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Least Developed Countries (LDCs) in the Global Value Chain (GVC)

Trends, Determinants and Challenges

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Khondaker Golam Moazzem

CENTRE FOR POLICY DIALOGUE (CPD)
BANGLADESH
a civil society think tank

LEAST DEVELOPED COUNTRIES (LDCs) IN THE GLOBAL VALUE CHAIN (GVC)

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The present paper titled **Least Developed Countries (LDCs) in the Global Value Chain (GVC): Trends, Determinants and Challenges** has been prepared by *Dr Debapriya Bhattacharya*, Distinguished Fellow, CPD and *Dr Khondaker Golam Moazzem*, Additional Research Director, CPD.

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Abstract

The present paper, based on a review of available literature and empirical evidence, has pointed out that the opportunities for the least developed countries (LDCs) to participate in the global values chains (GVCs) are expanding discernibly. However, the analyses show that the LDCs remain greatly handicapped in exploiting the full potential that the GVCs offer them due to their participation in low-value segment as well as the assymetric global governance structure of the value chains. Segment-specific analyses of participation in specific products indicate that the LDCs are facing multi-faceted challenges in the GVC process in terms of the production process, logistical and infrastructural requirements as well as complicated business processes. The paper has suggested some supportive measures, adoption of which could strengthen the position of the LDCs in GVCs, particularly in areas such as building productive capacity, development of trade-related infrastructure, access to inputs and logistical services, strengthening trade and industrial policies, and social upgrading.

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Acronyms

AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Nations
CEMAC	Economic and Monetary Community of Central Africa
CPD	Centre for Policy Dialogue
EAC	East African Community
ECOWAS	Economic Community of West African States
EU	European Union
FDI	Foreign Direct Investment
FTA	Free Trade Area
GCC	Global Commodity Chain
GCR	Global Competitiveness Report
GDP	Gross Domestic Product
GVC	Global Value Chain
HS	Harmonized System of Commodity Classification
ICT	Information and Communication Technology
IPR	Intellectual Property Right
IT	Information Technology
LDC	Least Developed Country
LIC	Low-Income Country
LPI	Logistic Performance Index
OHS	Occupational and Health Safety
RTA	Regional Trade Agreement
RoO	Rules of Origin
R&D	Research and Development
SACU	South African Customs Union
SADC	Southern African Development Community
SAFTA	South Asian Free Trade Area
SPARTECA	South Pacific Regional Trade and Economic Cooperation Agreement
SPS	Sanitary and Phytosanitary
TNC	Transnational Company
ToT	Terms of Trade
UAE	United Arab Emirates
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
WDI	World Development Indicator
WEF	World Economic Forum

1. INTRODUCTION

The term *Global Value Chain* (GVC) in its current usage implies the full range of activities undertaken to bring a product or service from its conception to end use, and how these activities are distributed over geographic space and across international borders (www.globalvaluechains.org). Emergence and popularisation of this concept over the last two decades are underpinned by international product fragmentation leading to geographic separation of activities involved in producing a good or a service. One of the consequences of such international organisation of production had been a rapid expansion of trade in intermediate goods and services (UNCTAD 2004).

Production fragmentation and geographic separation of activities have created new opportunities for the developing countries including the least developed countries (LDCs) to participate in this emerging division of labour in the global market. Concretely, the LDCs can now engage themselves in one or more stages of the production process which do not demand competency in the production of the full and final product.

Many LDCs are gradually making a place for themselves in this evolving international production system. Notwithstanding their weak supply-side and institutional capacities, these LDCs have created a niche for themselves in a number of cross-border production (commodity) chains. Arguably, this trend may generate new impulse for structural transformation of the LDC economies through expansion of manufacturing activities.

However, these new opportunities relating to participation in GVC is not equally available for all LDCs. The factors that have underpinned the participation of certain countries in this finer and subtle international division of labour ranges from regional networking and supply-side constraints to competitiveness-related aspects. Indeed, many of these factors lie in the interface of industrial organisation and trade policies.

For the LDCs to enhance the scope and depth of their gainful engagement in wide varieties of GVC, they would have to identify the factors which influence their participation in the international production systems and act on them. To this end, one needs to identify the measures which may strengthen and sustain the position of the LDCs in the GVCs.

In this context, the core objective of the present paper is to improve the understanding regarding the dynamics of LDCs' participation in the GVCs. Accordingly, the paper seeks to do the following:

i. Revisit the concept of GVC to examine its relevance for LDCs;
ii. Examine the state of participation of the LDCs in the global economy;
iii. Explore the engagement of the LDCs in the GVC at country, product and process levels; and
iv. Identify the challenges faced by the LDCs in improving their performance in the GVCs and suggest measures to mitigate them.

The paper is essentially based on desk-based review of relevant literature. While there is a growing body of literature on GVCs, regrettably there is only a precious few on LDCs' role in the GVCs. Thus, the present exercise started off by locating the relevant publications and preparing a reasonably exhaustive bibliography which has been appended at the end of the paper.

The study has also benefitted from debriefing knowledgeable informants, namely producers (exporters) located in Bangladesh who are linked to different GVCs including that in the apparel sector.

The paper has been organised around the major objectives of the paper. The following section (Section 2) reviews the conceptual aspects of GVC relevant for the LDCs. Section 3 analyses the aggregate trends concerning LDCs, participation in global production, trade and investment. Section 4 tries to take a more disaggregated look at LDCs' participation in the GVCs. Section 5 highlights the factors impeding LDCs' greater participation in the GVCs. The paper concludes (Section 6) by suggesting a number of measures which could address the constraints which are faced by the LDCs in this evolving production and marketing system.

2. GLOBAL VALUE CHAINS AND LDCs – A CONCEPTUAL DISCUSSION

The concept of *Global Value Chain* came into currency in the 2000s through international business literature. Michel Porter was first to use the term GVC in 1985 based on his analysis of trade and industrial organisation of cross-border integrated but discrete activities which incrementally added value to the ultimate consumable. However, the genesis of the concept may be traced back to the end of 1970s when analysts tried to understand the movement of inputs through various activities leading to creation of the final product. This process was explored in the concrete example of the apparel commodity chain and Gary Gereffi coined the term *Global Commodity Chain* (GCC) in 1994. The term GVC distinguishes from GCC by its scope as it also seeks to understand the determinants of the governance structure of the value chains. In this connection, the concerned literature placing emphasis on the GVC *leader*, distinguishes between 'producer-driven' and 'buyer-driven' chains. In the recent past some researchers have preferred to use the term 'network' instead of 'chain' in their analysis.[1] Some other names for the GVC phenomenon include offshoring, disintegration of process, delocalisation and unbundling of production.

The concept of GVC may be simply understood as a sequence of all functional activities required in the process of value creation involving more than one country (UNCTAD 2013). To elaborate, raw materials extracted in one country is being processed in a second country and then in third country, to be finally exported to a fourth country for final consumption. The movement of the product through successive countries where it acquires new value is designed, coordinated and implemented by a global network system. The prime motivation for international unbundling of the production is – minimisation of the cost for production and marketing.

Countries are usually engaged in the GVC process either through *forward linkage* (where a country provides inputs for exports of other countries) or through *backward linkages* (where a country imports intermediate products to be used in its exports) (Banga 2013).

Liberalisation of trade and investment policies, technological progress – particularly in the area of information and communication technology (ICT) – and reduction of transportation costs are some of the factors which have enabled the expansion of GVCs. On the other hand, cost competitiveness, relative wage rates, distance from the input sources and output markets, availability of infrastructural facilities, tax incentives, enabling regulatory framework constitute some of the factors which determine participation of a firm in the global value chain. The competency of a firm to participate in GVC is also determined by such factors as predictability, reliability and time sensitiveness (Cattaneo *et al.* 2013).

Participation in a GVC is a dynamic process as it may lead to 'upgradation' of the segment in which a firm is involved. Humphrey and Schmitz (2002) has delineated four types of upgrading for enterprises within a value chain. These are as follows:

[1]For details on history of GVC, see (OECD 2012).

i. *Process Upgrading* – transforming inputs into outputs more efficiently by recognising the production system or introducing superior technology.
ii. *Product Upgrading* – moving into more sophisticated product lines in terms of increased unit values.
iii. *Functional Upgrading* – acquiring new, superior functions in the chain, such as design or marketing.
iv. *Intersectoral Upgrading* – applying the competences acquired in a particular function to move into a new sector.

Evidence suggests that the GVC is characterised by regional bias which is often promoted by different forms of Regional Trade Agreements (RTAs). Beyond tariff, there are a number of trade instruments including the Rules of Origin (RoO) criteria which often promote or hold back expansion of GVC. By not being close to any regional production hub may deprive the developing countries from being included in a GVC.

LDCs in Global Value Chains

As mentioned earlier, there is hardly any literature which deals exclusively with the issues relating to LDCs' participation in the GVC. Pietrobelli (2007 and 2008) are exceptions in this regard. However, issues related to prospects and challenges of LDCs' engagement have been dealt with at varying levels in Dijk and Trienekens (2012); Gereffi *et al.* (2011); Mikic and Anukoonwattaka (2011); Serieux (2012); WEF (2012); and UNCTAD (2008, 2010 and 2013).

Analytical literature suggests that a large number of developing countries – including its poorest segment – is increasingly participating in the GVCs. It has been estimated that developing countries' share in global value added trade increased from 20 per cent in 1990 to 30 per cent by 2010 (UNCTAD 2013). Regrettably, comparable estimate is not readily available for the LDCs in this regard.

Increase in international product fragmentation has opened up new opportunities for the LDCs as they can now engage in global trade flow without the need to be competent in all aspects of production of a final output. This would mean that LDCs may move towards industrialisation by demonstrating competency by servicing one or a couple of stages of a fuller production process. This implies that the LDCs may seek vertical specialisation in a narrowly defined segment of activities and may also capture a rent.

The LDCs have demonstrated that they have special advantages in agricultural and natural resource base as well as in simple manufactured products. The LDC firms are usually not the *leader* on first tier supplier, but are often second and third tier supplier.[2] These situations imply opportunities for the LDC firms to upgrade to higher level. This upgradation of LDC firms may take place at both product and process levels. Conversely, inability to confront the risks and threats characterising the global trading environment would mean marginalisation, if not exclusion, of the LDC firms.

However, upgradation of an LDC firm within a GVC system may not take place in all aspects simultaneously. For example, according to studies by Barrientos *et al.* (2011), upgradation within the firms located in the low-income countries (LICs) may take place in the economic area, but not in social area. In other words, upgradation of productive capital machineries may not be accompanied by higher wages for the workers.

[2]At the top of the value chain pyramid sits the lead firm which is usually responsible for design, branding and final assemble. Much of the work and organisation is outsourced by the lead firm to a first-tier supplier. First tier supplier then creates complete sub-system by cooperating with a large network of lower (second and third tier) suppliers and sub-contractors.

Public policy has an important role to play in the LDCs to realise the potential of participation in the GVCs. Fiscal and monetary policies as well as trade and industrial policies reforms can create incentives for the buyers to relocate production facilities in the LDCs. In the face of growing demands of the international buyers, the local suppliers in the LDCs remain constrained to improve their price competitiveness. Development of production capacity and trade-supportive infrastructure including trade facilitation services remain critical in this respect. Aid for Trade in particular areas could play a very beneficial role in strengthening LDCs' capacity in participating in various GVC network.

3. LDCs IN GLOBAL ECONOMY – RECENT TRENDS

The group of LDCs, currently comprising of 48 countries[3], is defined by their structural disadvantages which are manifested with low income, weak human assets and various economic vulnerabilities. These countries currently account for 16 per cent of global population.

For contextualising the process of entry and expansion of the LDCs in the GVC it will be useful to recall recent performance of this group of countries in the global economy. Table 1 presents the gross domestic product (GDP) growth rates of the LDCs in the recent past. It may be observed that the average growth rate of the LDCs during 2000-2010 had been pretty impressive (6.9 per cent) and all its regional components enjoyed robust growth during this period. However, since 2007, i.e. the advent of the global economic and financial crisis, the LDCs have experienced deceleration of their economic growth. Indeed, as the global economy faltered, the recovery of the growth rates in 2010 did not sustain in 2011. This implies, the prospects of economic growth in the LDCs is getting increasingly intertwined with performance of the international markets including movement of international commodity prices. In other words, opportunities for the LDCs to participate in the GVC in a sense is circumscribed by the rate of expansion of the global economy.

Table 1: Trend in GDP Growth Rates in LDCs

(in Per cent)

Group	Average			2007	2008	2009	2010	2011	2012
	2001-2010	2006-2008	2009-2011						
LDCs	6.90	8.30	4.60	9.20	7.60	4.90	6.15	3.76	3.00
LDCs: Africa and Haiti[4]	7.00	9.00	4.20	10.10	8.40	4.60	5.96	3.73	1.63
LDCs: Asia[5]	6.70	7.10	5.40	7.70	6.20	5.40	6.69	3.68	5.33
LDCs: Islands[6]	5.20	4.00	3.90	5.30	4.40	1.90	0.44	8.12	7.49

Source: UNCTAD Stat, 2013.

The production structure in the LDCs has been experiencing changes, albeit slowly, in the recent past. As Table 2 reveals, the share of agriculture sector in GDP of both African and Asian LDCs had been decreasing steadily. As a result, share of industry in GDP has increased in African LDCs from 25 per cent in 2000 to 34 per cent in 2010, and further to 37 per cent in 2011. In case of Asian LDCs, the comparable growth had been somewhat modest, as the share of industry increased from 25 per cent in 2000 to 27 per cent in 2010, and continued at the same level in 2011.

[3] There are 32 LDCs in Africa (including Haiti), eight in Asia (with Yemen), and eight in the Pacific Islands.

[4] African LDCs include: Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, Togo, Uganda, United Republic of Tanzania and Zambia. For the convenience of analysis in this paper Haiti is included in the African LDCs group.

[5] Asian LDCs include: Afghanistan, Bangladesh, Bhutan, Cambodia, Lao People's Democratic Republic, Myanmar, Nepal and Yemen.

[6] Island LDCs include: Comoros, Kiribati, Samoa, Sao Tome and Principe, Solomon Islands, Timor-Leste, Tuvalu and Vanuatu.

Table 2: Composition of GDP in LDCs

(in Per cent)

Sector	2000	2005	2010	2011
	Africa and Haiti			
Agriculture, hunting, forestry, fishing	32.0	29.0	27.0	25.0
Industry	25.0	31.0	34.0	37.0
Mining, Utilities	12.0	18.0	-	-
Manufacturing	7.0	8.0	-	-
Services	43.0	40.0	39.0	38.0
	Asia-Pacific			
Agriculture, hunting, forestry, fishing	30.0	25.0	24.0	25.0
Industry	25.0	29.0	27.0	27.0
Mining, Utilities	6.0	8.0	-	-
Manufacturing	13.0	14.0	-	-
Services	44.0	47.0	48.0	47.0

Source: UNCTAD Stat, 2013.

These changes indicate that the LDCs, albeit gradually, are getting structurally better positioned to service the international market through its growing non-agricultural sector. However, one needs to point out that expansion of the industries in African LDCs has been taking place, thanks to higher growth of the mining and utilities sector, whereas in the Asian LDCs, this has been predicated by the (slow) growth of manufacturing sector. As will be seen later, this differentiated intra-industry performance is having varying consequences for the engagements of Asian and African LDCs in the GVC.

The structural change in the LDCs, albeit slowly, is also getting reflected in their external sector performance. For example, the degree of openness (measured by total of imports and export as a share of GDP) in the LDCs as a group have increased from 0.56 (2001-2005, average) to 0.65 (2006-2010, average), and then to 0.67 in 2011.[7] This is largely underwritten by the growing share of exports in the GDP of the LDCs – 31 per cent in 2006-2010 as against 25 per cent in 2001-2005 (Table 3).

Table 3: Share of Export in GDP of LDCs

(in Per cent)

Group	Average		2011
	2001-2005	2006-2010	
LDCs	24.95	30.58	32.35
LDCs: Africa and Haiti	28.12	35.27	39.51
LDCs: Asia	19.81	20.36	18.72
LDCs: Islands	39.01	69.43	72.80

Source: Based on UNCTAD Stat, 2013.

In 2011, the said share further grew to more than 32 per cent. It may be observed from Table 3 that the African LDCs had been more open than the Asian LDCs – the respective figures being 39.5 per cent (2011) and 19 per cent (2011). This varying degree of openness is largely explained by the composition of their respective export which is essentially a reflection of their industrial structure.

[7]The average ratio of openness for the LDCs was significantly pushed up by the highly open Island LDCs – 1.23 in 2011.

Role in Global Economy

Recent structural changes in the LDC economies, however marginal, have also strengthened the LDCs' position in the global economy. Table 4 shows that the share of LDCs in world GDP has gradually increased from 0.62 per cent (2001-2005) to 0.87 (2006-2010). The comparable figure in 2011 was almost 1 per cent. This progression was visible across the three regional groups of LDCs, signifying an improved relative positioning of the LDCs in global production.

Table 4: Share of LDCs in World GDP

(in Per cent)

Group	Average		2011
	2001-2005	2006-2010	
LDCs	0.62	0.87	0.99
LDCs: Africa and Haiti	0.37	0.56	0.61
LDCs: Asia	0.25	0.30	0.36
LDCs: Islands	0.005	0.01	0.01

Source: UNCTAD Stat, 2013.

The recent consolidation of LDCs' positions in the global production has found reflection in the creeping growth of LDCs' share in world exports. It may be observed from Table 5 that share of LDCs in the world exports has increased from 0.6 per cent (2001-2005, average) to 0.87 per cent (2006-2010, average), and finally to 1 per cent in 2011.

Table 5: Share of LDCs in World Exports

(in Per cent)

Group	Average		2011
	2001-2005	2006-2010	
LDCs	0.60	0.87	1.00
LDCs: Africa and Haiti	0.40	0.65	0.76
LDCs: Asia	0.19	0.20	0.21
LDCs: Islands	0.008	0.02	0.03

Source: UNCTAD Stat, 2013.

This trend cuts across all three regional groups of LDCs. However, this positive trend reflecting growing share of LDCs in world exports is more pronounced in case of the African LDCs because exportables of these countries, i.e. minerals and oil have enjoyed high international prices in the recent past. This of course has made the African LDCs more vulnerable to external shocks. On the other hand, Asian LDCs hardly progressed in claiming higher share of world exports.

Structure of Trade

The nature and extent of participation of LDCs in the GVCs is partly reflected in their openness to trade, structure of export and import, as well as direction of trade. As mentioned earlier, between 2001-2011, both African and Asian LDCs have made significant progress in trade openness, as trade-GDP ratio for a number of countries have posted significant rise. This led them to graduate from the lower segment to the upper rungs of trade-GDP ratio (Table 6). At the same time, a number of countries have remained

Table 6: Changes in Trade-GDP Ratio of LDCs

(Percentage of Total LDCs)

Group	2001			2005			2011		
	<10%	10-30%	>30%	<10%	10-30%	>30%	<10%	10-30%	>30%
Export-GDP Ratio									
African LDCs	39.4	51.5	9.1	36.4	45.5	18.2	18.8	53.1	28.1
Asian LDCs	14.3	57.1	28.6	14.3	42.9	42.9	28.6	14.3	57.1
Island LDCs	60.0	40.0	-	66.7	33.3	-	66.7	16.7	16.7
Import-GDP Ratio									
African LDCs	-	57.6	42.4	-	51.5	48.5	-	34.4	65.6
Asian LDCs	-	57.1	42.9	-	28.6	71.4	-	28.6	71.4
Island LDCs	-	40.0	60.0	-	16.7	83.3	-	16.7	83.3

Source: Based on the World Development Indicator (WDI) Database.

in the lower rungs of the trade-GDP ratio which include Burundi, Comoros, Ethiopia and Rwanda in Africa, Afghanistan in Asia, and in Island LDCs – Tuvalu and Vanuatu.

The rise in trade-GDP ratio in LDCs does not necessarily imply higher level of participation of LDCs in the GVCs. The participation of LDCs in GVCs has been emphasised from the perspective of their stronger role as sources of tradable products. This is reflected not only in the structure of export of LDCs as presented in the following sections, but also in their structure of import. Table 7 presents the top 20 imported products (at 6 digit level) of LDCs under different categories and their position in terms of import to different LDCs. The position of top 20 imported products in different LDCs is not the same from the points of view of both individual countries and the region. Most of the African LDCs import agricultural and petroleum products which are in their top 3 list, mainly for use as consumer

Table 7: Top 20 Imported Products of LDCs in 2012

HS Code	African LDCs (No. of Countries)				Asian LDCs (No. of Countries)			
	Top 3	4-5	6-10	11-20	Top 3	4-5	6-10	11-20
01-05	3	3	3	14	Top 3	4-5	6-10	11-20
06-15	18	8	19	21	1	2	2	6
16-24	9	6	15	19	4	3	4	8
25-27	19	7	15	16	-	5	5	10
28-38	8	9	16	16	12	6	7	5
39-40	1	-	3	8	-	-	1	4
41-43	-	-	-	1	-	-	2	1
44-49	-	-	1	5	-	-	-	1
50-63	3	3	10	16	-	-	1	2
64-67	-	-	2	3	3	3	3	6
68-71	-	-	-	2	-	-	-	2
72-83	5	5	12	22	-	-	-	3
84-85	3	3	15	25	-	1	6	6
86-89	3	6	10	27	1	3	6	10
90-97	-	-	1	8	6	4	10	10
98-99	3	3	3	8	-	1	2	3

Source: Based on Comtrade database.

Note: HS: Harmonized System of Commodity Classification.

products instead of using them as raw materials and intermediate products in other value chains. On the other hand, most of the Asian LDCs import minerals and other resources which belong to their top 3 list; these are mainly used as raw materials and intermediate products in industrial production, a part of which are used in export-oriented industries. Thus, structure of import of a number of Asian LDCs is favourable for developing value chains to an extent, based on imported products, compared to that of African LDCs.

The variation between the trade performance of African and Asian LDCs may be also partly explained by the trends in terms of trade (ToT). Table 8 indicates that ToT for the LDCs as a group has experienced a positive movement during the decade starting from the year 2000. Taking 2000 as 100, the ToT for LDCs has been about 122 in 2005 and 139 in 2010, rising further to 147 in 2011. Once again, this impressive growth of the ToT was driven exclusively by the African LDCs; indeed the Asian LDCs have experienced falling ToT. Taking 2000 as the base year (100), ToT for the Asian LDCs had been less than 100 in 2005 and 91 in 2010; the ratio fell further to 86 in 2011.

Table 8: Terms of Trade in LDCs

Group	2000	2005	2010	2011
LDCs	100.00	121.55	138.75	146.51
LDCs: Africa and Haiti	100.00	131.35	161.87	177.91
LDCs: Asia	100.00	99.56	90.94	87.82
LDCs: Islands	100.00	89.01	86.81	85.97

Source: UNCTAD Stat, 2013.

From the perspectives of enhanced participation of the LDCs in the GVC, it may be noted that the Asian LDCs, although these mainly export manufactured goods, are facing a falling ToT. A simple conclusion in this regard would be the need to enhance productivity of the export-oriented activities of the LDCs through wide ranging institutional measures. On the contrary, exportables of the African LDCs, which generally tend to be primary products, need to acquire more processed value so as to sustain in the face of fluctuating international commodities prices.

The foregoing aggregate level discussion in terms of regional groups allows us to conclude that there are some positive signals regarding improvement of LDCs' position in the global production structure and exports. However, the attendant changes in the structure of economic activities need to be accelerated further, particularly by enhancing productivity and improving economic competitiveness. Such an outcome will definitely facilitate the expansion of LDCs' participation in the GVCs. The disaggregated analysis presented in the next section will further address these issues at country, product and process levels.

4. GLOBAL VALUE CHAINS AND LDCs – A COUNTRY, PRODUCT AND PROCESS LEVEL ANALYSIS

4.1 Structure of Value Chains in LDCs

Participation of LDCs in the GVCs varies widely, particularly in terms of sectoral incidence and choice of segments of the value chains. This has to mainly do with LDCs' relative shortfalls in terms of economic structure, level of economic growth, geographic location and nature of economic relationship when compared with developed and developing countries. The present study has attempted to make a comprehensive listing of the value chains where LDCs are participating significantly. Accessing web-

based open sources, three Tables (Tables 9, 11 and 12) have been prepared with regard to LDCs' participation in GVCs.[8] The identified GVCs have been distinguished at three levels, viz. products by sourcing region, products by process level, and markets by destinations and products. However, the list may not be fully exhaustive as information on some value chains were not available on the relevant websites.

The total number of value chains where LDCs participate in at least one of the three segments of the value chain (i.e. production, processing and marketing) has been estimated to be at least 95.[9] Since a large number of LDCs are located in Africa (67 per cent of total LDCs), majority of the value chains are linked to African LDCs, followed by Asian and Island LDCs. Since African countries are endowed with agricultural products and minerals and other natural resources, their value chains (70 per cent) are mostly related to primary agricultural products and mineral resources. On the other hand, value chains in Asian LDCs largely deals with agricultural and manufacturing products, which corresponds to their structure of the economy as well as composition of trade.

As Table 9 reveals, mineral resources and primary products based value chains are exclusively found in the African LDCs. These value chains include oil and gas-based value chains which operate in Angola and Equatorial Guinea, diamond production-based value chains in Lesotho and Liberia, gold in Tanzania and Zambia, iron ore in Liberia, aluminium in Guinea, and copper in Zambia. Most of these value chains are owned and operated by transnational companies (TNCs) having origin in both developed and developing countries.

Table 9 further shows that value chains of agricultural products are found both in Africa and Asia – 41 value chains are in operation in African LDCs, while 33 in Asian LDCs. Most of these value chains are developed on the basis of domestic production of agricultural products which comply with international standards. Since 20 out of 33 LDCs in Africa participate in value chains of agricultural products, volume of exports of these products from Africa appears to be high. Unlike resource-based value chains which are highly capital-intensive and technology-driven, agricultural products value chains operate through domestic private investment including with participation of small landholding farmers.

In manufacturing products value chains, the number of value chains operating in Asian LDCs is higher (20) than that of African LDCs (15), although the number of African LDCs participating in these value chains is higher (Table 9). Taking note of the nature of inputs used, the Table distinguishes two types of value chains that are in operation in case of manufactured products, viz. agro-based and non-agricultural based. Given the difference in composition of imports, manufacturing value chains of African LDCs appear to be based on domestic supply of inputs (mainly agro-based value chains), while the value chains in Asian LDCs are based on both domestic and imported inputs.

[8]Each of these three Tables are based on a more detailed country, product and process level analysis. The findings have been reported here in a summary form.

[9]Most of the products identified are at HS code 2 digit level; some others at 4 and 6 digit levels.

Table 9: Participation of LDCs in GVCs: Identification of Product by Sourcing Region

Region / Product Group	Africa (including Haiti)			Asia (including Yemen)			Total Number of Countries (Net=34)	Total Number of Products (Net=95)
	Number of Countries Covered (21)	Number of Products Identified (63)	Products	Number of Countries Covered (13)	Number of Products Identified (53)	Products		
Primary mineral products (HS code 25-27)	6	9 (14.29)	Gas (1), Oil (1), Aluminium (1), Diamond (2), Gold (3), Iron ores (1), Niobium and tantalum (1), Tin (1), Tungsten (1)	N/A	N/A	N/A	6	9 (9.47)
Primary agricultural products (HS code 01-15)	20	41 (65.08)	African cat fish (1), Apple (1), Banana (3), Beans (2), Cashew (3), Cassava (6), Coffee (6), Dried fruit (1), Fisheries (3), Flower (1), Goat meat (1), Grape (1), Groundnuts (4), Hibiscus (1), Honey (3), Maize (7), Mango (4), Melon (1), Milk (2), Millet (1), Mushrooms (3), Oilseeds (3), Onion (1), Palm oil (2), Pineapple (1), Potato (3), Passion fruit (1), Pulse (4), Rice (7), Roses (1), Sesame (1), Shallot (1), Sheep meat (1), Shrimp (1), Sorghum (1), Sweetheart (1), Tea (2), Tilapia (1), Tomato (3), Vegetable oil (1), Wheat (3)	12	33 (62.26)	Almonds (1), Banana (1), Cardamom (1), Cashew (1), Citrus (3), Coconut oil (1), Coconut (3), Coffee (4), Cucumber (1), Grape (1), Groundnut oil (1), Hilsha (1), Honey (3), Jute (1), Lobster (1), Maize (1), Mud crab (1), Paddy (1), Palm oil (2), Pulse (1), Pangasius (1), Pineapple (1), Potato (4), Prawn (2), Rice (3), Rubber (1), Saffron (1), Sesame oil (1), Shrimp (1), Tea (1), Ginger (1), Tuna fish (2), Onion (1)	32	58 (61.05)
Manufacturing products **Agro** (HS code 28-40, 44-49)	5	3 (7.94)	Cocoa beans/Cocoa (2), Sugar (2), Tobacco (4)	4	2 (3.77)	Cocoa (2), Semi and finished leather (2)	9	4 (4.21)
Manufacturing products **Non-Agro** (HS code 16-24, 41-43)	12	10 (19.05)	Aluminium wire (1), Apparels (6), Copper wire and copper robs (1), Cotton (9), Crown crocks (1), Furniture (1), Leather shoe and products (2), Wood and timber (2), Yarn and woven made fabrics (1), Footwear (2)	8	18 (33.96)	Apparels (4), Bicycle (1), Boiler machinery (1), Carpet (1), Footwear (3), Gems (1), Jute (1), Leather bag (2), Light engineering (1), Pashmina products (1), Raw Afghan wool (1), Rubber (1), Sandal wood (1), Silver jewellery (1), Stone(1), Timber (1), Handmade paper (1), Finished jute products (1)	20	24 (25.26)

Source: Based on an extensive review of relevant documents accessed from web-based open sources.

Note: Figures in parentheses refer to percentage of total.

Value Chain Breadth

Most of the value chains operating in the LDCs are, by and large, narrow in breadth indicating that operations are concentrated in individual steps (e.g. in resource extraction or in production). According to Table 10, the Perception Index for extent of value chain breadth is lowest for the LICs – largely comprising of LDCs. However, these countries have made some progress over the years by increasing their participation in global trade, and have reduced the gap with countries belonging to higher income categories. Yet, the gap between the LICs with their nearest category (i.e. upper middle income countries) is still quite wide.

Table 10: Perception Index 2012 for Value Chain Breadth

(Index Value: 1-7)

Category of Countries	2006	2008	2012
Low income	2.80	2.98	3.04
Upper middle income	3.43	3.46	3.47
Emerging and developing economies	3.23	3.89	3.39
Developing Asia	3.65	3.89	3.74

Source: Based on the database available at the website: http://www.weforum.org/issues/competitiveness-0/gci2012-data-platform/

The value chain breadth widely varies both at intra-regional as well as inter-regional levels. The lowest value of Perception Index within the LIC group relates to Burkina Faso and the highest for Senegal – both are incidentally LDCs. More importantly, a number of LDCs have experienced deterioration in the value chain breadth between 2006 and 2012. These include Nepal, Benin and Burkina Faso. Thus, special attention is needed both for revival as well as for strengthening of the value chains in LDCs.

Within the three forms of output in a value chain (i.e. raw products, intermediate products and finished products), LDCs are found to participate in all. Table 11 depicts distribution of products produced by LDCs as part of GVCs. Shares of three stages of production in different value chains are found to be the following: 48 per cent are raw products, 38 per cent are intermediate products, and only 14 per cent are finished products. In other words, as high as 86 per cent of products of the LDCs engaged in different value chains are produced and exported at non-finished stages. This would imply that they are foregoing a significant amount of potential value addition whilst exporting their products. This is particularly evident in case of Africa where about 88 per cent of total products are exported at raw and intermediate stages; this is followed by Asia (75 per cent). Asian LDCs performed relatively well at least in terms of ensuring higher share of finished products in their exports (about 25 per cent). Thus, policymakers – at global and national levels – should put more focus on ensuring more value addition in the LDCs as they participate in the GVCs.

Table 11: Participation of LDCs in GVCs: Identification of Products by Process Level

Region / Product Category	Africa (including Haiti)			Asia (including Yemen)			Total Number of Countries (Net=34)	Total Number of Products (Net=109)
	Number of Countries Covered (21)	Number of Products Identified (78)	Products	Number of Countries Covered (13)	Number of Products Identified (57)	Products		
Raw Product	16	40 (50.30)	African catfish (1), Apples (1), Banana (3), Beans (2), Black tea (not fermented) and partly fermented (1), Cassava (5), (Coffee (6), Wet coffee (1), Coffee (1, not roasted, not decaffeinated), Coffee (2, robusta and mild Arabic)), Cotton (9), Beans/ cocoa (2), Fisheries (3), Flower (1), Flower (1, frozen and processed), Grape (1), Goat meat (1), Green tea (not fermented) (1), Groundnuts (4), Gold (3), Hibiscus (1), Mango (4), Melon (1), Millet (1), Mushrooms (2), Oilseeds (3), Onion (1), Passion fruit, Pineapple (1), Potato (3), Raw cashew/cashew nuts (3), Raw sugar (1), Roses (1), Sesame (1), Shallot (1), Sheep meat (1), Shrimp (1), Sorghum (1), Sweethearts (1), (Tobacco (4), Burley unprocessed leaf (1)), Tilapia (1), Tomato (3), Wheat (3), Wood/ timber/raw logs (2)	10	27 (47.37)	Almonds (1), Banana (1), Citrus (3), Cocoa (2), Coconut (3), Coffee (1 Arabica green beans, Nepal), Cucumber (1), Ginger (1 fresh), Grape(1), Hilsha (1), Jute (1), Leather (1 wet blue and crust leather, Nepal), Lobster (1), Coconut oil (1 crude), Mud crab (1), Onion (1), Paddy (1), Pangasius (1), Pineapple (1), Potato (4), Prawn (2), Raw Afghan wool (1), Raw cashew (1), Shrimp (1), Tea (1 Orthodox tea, Nepal), Timber (1), Tuna fish (1)	26	52 (47.71)

(Table 11 contd.)

(Table 11 contd.)

Region / Product Category	Africa (including Haiti)			Asia (including Yemen)			Total Number of Countries (Net=34)	Total Number of Products (Net=109)
	Number of Countries Covered (21)	Number of Products Identified (78)	Products	Number of Countries Covered (13)	Number of Products Identified (57)	Products		
Intermediate Product	14	31 (39.74)	Aluminium wire (1), Aluminium (1, Bauxite), Cassava dry chips (1), Cassava flour (3), Coffee (4), Copper wire and copper robs (1), Cotton yarn (1), Diamond (2), Dried beans (2), Dried cassava (1), Dried mango (1), Dried mushroom (1), Dry maize and flour of maize (1), Gas (1), Hibiscus (1, as intermediate input), Iron ores (1), Maize (7), Milk (2), Niobium and tantalum (1), Oil (1), Palm oil (2), Pulse (4), Processed tomato (1), Tea (1), Tin (1), Tungsten (1), Vegetable oil (1), Wheat flour (1 Rwanda), Yarn and woven made fabrics (1), Rice (7), Sugar (refined brown, 1)	9	18 (31.58)	Cardamom (1), Coffee (3), Frozen yellow fin tuna (1), Gems (1), Ginger dry (1, grading done to India), Groundnut oil (1), Jute (1), Light engineering products (1), Maize (1), Palm oil (2), Pulse (1, split, Nepal), Processed coconut (1), Rice (3), Rubber (1), Sandalwood (1), Semi and finished leather (2), Saffron (1), Sesame oil (1)	23	42 (38.53)
Finished Product	8	7 (9.72)	Apparels (6), Crown crocks (1), Dried fruit (1), Footwear (2), Furniture (1), Honey (3), Leather shoe and products (2)	9	12 (21.05)	Handmade paper (1), Apparels (4), Bicycles (1), Boiler machinery (1), Carpet (1), Finished jute products (1), Footwear (3), Honey (3), Leather bag (2), Pashmina products (1), Pulse (1, polished), Silver jewellery (1)	15	15 (13.76)

Source: Based on an extensive review of relevant documents accessed from web-based open sources.
Note: Figures in the parentheses indicate percentage of total.

4.2 Linkages with Export Markets

LDC value chains products are destined for major markets of developed and developing countries.[10] According to Table 12, the highest number of products (in terms of share in total products) was exported to the European Union (EU) market (22 per cent), followed by Africa (17 per cent), North America (14 per cent), East Asia (13 per cent) and West Asia (12 per cent). Major factors shaping the preference for export destination include, inter alia, tariff preferences, demand for specific 'branded' consumer products (agricultural products and minerals), demand for raw materials and intermediate products, and locational advantages particularly in regional markets.

In case of value chains operating in African LDCs, regional markets are found to be equally important along with those of markets of developed countries. One does see a hub or cluster in Africa, which is not so obvious in case of Asian LDCs. However, the product baskets of these two markets are not the same. Agricultural products and minerals are the major exportables to the EU markets, mainly because of their demand as inputs and finished consumer goods, and also for the preferential market access. On the other hand, agricultural products and finished products are exported to the regional markets, particularly in neighbouring countries, due to landlocked nature of a number of African and Asian LDCs. Besides, regional markets are also targeted for taking advantage of proximity and similarity of tax and tariff preferences under the various RTAs and bilateral Free Trade Areas (FTAs) embracing neighbouring countries.[11]

Table 12 further reveals that for the value chains operating in Asian LDCs, markets of developed countries (such as EU and USA) as well as those of regional countries are considered to be equally important. The product baskets for different markets are quite similar, although preferences for export destination may be motivated by varying reasons including proximity, landlockedness and tariff preferences. However, the falling ToT arising from export of relatively low value added manufactured products puts the Asian LDCs at a relatively disadvantageous position vis-à-vis other LDCs, which tend to export primary products.

[10]The analysis presented in the paper is based on number of products exported from LDCs, and it is not based on value or volume of export of different products from LDCs. The two estimates would not necessarily be the same.

[11]These include Economic and Monetary Community of Central Africa (CEMAC), East African Community (EAC), South Asian Free Trade Area (SAFTA), South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA), South African Customs Union (SACU), Southern African Development Community (SADC), Economic Community of West African States (ECOWAS), ASEAN (Association of Southeast Asian Nations) Free Trade Area (AFTA), and various other bilateral FTAs.

Table 12: Participation of LDCs in GVCs: Markets by Destinations and Products

Africa (including Haiti)				Asia (including Yemen)				Total Number of Countries	Total Number of Products
Markets	**Number of Countries Covered (21)**	**Number of Products Identified**	**Products**	**Markets**	**Number of Countries Covered (13)**	**Number of Products Identified**	**Products**		
EU (France, Belgium, Spain, Switzerland, UK, Netherlands, Italy, Germany, Sweden, Norway, Iceland, Portugal, Hungary, Denmark, Russia, Finland, Romania, Bulgaria, Latvia, Estonia)	21	47 (25.4)	Cashew, Cotton, Apparels, Footwear, Furniture, Honey, Leather products, Pulse, Flower, Oilseeds, Maize, Groundnuts, Fisheries, Aluminium, Coffee, Pineapple, Rice, Tilapia, Cocoa beans, Iron ores, Gold, Timber, Tobacco, Tin ores, Niobium and tantalum, Tungsten ores, Pink shrimp, Cassava, Fuel wood, Palm oil, Hibiscus, Mango, Grape, Banana, Melon, Green beans, African catfish, Mushrooms, Roses, Textile (yarn and woven made), Dried fruit, Okra, Apple, Avocado, Hot pepper, Passion fruit, Copper	**EU** (Germany, UK, Norway, Italy, Russia, Sweden, Switzerland, Belgium, Poland, France)	8	29 (21.0)	Coffee, Ginger, Silver jewellery, Gems, Stones, Leather (hides and skins), Leather (bags and footwear), Tea, Handmade paper, Mandarin orange, Apparels, Carpet, Cashew, Jute, Shrimp, Prawn, Pangasius, Coconut, Hilsha, Pharmaceuticals, Potato, Coconut oil, Fruits, Vegetables, Tuna fish, Palm oil, Honey	29	76 (23.5)
North America (USA, Canada)	14	22 (11.9)	Oil, Cashew, Cotton, Apparels, Furniture, Leather products, Pulse, Oilseeds, Aluminium, Rice, Tilapia, Cocoa beans, Mango, Iron ores, Gold, Tobacco, Tin ores, Niobium and tantalum, Palm oil, African catfish, Textile (yarn and woven made), Coffee	**North America** (USA, Canada)	8	22 (15.0)	Coffee, Ginger, Silver jewellery, Gems, Stones, Tea, Carpet, Handmade paper, Apparels, Mud curb, Shrimp, Prawn, Pangasius, Hilsha, Pharmaceuticals, Light engineering products, Apparels, Tuna fish, Organic black rice, Honey	22	44 (13.6)

(Table 12 contd.)

(Table 12 contd.)

Africa (including Haiti)				Asia (including Yemen)				Total Number of Countries	Total Number of Products
Markets	**Number of Countries Covered (21)**	**Number of Products Identified**	**Products**	**Markets**	**Number of Countries Covered (13)**	**Number of Products Identified**	**Products**		
South America (Argentina, Brazil)	1	2 (1.1)	Cashew, Cotton	**South America**	N/A	N/A	N/A	1	2 (0.6)
East Asia (China, Japan, Hong Kong, Korea)	19	20 (10.8)	Oil, Cashew, Cotton, Apparels, Footwear, Rubber, Leather products, Aluminium, Coffee, Rice, Tilapia, Pulse, Tin ores, Niobium and tantalum, Tungsten ores, Cassava, Hibiscus, Pineapple, Copper, Gold	**East Asia** (China, Japan, Hong Kong, Korea)	9	23 (16.7)	Edible oil, Sesame oil, Groundnut oil, Palm oil, Coffee, Ginger, Honey, Silver jewellery, Gems, Stones, Leather (hides and skins), Leather (bags and footwear), Tea, Handmade paper, Cashew, Vegetables, Potato, Tuna fish, Rice, Fruits (juice), Timber, Sandalwood	28	43 (13.3)
South East Asia (Malaysia, Vietnam, Thailand, Indonesia, Singapore, Philippines)	9	12 (6.5)	Cotton, Rubber, Paddy, Rice, Oilseeds, Maize, Pulse, Groundnuts, Prawn, Tin ores, Coffee, Corn	**South East Asia** (Thailand, Vietnam, Malaysia, Philippines, Singapore, Myanmar, Indonesia)	7	14 (10.1)	Prawn, Cardamom, Leather (hides and skins), Vegetables, Light engineering products, Potato, Apparels, Tuna fish, Rice, Coconut, Virgin coconut oil, Timber, Candlenut, Honey	16	26 (8.0)

(Table 12 contd.)

(Table 12 contd.)

Africa (including Haiti)				Asia (including Yemen)				Total Number of Countries	Total Number of Products
Markets	**Number of Countries Covered (21)**	**Number of Products Identified**	**Products**	**Markets**	**Number of Countries Covered (13)**	**Number of Products Identified**	**Products**		
South Asia (Bangladesh, India, Pakistan)	5	6 (3.2)	Furniture, Oilseeds, Pulse, Groundnuts, Rice, Cashew	**South Asia** (Bangladesh, India, Pakistan, Afghanistan, Iran, Nepal, Maldives)	5	22 (15.9)	Prawn, Edible oil, Sesame oil, Groundnut oil, Palm oil, Ginger, Honey, Silver jewellery, Gems, Stones, Pulse, Cardamom, Leather (hides and skins), Leather (bags and footwear). Onion, Raw Afghan wool, Jute, Vegetables, Potato, Citrus, Maize	10	28 (8.7)
West Asia (UAE, Kuwait, Saudi Arab, Yemen, Israel, Iraq, Syria, Jordan, Oman, Lebanon, Qatar)	8	21 (11.4)	Cashew, Cotton, Honey, Pulse, Maize, Aluminium, Coffee, Groundnuts, Hibiscus, Onion, Mango, Grape, Banana, Melon, Green beans, Pineapple, Avocado, Hot pepper, Passion fruit, Footwear/leather shoe, Gold	**West Asia** (UAE, Saudi Arab, Turkey, Yemen, Oman, Lebanon, Kuwait, Oman, Bahrain, Qatar)	6	16 (11.6)	Ginger, Pulse, Cardamom, Tea, Cashew, Potato, Vegetables, Shrimp, Prawn, Pangasius, Hilsha, Tilapia, Pharmaceuticals, Light engineering products, Honey, Coffee, Tuna fish	14	37 (11.5)

(Table 12 contd.)

(Table 12 contd.)

Africa (including Haiti)				Asia (including Yemen)				Total Number of Countries	Total Number of Products
Markets	**Number of Countries Covered (21)**	**Number of Products Identified**	**Products**	**Markets**	**Number of Countries Covered (13)**	**Number of Products Identified**	**Products**		
Africa (Nigeria, Mali, Ghana, Kenya, Djibouti, Somalia Island, Morocco, Gambia, Sierra Leone, Algeria, South Africa, Madagascar, Benin, Zimbabwe, Congo, Zambia, Mauritius, Tanzania, Comoros, Sudan, Burundi, Kenya, Uganda, Egypt, Rwanda, Tunisia, Lesotho, Malawi, Mozambique, Botswana)	16	46 (24.9)	Cashew, Rice, Cotton, Furniture, Leather products, Pulse, Oilseeds, Milk, Maize, Aluminium, Coffee, Pineapple, Iron ores, Gold, Tobacco, Wheat, Groundnuts, Apparels, Mango, Banana, Cassava, Tin ores, Paddy, Sorghum, Potato, Hibiscus, African catfish, Sugar, Beans, Tomato, Corn, Wood furniture, Leather shoe/footwear	**Africa** (South Africa, Nigeria, Togo, Uganda, Yemen, Congo, Sudan, Ethiopia, Kenya, Morocco, Somalia, Ethiopia)	2	6 (4.4)	Leather (bags and footwear), Rice, Tea, Coffee, Jute, Pharmaceuticals	16	52 (16.1)
Latin America and the Caribbean (Aruba, Turks and Caicos Islands, Mexico)	5	6 (3.2)	Rice, Tilapia, Apparels, Groundnuts, Milk, Hibiscus	**Latin America and the Caribbean** (Haiti)	N/A	N/A	N/A	5	6 (1.9)
Oceania (Australia, Fiji, New Zealand)	4	3 (1.6)	Apparels, Tobacco, Pulse	**Oceania** (Australia, American Samoa)	5	6 (4.4)	Apparels, Carpet, Lobsters, Coconut oil, Fruits, Vegetables	7	9 (2.8)

Source: Based on an extensive review of relevant documents accessed from web-based open sources.
Note: Figures in parentheses refer to percentage of total.
Products may go to more than one country under the market segment.

4.3 Governance Structure

Governance structure for three different categories of products, i.e. agricultural, minerals and other natural resources, and manufactured products are not similar, and its variation occurs due to the role of the lead firm in the supply chain. Value chains concerning agricultural and manufactured products are mainly 'buyer-driven', whereas value chains dealing with minerals and other natural resources are mainly 'supply-driven'. The specific role to be played by the lead firm is determined by the nature and extent of development of a value chain in a particular location. Thus, the role of the lead firm in determining the relationship with buyers or with suppliers varies from 'hierarchic' to 'competitive' forms (Gereffi and Fernandez 2011).

The nature and extent of participation of suppliers in LDCs in different value chains differ in terms of capital intensity in production, compliance with specification of buyers, and ability to meet timely supply of products. Both local and foreign investments in the LDCs in agricultural and manufacturing products are less capital-intensive in nature. On the other hand, foreign investment is largely evident in mineral resource production which is mainly capital-intensive and technology-driven.

Domestic suppliers in the agricultural supply chains are mostly farmers who operate small farms with limited capital and with limited access to better inputs and other services. Such constraints lead small farmers to depend on intermediaries or buyers for required inputs and services. Suppliers in case of manufacturing value chain, on the other hand, depend on international buyers for technological assistance and market information. In most cases, domestic firms in LDCs operate at the second or third tier in the supply channel. In general, these firms possess limited control in any kind of value chain.

The limited control of domestic firms is also evident in the perception of entrepreneurs of respective LDCs. According to Table 13, the perception on extent of control over international value chain by domestic suppliers in LICs falls in the lowest category, and the value of this index has fluctuated over the years, although some other categories of countries have progressed in this regard. Among the LDCs, the Perception Index varies quite significantly – in 2012, the lowest value was found in Chad (2.9) and the highest in Guyana (4.2). Between 2006 and 2012, out of 25 LDCs which were reported in the Global Competitiveness Report (GCR) of the World Economic Forum (WEF), 12 LDCs made some progress, while six slipped, and others remained in the same position. Overall, local companies could not make significant progress in exerting their control over international value chains.

Table 13: Perception about Local Control over International Distribution System

(Index Value: 1-7)

Group	2006	2008	2012
Low income	3.50	3.73	3.55
Upper middle income	3.97	3.96	3.97
Emerging and developing economies	3.78	3.89	3.86
Developing Asia	3.88	3.89	4.08

Source: Based on the database available at the website: http://www.weforum.org/issues/competitiveness-0/gci2012-data-platform/

4.4 Upgradation of the Value Chains

Upgradation in the value chains in most of the LDCs takes place under the prevailing governance structure – mostly under quasi-hierarchic form of value chains. With this type of governance structure, it is the product and process upgradation that mainly takes place; this may not, however, be suitable for functional upgradation (Humphrey and Schmitz (2000); Giuliani *et al.* (2005); Pietrobelli and Rabellotti

(2007)). With the rise of 'buyer-driven' value chains, the role of buyer is increasingly becoming one of a *driver*. With the upgradation of the value chains, this relationship extends further towards first and second tier suppliers in terms of product development, branding, supplier selection and distribution, particularly in case of agricultural and fresh produces (Pietrobelli 2008).

In case of agricultural products, for example coffee value chain in Ethiopia, upgradation is observed through improvements in washing operations and other technologies. These changes are taking place through technical assistance which is provided to farmers in the form of training in post-harvest handling and upgradation of skills of washing station managers of cooperatives under contract and delivery agreements (Dempsey and Campbell n.d.). In case of cotton value chain, upgradation is observed in production technology, development of pest and disease surveillance system, post-harvest management, entrepreneurship development and cluster development.

In case of manufacturing sector value chain, for example apparels in Bangladesh, a number of changes have taken place in the nature of relationship between suppliers and buyers. Besides, significant improvement has taken place in case of machine and worker productivity. A number of factors including use of high speed machineries, introduction of new technologies and new departments in the production process are responsible for these changes. Buyers' guidelines with regard to sourcing of raw materials are of limited use in the current context; on the other hand, level of buyers' inspection in the production process has increased. Firms appear to shift product composition by putting emphasis on more value added items.

In case of minerals, for example tin ore and iron in Rwanda, the upgradation process has been rather slow. Exporters are less interested to spend for processing the materials as they look for quick buck (Teeffelen 2012). The exporters could have reduced their costs by processing the materials at local level instead of incurring additional expenses by wasting a significant part of the unprocessed materials during transportation.

Perceptions on sophistication of production process reveal that the level of development in the LDCs in this criteria is well below that in developed and developing countries. However, a number of LDCs has experienced improvement in the production process through use of upgraded technologies and efficient production processes. At the same time, a number of countries have experienced deterioration in the sophistication of production process, which means use of traditional technologies is still quite common. These countries include Nepal, Mauritania, Burkina Faso, Mozambique and Timor Leste.

Social Upgrading

The economic upgrading in the value chains does not necessarily convert into social upgrading if proper policies are not in place. With the development of the value chain breadth as well as increasing economic activities in most of the LDCs, efficiency in the labour market, participation of women in the labour force and flexibility in terms and conditions in appointing workers have made considerable improvement. This has resulted in further flexibility in wage determination process which is interestingly at the highest level in the LICs. The flexibility in hiring and firing of workers has further increased and positioned the LDCs at a lower level compared to other categories of countries. Moreover, the relationship between pay and productivity has further weakened in LICs although similar incidence is observed in other categories of countries. Hence, despite the progress made in economic upgrading of value chains in LDCs, social upgrading has registered negative, or at best, limited progress. As a result, labour-employer relationship has weakened in a systemic manner, which is also found in case of other markets. In case of job crisis, redundancy cost for firing workers (in terms of payment for number of

weeks) has declined significantly in recent years. Overall, social issues related to economic activities did not make progress over the years.

It is found that suppliers of LDCs are rarely in a position to work in the first tier of the GVCs because of lack of their capabilities in terms of skilled labour, technology, financial soundness and other determinants. Similarly workers are underprivileged in terms of wage, work environment and skill. These multiple factors hold back the process of social upgrading in the value chain of LDCs. Without appropriate package of policies and institutions, suppliers of LDCs often do not have the skills to enter into higher value added activities. As a result, the small farmers, suppliers and workers remain stuck in the loop of lower value added activities and lower income. The underlying factors which are essential to form human capital are higher wages, hands-on training for skill development, better work environment and ensuring work place safety and security which is the ultimate leverage point for social upgrading.[12] Often, LDCs do not have the needed resources at their disposal to address these.

Box 1: Changes in Perception of Bangladeshi Suppliers in terms of their Participation in the GVCs

Centre for Policy Dialogue (CPD), Bangladesh in association with the World Economic Forum (WEF), Geneva undertakes the annual Executive Opinion Survey of the large entrepreneurs on business environment which includes issues related to the development of value chain. The issues raised by the respondents regarding value chain include availability and quality of local suppliers, availability of clusters, companies' competitiveness, breadth of value chains, sophistication of value chain, extent of control over international value chains and social upgrading. Between 2009 and 2012, Bangladesh's performance has improved in terms of all these indicators, though at varying extents. The performance was better with respect to issues such as availability of local suppliers and wage setting mechanism, while its performance was weak on competitive advantage in the international markets and extent of spending on research and development (R&D).

Box Table 1: Perception of Bangladeshi Suppliers on Different Aspects of Value Chains

Indicator	2009	2010	2011	2012	Changes between 2009 and 2012
Availability of local suppliers	0.29	0.58	0.56	0.89	Improved
Quality of local suppliers	0.05	0.37	0.35	0.34	Improved
Prevalence of well-developed and deep clusters	-0.43	-0.13	-0.11	-0.13	Improved
Competitive advantage of companies in international markets based upon low cost or natural resources or not	-1.46	-1.64	-1.44	-1.51	Improved
Narrow or broad presence in the value chain	-0.6	-0.45	-0.52	-0.56	Improved
Spending on research and development (R&D)	-1.72	-1.36	-1.65	-1.47	Improved
Sophistication of production processes	-1.3	-0.64	-0.99	-1.03	Improved
Extent of use of sophisticated marketing tools and techniques	-0.88	-0.52	-0.69	-0.69	Improved
Extent of international distribution and marketing from your country owned and controlled by domestic companies	-0.59	-0.33	-0.46	-0.38	Improved
Labour-employer relations in your country	0.13	0.24	0.06	0.4	Improved
Wages generally set in your country by a centralized bargaining process or not	0.7	1.17	0.91	0.72	Improved
Companies' investment in training and employee development	-1.11	2.0	-0.97	-0.94	Improved
Wages for women equal to those of men or not	-0.47	-0.11	-0.09	-0.18	Improved
Extent of businesses opportunities provided to women as like men to take the position of leadership	-0.02	0.0	0.06	0.04	Improved

Source: Based on the CPD-WEF database.

[12] Termed as occupational health and safety (OHS).

5. CHALLENGES OF PROMOTING LDCs IN GLOBAL VALUE CHAINS

The LDCs confront wide ranging challenges which constrain their more gainful participation in the GVCs. The present section draws on Box Table 1 to identify these challenges by product and segment of GVCs. The challenges have been grouped under four categories, namely (i) operational; (ii) logistical; (iii) infrastructural; and (iv) business process.

5.1 Operational Challenges

The challenges confronting the LDCs as regards the different segments of the value chains for different types of *agricultural products* are by and large the same. Most of these supply chains are constrained by lack of quality raw materials, technology and know-how, and inadequate productive capacity. Inadequate access to capital and finance often underpin these problems. Since small farmers are involved in production processes in most of the agricultural value chains, the extent of vulnerability increases due to insufficient support from institutional sources in terms of financial resources, technologies and marketing of products. Major challenges at the production stage include inaccessibility to quality inputs, limited use of modern technologies in farming and harvesting, insufficient support from extension services, small-scale operation, high cost of fund and lack of skilled workers. At the processing stage of the agricultural value chains, major challenges are: weak storage facility, lack of post-harvest management, contamination of diseases, poor packaging facility, limited quality assurance facility and lack of knowledge. The challenges at the marketing stage are: high cost for certification, poor packaging, limited knowledge about international markets, price uncertainty, underdeveloped market chains and unreliable transport facilities.

In case of value chains of *minerals and other resources*, major challenges are related to lack of human resources and technical expertise (particularly in metallurgical sector), weak institutional capacity and time consuming licensing process. Some of the challenges arise through foreign direct investment (FDI) inflow as these investments often acquire 'enclave' form, with limited backward and forward linkages. These industries, largely exporting unprocessed materials, are usually capital-intensive with limited scope for employment generation.[13] Additionally, opportunities for strengthening linkages are modest because of limited resource commitment by FDI firms for long-term investments; in addition, production and export are too focused on a narrow range of highly specified low value adding products (Yamin and Sinkovics 2009). In these ventures channels for knowledge circulation between foreign and local companies are highly limited (UNCTAD 2007a; 2007b). Further, the scope for vertical linkages in the primary sector is quite small. Linkages are more likely when investment uses intermediate goods intensively, communication costs with the home company are high, and home and host countries are similar in terms of intermediate goods. These characteristics generally do not tend to be the case as far as TNCs in the LDCs are concerned (Lall and Narula 2004).[14]

In case of *manufacturing value chains*, major challenges are: lack of technology spillover, limited skills of workers, poor health and safety condition, inconsistent quality, unfavourable tariff structure and shortages of skilled manpower.

Most of the LDCs suffered with inadequate supply of modern technologies for production and processing of products. Despite the fact that their technology absorption capacity has improved, it is still below the level of the developing countries. However, availability of latest technology in most of

[13] In those areas which do have more long-term investments, the specialisation that often occurs in certain industries can hinder the transition to differentiated products. Homogenous products only have limited upgrading potential, in terms of learning opportunities, capacity requirements and value added linkages (Ernst 2008).

[14] Institutional and government failures have also inhibited linkages growth. The lack of apex government institutions in charge of coordinating industries in many LDCs indicates the absence of a proper facilitation process (Phelps *et al.* 2008).

the countries made considerable progress mainly through imported machineries and equipments. In most LDCs, the perception regarding technology transfer through FDI has deteriorated between 2006 and 2011. Notwithstanding some increase in flows in recent years, FDI in the LDCs is yet to regain the pre-global crisis benchmark.

Intellectual property right (IPR) regime also remains in a weak state in the LDCs and the perception about the state of IPR regime has declined for a number of countries. Overall, technology availability in LDCs has increased, but transfer of technology through FDI has remained negligible.

5.2 Logistical Challenges

Poor logistics – for both internal and external trade – is considered to be a major bottleneck for development of value chains in LDCs. Landlockedness of a number of African and Asian LDCs and remoteness of Island LDCs have disadvantaged these LDCs greatly in terms of participation in GVCs. Because of poor road connectivity with nearest ports, landlocked countries had a rather limited scope to develop supply chains other than with neighbouring markets (particularly for their finished products). Since the value chains for finished consumer goods usually operate on the principle of 'just-in time', inventory delivery often get interrupted by weak logistical facilities within and outside the country. Political volatility in many LDCs (affecting smooth working environment) have also impaired these countries' prospect of participation in GVCs. Besides, weak logistics impede developing an easy import process in many LDCs, particularly in the landlocked ones. These disadvantages deprive the LDCs from developing supply chains for manufactured products based on imported inputs. According to the Logistic Performance Index (LPI), most of the LDCs are at the bottom rungs of the ranking. Despite the fact that a number of countries made progress in their ranking in LPI, many countries have slipped over the years.

An often cited example in this regard relates to the number of documents to be handled for export and import in the LDCs – not much change has been visible between 2005 and 2012, except in case of very few countries. The LDCs which have made progress in this area include Rwanda, Senegal, Djibouti, Uganda and Tanzania. The improvements in Asian and Island LDCs are not so discernible in this regard.

5.3 Infrastructural Challenges

Most of the LDCs have experienced improvement in physical infrastructural facilities over the years in terms of better road, port and air infrastructures. However, these improvements have not yet made the LDCs competitive enough vis-à-vis other countries in developing supply chain linkages. Similarly, supply of electricity has improved in most of the LDCs, but it is still of poor quality which hinders strengthening the value chains in LDCs. Overall, quality of infrastructure, participating in the area of connectivity, availability of energy products, access to information technology (IT), continue to remain major concerns in the majotity of the LDCs. These impose serious limitation on the opportunities for expansion and intensification of the available value chains.

5.4 Challenges in the Business Processes

Business enabling environment in LDCs is often in a poor state. Although a number of countries have taken initiatives to reduce the hassles in the business process, yet the performance remains poor in terms of development of competitive supply chains. In a positive development, most of the LDCs have been able to reduce the time required for initiating a business, by a significant extent. The success stories may be located in the African LDCs such as Angola, Burkina Faso, Ethiopia, Guinea-Bisau,

Lesotho, Madagascar, Mozambique and Senegal. Similar positive changes may be also observed in case of Bangladesh and Cambodia in Asia, and Sao-Tome and Timor-Leste belonging to the group of Island LDCs.

Cost of business start-up did come down in many LDCs. Nonetheless, it is still considered to be very high for small and medium-scale suppliers. Complex and burdensome customs procedures have also constrained the LDCs in participating more extensively in the GVCs. No doubt, without significantly improving its ranking in the Ease of Doing Business Index, the LDCs will face serious challenges in engaging in the GVCs.

6. SUPPORTIVE MEASURES FOR STRENGTHENING LDCs' POSITION IN GLOBAL VALUE CHAINS

The present paper, based on review of available literature and empirical evidence, has maintained that economies of the LDCs are not only getting more integrated with the international markets, but are also slowly enhancing their share in the global economy. Participation in GVCs happens to be one of the avenues through which the LDCs are increasingly interfacing with the global economy. However, the paper has established that the LDCs remain greatly handicapped in exploiting the full potential that the GVCs offer them. A segment-specific analysis of participation in specific products revealed that the LDCs are facing multi-faceted challenges in the GVC process. The concluding section of the paper thus highlights some of the supportive measures, adoption of which could strengthen the position of the LDCs in GVCs. The areas mentioned include: (i) productive capacity; (ii) trade-related infrastructure; (iii) access to inputs and logistical services; (iv) trade and industrial policies; and (v) social upgrading.

Measures for Building Productive Capacity

- Investment in backward and forward linkage sectors of GVCs, i.e. developing capacity to produce upstream and downstream goods and services of the GVC segments available in the LDCs.
- Strengthening international investment agreements for enhanced reinvestment and effective technology transfer, particularly in the GVCs in the LDCs.

Measures for Development of Trade-related Infrastructure

- Better connectivity for landlocked countries with nearby ports (sea and air) for international trade.
- Better road and rail connectivity within the country.
- Improvement in access to electricity, particularly for industries operating in GVCs.

Measures for Access to Inputs and Logistics

- Agricultural products value chains: support for better access to quality inputs, enhanced use of modern technologies in farming and harvesting, better extension services, access to low cost fund.
- Improving storage facilities, better post-harvest management, pest and disease control, quality assurance facility, packaging facility.
- Support for certification, transport and packaging facility, access to information about international markets and buyers.
- Development of logistic facilities at border areas including warehouses.
- Special attention for development of connectivity and logistic facility to landlocked, small island states and other vulnerable economies.

Measures for Strengthening Trade and Industrial Policies

- Strengthening industrial and trade policies keeping in view development of local value chains (e.g. harmonisation of tariff structure for products related to specific GVC).
- Better policy support (fiscal and budgetary) for the sectors which support GVC operations.
- Continuation of policy support for strengthening LDCs' trade through preferential market access in developed and developing countries.
- A number of natural barriers such as landlockedness, remoteness and limited connectivity with regional and major global markets have constrained a large number of LDCs in using available preferential market access in an optimal manner. In this backdrop, refocusing trade-related policies towards cross-border multi-modal transport connectivity and trade facilitation is considered to be important for higher level of participation of LDCs in the GVCs (e.g. implementing/extending border and behind-the-border measures concerning imports and exports; building/improving road/rail connectivity with nearest sea/airports).
- Calibrated pro-competitive regulatory reforms leading to opening up of key service sectors especially in telecommunications, transport and energy for efficient and cost effective services as well as for attracting private investment including FDI.
- Streamlining investment regimes including setting up one-stop investment services; undertaking measures to reduce start-up cost of businesses.
- Mutual recognition of standards/SPS (sanitary and phytosanitary) measures and compliance practices concerning major export destinations and regional trading partners along with provisions of technical and financial support for improvement of these measures and practices in the GVCs of LDCs.

Measures for Social Upgrading

- Strengthening national policies related to working conditions in GVC-related industries including work place safety and security, and living wages and better livelihood issues.
- Strengthening the bargaining capacity of workers through ensuring of the labour rights.
- Special measures for improvement of livelihood of workers working in the GVCs.
- Revisiting international investment agreements to take into account inter alia, the social issues related to the GVCs.

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