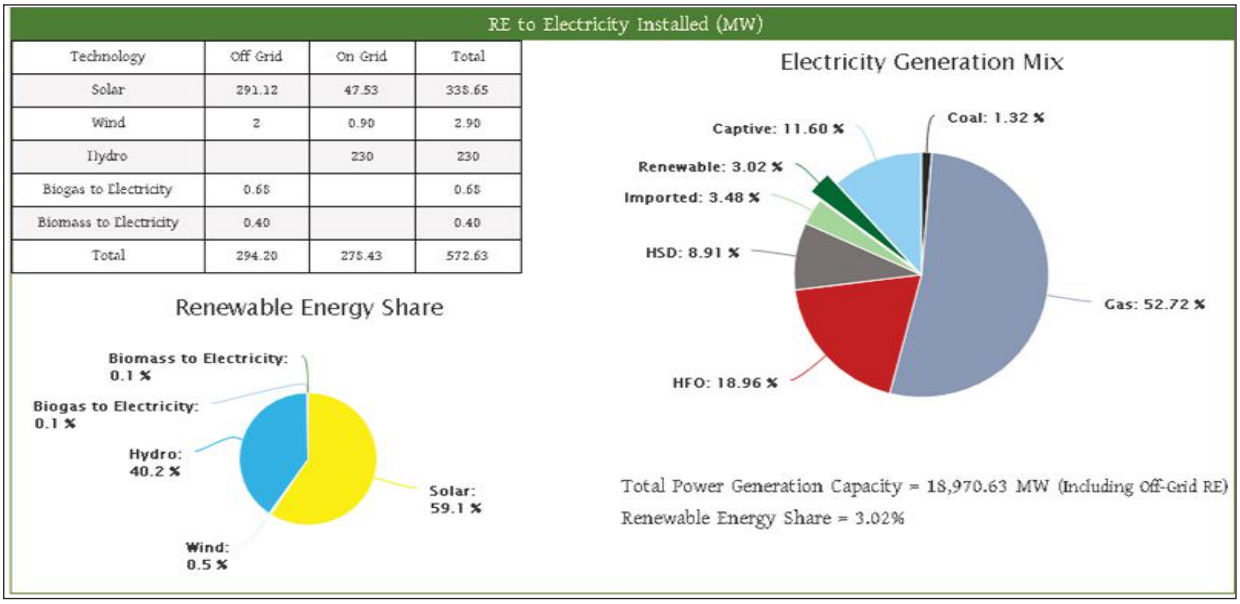
In Ecuador, the different sources of energy are hydraulic (potential energy of water), thermal (heat generated by fossil fuels), solar (sun), wind (wind) and biomass (organic waste). Ecuador has more than 5,000 MW of installed capacity: 56% thermal, 42% hydraulic, 0.5% solar and 0.4% wind. In recent years, Ecuador has developed hydro, solar and wind generation projects (ECUATRAN, 2018)

During the last 8 years, Ecuador reduced its fossil energy consumption, which accounted for 43%. Currently, 95% of the energy comes from a hydroelectric source. Hydroelectric power plants as a source of renewable energy play a fundamental role in the productivity of the country in large part due to its non-polluting action, and above all,due to its efficiency and immediate availability of generation, currently constituting the best system of clean energy storage. That is why, today, it is one of the most widely used sources worldwide (Ponce Jara *et al.*, 2018)

It is estimated that, in the coming years, Ecuador would supply close to 93% of the national electricity demand; thanks to hydroelectric energy, a system of production of clean and renewable energy, which is in

Figure 1: Bangladesh's Experience in the Renewable Energy Sector

Present Status of RE in Bangladesh



Source: http://www.sreda.gov.bd/index.php/site , accessed on 27-02-2019

Table 2: Hydroelectric Projects in Ecuador

Hydroelectric project	Energy supply
Coca Codo Sinclair	6.2425,02 GWh
Manduriacu	678,36 GWh
Mazar Dudas	125.4 GWh
Minas San Francisco	1290 GWh
Quijos	355 GWh
Sopladora	2.303,04 GWh

Source: ECUATRAN, 2018

contrast with that used before 2008.Currently, Ecuador has 9 hydroelectric plants; strategically distributed throughout the national territory. Of these 9 plants, 3 are active and 6 must go into operation.

In this way, Ecuador has taken important steps in terms of hydroelectric production for national consumption. However, beyond that, prospects as part of the country's development axes are in achieving export of clean energy and turning country into a regional leader. For this, it is important and necessary to develop in human capital in the technical and professional capacities around planning, design, construction and operation of hydroelectric plants, as well as to look for opportunities to promote use of environmentally friendly energy from other resources and in other sectors.

Mauritius

Long Term Energy Strategy (LTES)

Energy security is a priority for the Government of Mauritius; as currently, approximately 80 per cent of its energy supply comes from imported fossil fuels. The Government's Long-Term Energy Strategy 2009-2025 explicitly recommends renewable energy, energy efficiency and energy conservation as priorities in dealing with country's energy and environmental challenges. Institutional strengthening, developing the necessary regulatory framework and encouraging investment in renewable energy are the cornerstones of the LTES.

The Mauritius Renewable Energy Agency (MARENA) was established in 2015 to oversee development and promotion of renewable energy in Mauritius. A Utility Regulatory Authority has also been established, and is working on licensing of operators and is expected to encourage fair competition in the electricity sector and in ensuring sustainability and viability of utility services.

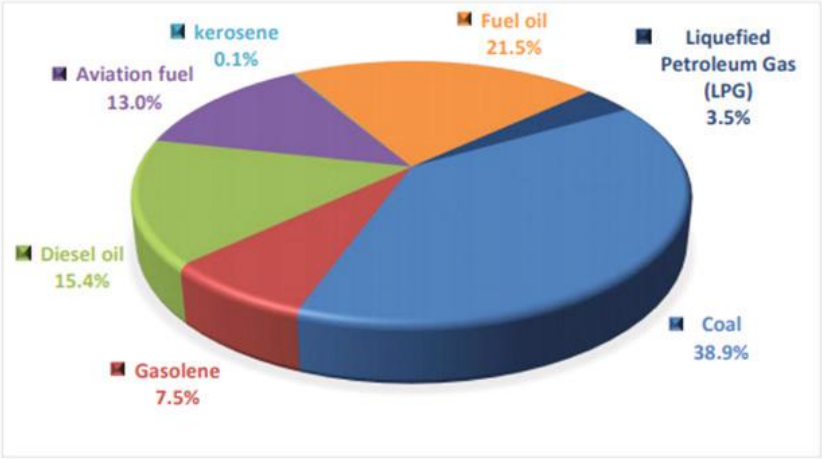
Production of Primary energy – Local Renewable Sources

Renewable energy contributes to about 18% of electricity production. Government's target is to achieve 35% renewable energy by 2030. In Mauritius, the main sources of renewable energy are biomass in the form of bagasse (the fibrous residue of sugar cane used by sugar factories for heat production), hydro, Photovoltaic (PV), wind and fuel wood. A total of 251.3 ktoe of local resources was tapped in 2015. Research is ongoing in the exploitation of ocean energy.

Renewable energy – New Projects

(i) In 2017, a US$191 million renewable energy project supported by the Green Climate Fund (GCF) and the United Nations Development Programme (UNDP) was launched. The 8-year project aims to reduce fossil fuel imports and to accelerate nation's shift to a low-carbon economy over a period of 20 years.

Figure 2: The Distribution of the Imports of Energy Sources in 2015



Source Ministry of Energy and Public Utilitieshttp://publicutilities.govmu.org/English/Pages/default.aspx

(ii) In 2018, the Abu Dhabi Fund for Development (ADFD) and the International Renewable Energy Agency (IRENA), the global platform for international cooperation on renewable energy, pledged a loan of USD 10 million to Mauritius. The project aims at installing solar PV systems on rooftops of 10,000 households. An estimated 35,000 people in low income communities would benefit from significant electricity bill savings. It will bring 10 megawatts (MW) of new renewable energy capacity online, resulting in savings of over USD 35 million in fossil fuel imports over the project lifetime and improvements in the energy security of the country.

Cooperation in Renewable Energy

International Solar Alliance (ISA)

Mauritius has signed the Framework Agreement with the ISA, and has also deposited the instrument of ratification

SADC-SACREE

Mauritius is a member of the Southern African Development Community (SADC) Centre for Renewable Energy and Energy Efficiency (SACREEE), which was established by the SADC Member States in 2015 to contribute towards increased access to modern energy services and improved energy security across the SADC Region. SACREEE will play a key role in the implementation of the recently adopted Southern Africa Renewable Energy and Energy Efficiency Strategy and Action Plan.

Indian Ocean RIM Association

Mauritius adopted the Delhi Declaration on Renewable Energy in the Indian Ocean Region, post the 2nd IORA Renewable Energy Ministerial Meeting held in October 2018. The Declaration calls for collaboration in meeting growing demand for renewable energy, development of a common renewable energy agenda and promotion of regional capacity building. It also calls for technology development and transfer, strengthening of public private partnerships in renewable energy and collaboration among IORA member states and the member nations of the International Solar Alliance (ISA).

Namibia

The supply of electricity to Namibia's consumers is increasingly under pressure. The country's demand for electrical energy is outstripping available supply. Over the past years, Namibia has substantially relied on importing electricity shortfalls from its neighbours. However, regional electricity supply capacities have become constrained substantially. Without

adequate electrical energy, local and regional development ambitions cannot be realized. Namibia Power Corporation (NamPower), as Namibia's monopoly electricity provider, faces particularly challenging times to ensure that country's lights remain on.

Renewable energy project come along with local employment creation, reduction in currency outflows as the country is not exporting from neighboring countries anymore, and reducing Namibia's dependence and vulnerability to foreign exchange fluctuations for energy-related expenditures. The energy from renewable sources has spread out over large areas; most of the villages and town would be able to produce their own electricity and would be electrified.

Environmental value enhanced through reduction of carbon dioxide emissions as well as of particulate matter (PM), sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) emissions.

It also improved public health as the air and water pollution emitted by coal and natural gas plants has gonedown. These are the advantages of the renewable energy.

Renewable Energy Projects

Ruacana is a hydro-electric power station project in the Kunene River, which has a generation capacity of 332 MW. It is a run-of-river power station, meaning that its ability to generate electricity remains dependent on continuous water flows from Angola. In the absence of enough water flows, Ruacana can generate and feed electrical energy only into some part of Namibia's national electricity grid.

Solar-diesel Hybrid System

PV technology is mature, ultimately reliable and often backed by 20, 25 or even 30-year product warranties. Solar PV is highly suitable for the country as well-endowed with sunshine as Namibia. PV technology can be used in urban grid-connected systems, whereby electricity generated by the PV modules is fed into the local distribution network. Solar PV contributes to Namibia's electricity by making a significant contribution in reducing electrical energy requirements during the day. On the other hand, without storage devices, such as large-scale battery systems or other technologies, the contribution that large-scale solar PV can make to reduce country's peak demand, especially during evening peak, is insignificant. This implies that the role that solar PV can play is most pronounced during the day;peaking at midday.

What are the challenges that come with renewable energy in Namibia?

In a country with moderate economic growth, the delay of much-needed investments in generation capacity is acknowledged in leading

Figure 3: Solar PV array of Namibia's largest solar-diesel hybrid system at Tsumkwe-Namibia

to supply bottlenecks. Electricity prices have escalated significantly over the past years, and are expected to rise further for at least another couple of years; most likely at double-digit growth rates every year. This would continue to place pressure on consumers, especially those already struggling to make ends meet. Rapidly rising electricity prices will also negatively affect enterprises that use electrical energy for productive purposes. This is set to lead to a negative impact on the commercial, mining, industrial and manufacturing sectors.

- The energy from renewable sources is spread out over large areas
- Mankind has no fully developed technology to harness those sources effectively.
- The equipment needed to harness the energy is expensive
- There may be environmental consequences for example:
  - » Visual and sound pollution for example from wind turbines
  - » The production from burning biomass fuels generates pollution
  - » Natural habitats may be harmed or destroyed.

Vietnam

Vietnam is a developing country with a population of over 90 million, and a territory of more than 330,000 square kilometres. To power the economy which has achieved average GDP growth rate of more than 5% over last 20 years, given the context worldwide concern for sustainable development, Vietnam has huge demand for cleaner and more secured sources of energy. Currently, Vietnam relies heavily on hydropower (37.6%) and coal-fired thermal power (34.3%).

According to UNDP, at least 10 billion USD of external capital is believed to be available, accounting for approximately 50% of the total investments needed, to support Vietnam's transition to cleaner energy "if the current barriers constraining such investments are addressed- especially low price of electricity ...and existing format of power purchase agreements" (UNDP, 2018).

Challenges

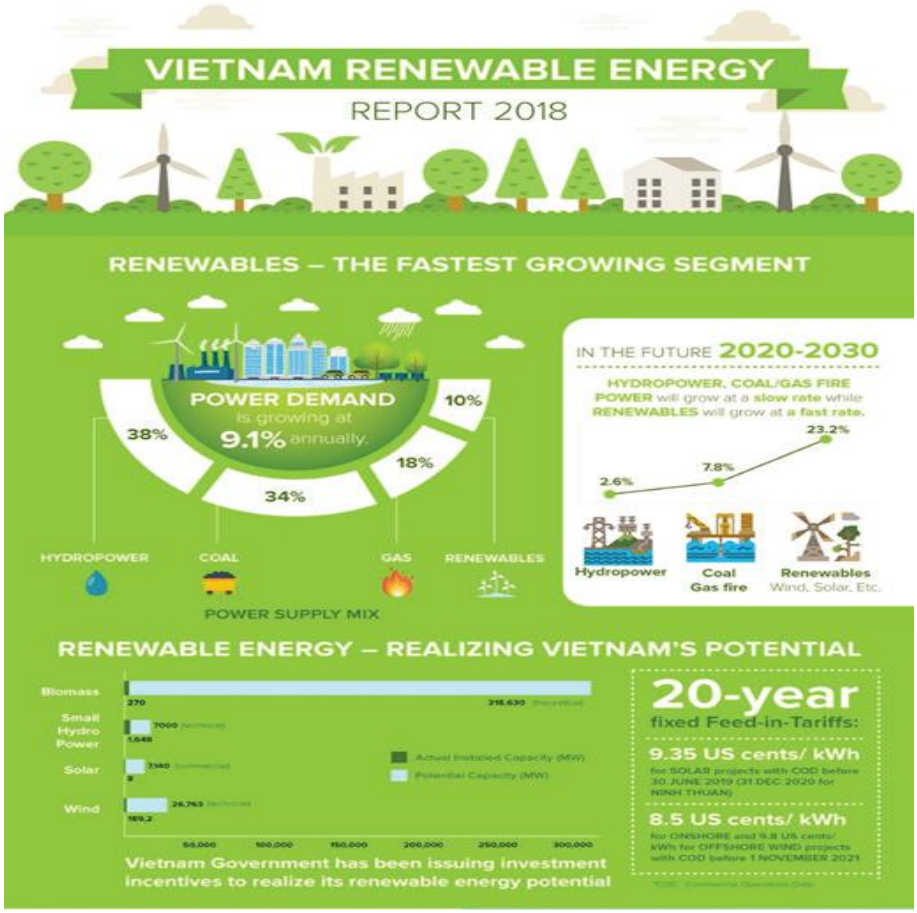
Vietnam's renewable energy development strategy up to 2030 with a vision to 2050 has been approved by the Government of Vietnam (Chinhphu, 2015) as the basis for renewable energy development in Vietnam. This framework targeted an increase in the ratio of power generated from renewable energy to 32% by 2030 and 43% by 2050. However, the implementation of renewable energy investment projects has encountered many difficulties and obstacles, including but not limited to:

- Land acquisition, compensation and resettlement are commonly occurring problems when implemented projects in general and renewable energy projects in particular.
- High production cost. That of solar energy is around 10 and 12 US cent/kWh. Obviously with such high costs, renewable energy could not compete with other conventional generation sources like coal or hydropower whose production costs are just a half.
- The system of specialized codes and standards/design, operation standards, etc. in the field of renewable energy is inadequate and inconsistent.
- Renewable energy development master plans (except for small hydropower) have been prepared for only potential scale in each zone, region, but not specified project locations, which cause difficulties in planning and developing power grid.
- Underdeveloped supporting industries.

Advantages and Incentives

Being in a tropical monsoon region, the country has the average number of sunshine hours in a year ranging from 2,500 to 3,000 hours, average temperature of over 21 degreeCelsius, a long

Figure 4: Overview of Renewable Energy in Vietnam



Source: https://www.vir.com.vn/vietnam-renewable-energy-report-2018-63034.html

coast of over 3,260 km, and sea breeze all year round. At the same time, the solar radiation in Vietnam can average about 3 - 5 kWh / m^2/day,and the average number of sunshine hours is around 2,500 - 3,000 hours (EVN, 2017). Therefore, Vietnam can take advantage of this strength to develop renewable energy source.

Such natural endowments combined with a significant drop in the capital costs of solar and wind over the past five years (75 per cent decrease in solar costs and a 30 per cent decrease in the cost of wind) have made renewable energy much cheaper (McKinsey&Company, 2019).

There are a growing number of private entities interested in renewable energy investment— around 50 wind power plants, and more than 100 solar power projects, along with several biomass projects being developed in the country. Hundreds of solar projects have been registered, as of July 2017, allowing them to seek investors, with a total capacity of up to 17,000 MW. Also, many investors recently announced very large investments in renewable energy projects in Vietnam (VOV, 2018).

Against this backdrop, Vietnam has implemented various policies to overcome challenges in wind power and solar power development with the view to attracting local and foreign investors as well as promoting sustainable development. Within the current legislation, renewable energy investors are

entitled to exemption from the land use fee for a period of 11 years and 15 years in the case of rural areas. In addition, during the construction of the plant or building, investors are entitled to exemption from land and water surface rents.

Corporations can also enjoy a reduction in corporate income taxes (CIT). A CIT of 10 per cent is applicable for renewable energy producers for the first 15 years. Under certain conditions, CIT exemptions are also provided for investors.

Import duties are also exempted in case imported goods are raw materials or are used in the manufacturing of components.

Challenges And Opportunities

Policy formulation and global trends

Besides, global frameworks like Agenda 2030, Kyoto Protocol and the Paris Agreement, government support policies have been instrumental in promoting renewable energy sector. According to IRENA, renewable energy support policies have continued to expand across all regions.

> *Nearly all countries now have at least one renewable energy target. The number of countries promoting renewables through direct policy support has tripled, from at least 48 in 2004 to at least 147 by 2017, and additional developing and emerging countries continue to adopt renewable energy targets and policies* (IRENA, 2018).

However, this does not mean that renewable energy has the advantages over the traditional energy sector, at least presently. On the contrary, competition from heavily subsidized conventional forms of energy, policy formulation in developing countries and emerging economies, where growth is a priority and where old and entrenched mechanisms are difficult to part with are among the challenges that the renewable energy sector is faced with. Households or energy companies which prefer to install wind turbines or solar panels have been discouraged for lack of finance and considering high pay back times for loans.

Private sector participation

Creation of an enabling policy environment to encourage private sector participation in financing development of renewable energy projects (UNDP, 2013) is another challenge. Inadequate information sharing, lack of capacity- building and decentralization of renewable energy projects are equally important issues. Most support for renewable energy policies and technologies in developing countries come from local governments or from international donors, which underminetheir sustainability as the funds fluctuate with changing priorities and crises.

Technology diffusion and access to finance

Due to relatively high upfront costs of most technologies, having access to finance is an important prerequisite for their adoption (Kandpal *et al.,* 2003; Brunnschweiler, 2010). Another concern is whether many of the low-income developing countries would be able to secure diffusion of these technologies, as well as would be able to create conditions for the development of domestic renewable energy technologies (Ockwell and Mallett, 2012;Huenteler *et al.,* 2014).

But the good news is that,the recent renewable technologies and innovations are appropriately address the issues of energy access and storage. Grid extension is no longer seen as the only option as new business models and technologies foster development of off-grid renewable energy markets (IRENA, 2018). Besides these technologies, artificial intelligence (AI) is also a natural fit for the problems that arise with renewable resources: predicting energy production and therefore achieving a better demand response management and better resources allocation (Innoenergy, 2018). A combination of the artificial intelligence and

the renewable energy "seems to be the perfect marriage of an emerging technology with a maturing industry" (Nanalyze, 2018).

Thanks to the development of technologies and climate change advocates, countries are opting for renewables as "they are not only the most environmentally sound, but also the cheapest option" (The Independent, 2016).

Bangladesh is the world's largest market for solar home systems, and other developing countries (e.g., Kenya, Uganda and Tanzania in Africa; China, India and Nepal in Asia; Brazil and Guyana in Latin America) are seeing rapid expansion of small-scale renewable systems, including renewables-based mini-grids, to provide electricity for people living far from the grid. (IRENA, 2018).

Commercialization and underdeveloped infrastructure

In their competition with mature fossil fuels, which receive six times more in subsidies than renewable energy sources and nuclear technologies, renewables encounter major challenges to commercialization, including underdeveloped infrastructure and lack of economies of scale. The success of deploying new technologies depends on the ability to build, monitor and maintain energy infrastructure, as well train scientists, decision-makers and manufacturers at domestic and global levels (MacLeod and Rosei, 2015).In other words, expanding infrastructure and improving the capacity- building, which are both challenges and motivations to have clean energy in all developing countries are crucial to stimulate growth as well as protect the environment.

SMEs and rural development promotion

Renewable energy projects can increase the supply of stable energy and make rural areas less dependent on the imported energy, thereby creating more jobs, promoting infrastructure and economic development. The economic, social and environmental benefits can also be extended to individuals and businesses in urban areas, since this is where most innovation and industrial activities tend to occur, and where recycling and reuse are highly efficient (International Council for Science, 2017).

This is also a motivation for countries in fulfilling its SDG obligations, explicitly SDG 7 and SDG 9. From SDG 7 (ensure access to affordable, reliable, sustainable and modern energy), the infrastructure can be updated and modernized to make it more reliable and sustainable in accordance with the goals set by SDG9 (build resilient infrastructure, promote sustainable industrialization and foster innovation).

In short, although challenges are many in future, renewable energy sector is gaining momentum as the form of the sustainable source for the coming generations.

Conclusions

Fossil-fuels are the major source of energy worldwide. And their continued use present enormous irreversible environmental damage. Although the adoption of renewable energy sources is increasing in many parts of the world, widespread adoption is constrained by a multitude of policy, regulatory, technological, social and financial barriers. However, in the past, due consideration was not given to Renewable Energy. It has often been referred to as the "missing MDG". For this reason, inclusion of Renewable Energy under the SDGs is certainly a step forward. This paper has attempted to portray an existing picture of the Renewable Energy Sector in Bangladesh, Ecuador, Mauritius, Namibia and Vietnam and the linkages with the SDG7, SDG9 with other SDGs in the context of the Agenda 2030. The challenges faced by these countries to a large extent are similar. To ensure affordable, reliable, sustainable and modern energy for all, co-operation among the countries is important, not only on a bilateral basis but also in regional and International Fora and Organizations such as IRENA, ISA, SADC, IORA, to name a few.

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