

Global Value Chains, Global Responsibility?

Sustainability in Global Value Chains

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Imprint

Published by:

Konrad-Adenauer-Stiftung e. V. 2020, Berlin

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Design and layout: yellow too Pasiek Horntrich GbR

The print edition of this publication was climate-neutrally printed by Kern GmbH, Bexbach, on FSC certified paper.

Printed in Germany.

Printed with the financial assistance of the Federal Republic of Germany.

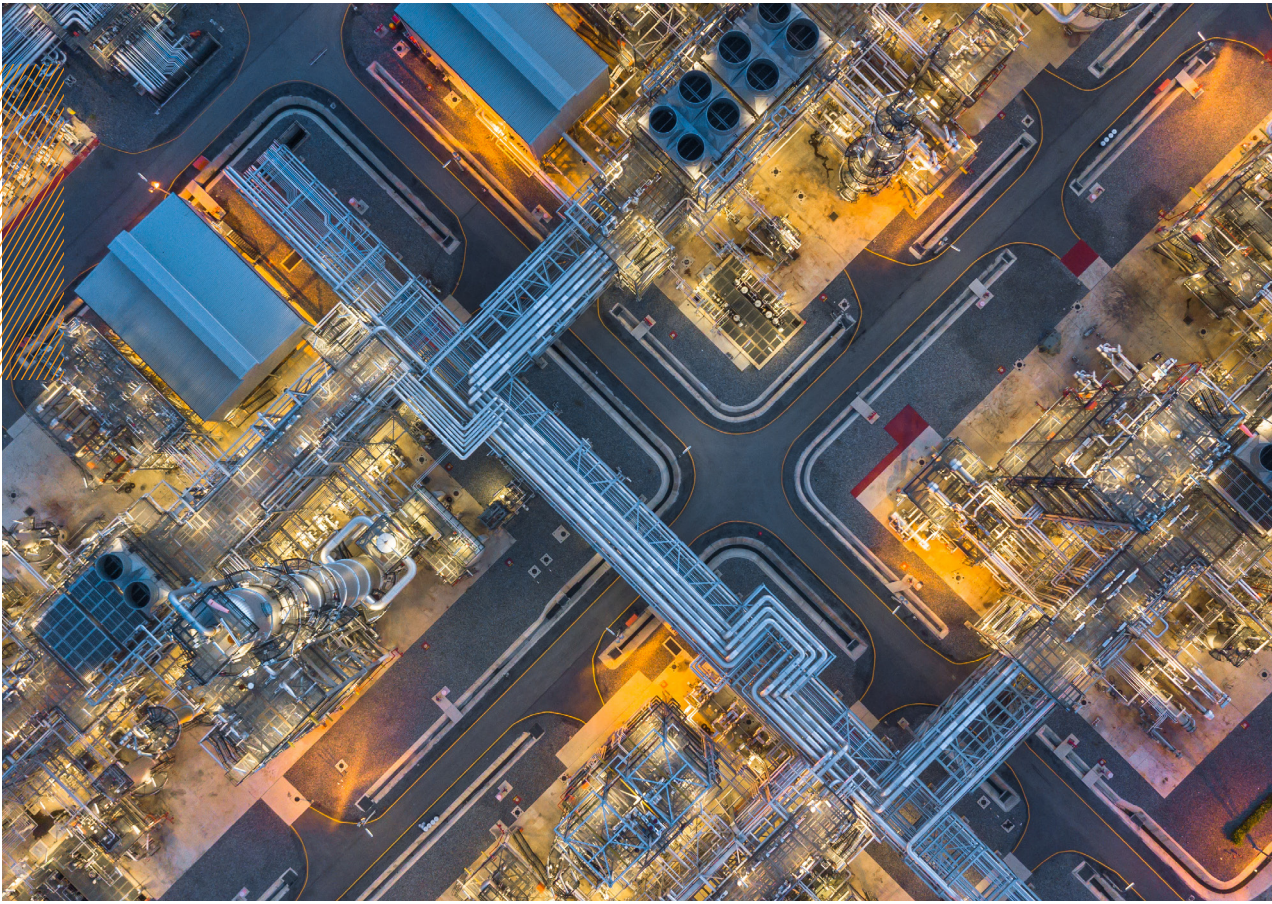


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ISBN 978-3-95721-649-6

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1. Introduction

During the last three decades, global value chains have become a formative element of the global economy. Nowadays, products are no longer merely manufactured in one country in order to then be exported to another. Instead, global value chains have resulted in the fragmentation of production processes across national borders. As a result, the origin of products today is no longer *Made in Germany* or *Made in China*, but rather *Made in the World*. Global value chains afford companies from indus-

trial and, increasingly, from emerging countries the opportunity to design their production processes in a more cost- and time-efficient way, and thus to enhance their competitiveness. Global value chains also enable companies from developing nations to enter into global economic production processes. They no longer have to develop entire production lines, but can instead focus on the production of certain intermediate products and, armed with specific competencies, can integrate into global value

chains. Therefore, they have also become a central element of development-oriented economic promotion. Integration in global value chains is not only bound with the hope of more and better jobs, but also with the transfer of high-quality technology and enhanced managerial expertise.

At the same time, in recent years criticism has been increasingly levelled against integrating the global economy within global value chains. Global competition has resulted in high pressure on wage costs and working conditions in both industrial and developing nations. This criticism was clearly manifested, for example, in the reactions to the collapse of the Rana Plaza, a building in Dhaka, the capital city of Bangladesh, in which a number of textile companies were located. In the collapse in April 2013, more than 1,000 people lost their lives due to insufficient industrial safety measures. In the Western industrial nations, too, we can increasingly identify clearly articulated, critical reactions to the impact of globalisation, which are gaining in prominence on the political agenda. In 2016, it was mainly voters in regions of the US that are in particularly strong competition with low-income countries such as China, and are affected by unemployment and stagnating wages, who elected Donald Trump as American President. In Great Britain, a comparable public instrumentalisation of the repercussions stemming from global economic integration during the referendum on withdrawal from the European Union, led to the current Brexit negotiations.

It is becoming ever clearer that our trade arrangements call for greater emphasis on human and environmental factors. In addition to major changes in the political climate, the global fragmentation of production processes has also resulted in environmental degradation such as through the growth in production, and the increased transportation of goods by ships or aircraft. It can also be observed that global value chains have led to a transfer of production stages to national economies where less importance is placed on the structure and enforcement of environmental regulations.

Against the background of such challenges, global value chains ought to be designed in a more sustainable way. In particular, these requirements find their framework of reference in the 2030 Agenda for Sustainable Development, the UN Guiding Principles on Business and Human Rights and the Organisation for Economic Cooperation and Development (OECD) Guidelines on Multinational Enterprises. The 2030 Agenda, adopted by the United Nations in 2015, contains a series of starting points on how the interrelationship between global value chains and the three dimensions of sustainability can be taken into account. With a view to the economic dimension, the Sustainable Development Goal (SDG) 9 calls for developing infrastructure for inclusive and sustainable industrialisation, for example. Starting points for social sustainability can be found in the goals of eliminating global poverty (SDG 1), gender equality (SDG 5), creating decent work (SDG 8), and reducing inequality (SDG 10). The

goals on promoting responsible consumption and production (SDG 12) and combating climate change and reducing the pollution of world oceans (SDG 14), can be attributed to the environmental dimension of sustainability. Hence, the 2030 Agenda far exceeds the predecessor agenda, the Millennium Development Goals (2000–2015), whose main aim was to promote material wealth. In contrast to the Millennium Development Goals, the 2030 Agenda is no longer just a development policy agenda, but is instead a universal target system based upon the insight that development deficits exist both in developing and industrial nations, and that global development can only be achieved through intensified international cooperation (SDG 17).

The Guiding Principles on Business and Human Rights were adopted by the United Nations in 2011, and are based on existing agreements such as the International Charter for Human Rights and the Core Labour Standards of the International Labour Organisation (ILO). They comprise 31 principles for states and businesses to prevent business-related human rights violations within global value chains. The OECD guidelines formulate a code of conduct for companies operating at the international level, with regard to dealing with trade unions, environmental protection and the fight against corruption, to name a few. In 2016, Germany adopted the National Action Plan for Business and Human Rights, which aims to implement the three pillars of the UN guiding principles – state obligations, entrepreneur-

ial responsibility and access to redress for those affected. The National Contact Point established in 2001 in order to implement the OECD guidelines also serves as a complaints office for compliance with the UN guiding principles.

In light of the multidimensional nature of the global sustainability agenda, it is hardly surprising that promoting sustainability in global value chains is characterised by a number of conflicting goals. On the one hand, these conflicts concern the necessity of reconciling the three dimensions of sustainability: environmental, social and economic sustainability. What is more, they arise out of the principle of universality. The 2030 Agenda is not purely a development policy agenda, but also has the declared goal of promoting sustainability in developing, emerging and industrial nations. These countries often have fundamental differences of opinion when it comes to balancing the priorities of the three principles. Should for example environmental and social standards in global value chains be implemented at the same time across the world, or should the focus in developing countries primarily be placed on promoting economic productivity and industrialisation? This is just one example of the need to discuss multiple issues with respect to shaping globalisation.

A further aspect that needs to be considered when promoting sustainability in global value chains, is the responsibility of states and private actors, as illustrated for example by the UN Guiding Principles on Business and Human Rights.

The spread of global value chains and the associated significance of multinational companies present new challenges to the regulative scope and instruments of nation states. Production processes in global value chains extend across several countries and often continents, and thus elude the direct regulatory efforts of individual nation states. Intensifying international cooperation while at the same time strengthening regulatory capacity, especially in developing countries, is necessary in order to promote sustainability in global value chains. International organisations such as the World Bank and regional development banks like the Asian Development Bank play an important role here. Through a series of reports and databases, they are laying analytical foundations for the sustainable design of global value chains. Through their project work in developing countries, too, they aim to reinforce the economic, social and environmental effect of global value chains on local development. Moreover, we need to consider the role of those multinational businesses which have a special responsibility as lead firms in value chains. In this context, the impact that voluntary sustainability standards have on global value chains, and how multi-stakeholder approaches can be harnessed, which not only include governments and businesses but also affected social groups, is becoming increasingly important.

The objective of this study is to provide an overview of current knowledge on the interrelationship between sustainability and global value chains, and to draw

conclusions from it for the promotion of economic, environmental and social sustainability. In light of the fact that global value chains have undergone intensive research from a range of disciplinary perspectives since the mid-1990s, this study can only provide an overview. In doing so, it will not only consult scientific literature, but also reports from international organisations such as the World Bank, the United Nations or the World Trade Organisation; with the latter making increasing reference to the significance of sustainability in global value chains. The study does not claim to be exhaustive; rather it is intended to focus on topics and constellations, which are particularly important in view of the role of German and European politics, businesses and civil society actors.

Chapter 2 illustrates the reasons and consequences of the spread of global value chains, and the key role played by lead firms when managing global value chains. Chapter 3 justifies the need to promote sustainability in global value chains. The challenges surrounding economic, social and environmental sustainability in global value chains are discussed in this context. The key here is to point out central conflicting goals connected with the promotion of sustainability in global value chains. Chapter 4 will derive core recommendations for the promotion of sustainability in global value chains based on the previous chapters. Chapter 5 summarises the key findings of the study.



2. Spread of Global Value Chains

During the last three decades, global value chains have become a formative element of economic globalisation. Whereas products were once manufactured mainly in one country and then exported, from the early 1990s declining communication costs led to production processes being divided across national borders. Technological advances, particularly in information and communication

technology, have made it possible to fragment and coordinate complex production processes comprising a multitude of companies, across several countries and often continents (Baldwin, 2016). The trade in goods has been increasingly superseded by the trade in tasks (G. M. Grossman & Rossi-Hansberg, 2008). According to estimates, approx. 80 per cent of worldwide trade flows are processed within global

Box 1: Value Chains for Cars

Complex industrial products, such as cars, are often manufactured within global value chains. At the top of these value chains are mostly businesses, whose competitive advantage lies not only in designing technologically sophisticated products, but also in managing and coordinating complex value chains. For instance, the German car manufacturer BMW states that it cooperates with over 12,000 suppliers in more than 70 countries. Automobile production not only takes place in Germany, but increasingly in the important consumer markets themselves. The largest BMW factory is not located in Germany, but

rather in Spartanburg in the US state of South Carolina where it mainly produces SUVs for the US market. The majority of components necessary for production are purchased in close geographical proximity to the final production. BMW works closely with its suppliers and uses international standards such as ISO 9000 (quality) or ISO 14001 (environment), so as to not only ensure the quality of components and reliability of delivery, but also to minimise the environmental impact of production.

Source: own representation based on www.bmwgroup.com

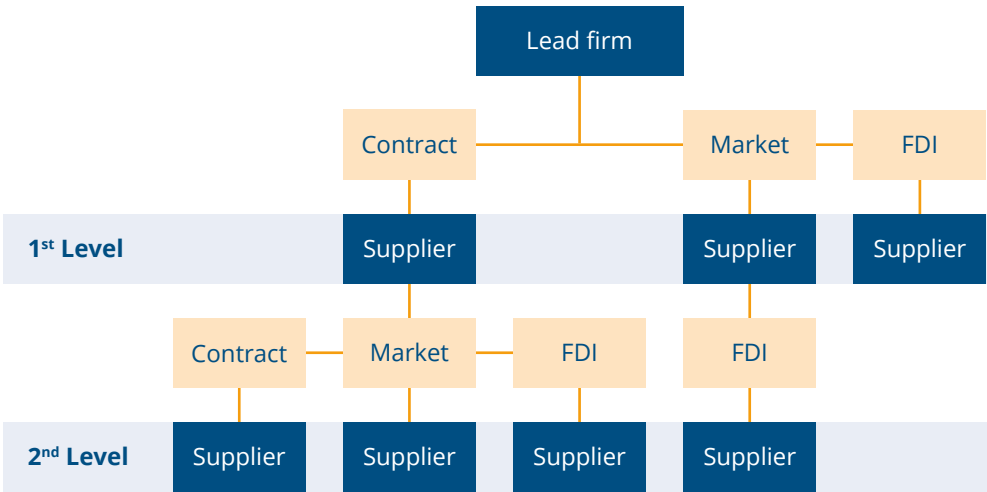
value chains (UNCTAD, 2013, p. 135). Not only are complex and technologically sophisticated products such as smartphones, passenger aircraft or automobiles manufactured in global value chains (Box 1), but also relatively simple products like coffee (UNCTAD, 2013, p. 142).

This value chain revolution has engendered new patterns of specialisation: while knowledge- and technology-intensive production stages often remained in the industrial states, labour-intensive production stages were increasingly located in developing nations with low wage costs. From now on, developing nations did not have to create entire

export industries, but were instead able to specialise in individual production stages, which since then have often benefited from their low labour costs. In some countries, these economic transformation processes have resulted in dynamic economic catch-up processes.

The increasing fragmentation of production processes makes it necessary to reassess the role of companies in the framework of global value chains. Research shows that so-called lead firms have a decisive influence on production parameters within value chains by determining which economic activities are manufactured in which quality, by which compa-

Chart 1: Complexity of Global Value Chains



Source: own representation of the author

nies and at which location in the world (see Box 2). Not only do lead firms exercise their management and coordination functions via direct control through subsidiary companies and foreign direct investments (FDI), they also specify the production parameters for legally independent supplier companies. Hence, they profoundly influence sustainable development on a global scale. The global value chains managed and coordinated by lead firms frequently extend across several levels of value added and manifest various forms of governance (see Chart 1). Depending on the corporate strategy, the type of product and the competen-

cies of suppliers, lead firms can exercise direct control over supplier companies (e. g. through foreign direct investments), maintain contractual relationships with their suppliers, or purchase intermediate products on the market (UNCTAD, 2013, pp. 141–144). This complexity is a consequence of the search for cost-saving potential and results in lead firms being confronted with the challenge of enforcing their quality and sustainability standards vis-à-vis suppliers whose activities they do not directly control (UNCTAD, 2013).

Box 2: Coordination and Management of Global Value Chains

The value chain concept has its origin in the business management approach to production processes, which consists of a complex network of activities (research and development, design, financing, production, marketing, sales etc.), within a corporate structure and between companies (Porter, 1985).

Central to the understanding of global value chains is the role of lead firms, which decide what is manufactured in which quantity and quality, by whom and at what location. These lead firms, depending on the sector, are not solely vertically integrated companies that control a range of production activities within their corporate structure. One example for this is German car manufacturers, which manage a number of production facilities across the globe. In most cases, trading companies, such as the German METRO AG, do not have their own international production facilities; however, their purchasing decisions enable them to have a key impact on production processes in supplier companies. Against this background, a general distinction can be made between producer-driven and buyer-driven value chains (Gereffi, 1994).

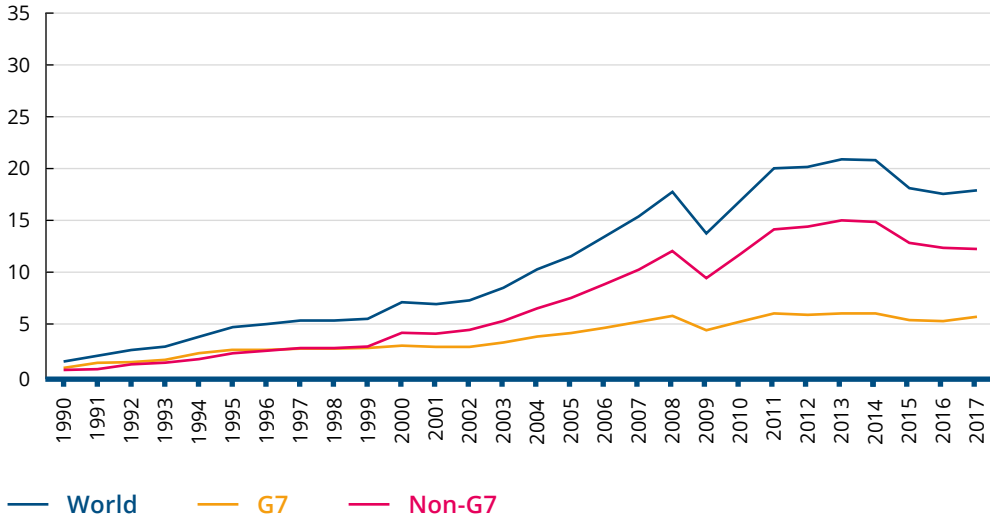
Research points towards different relationships between lead firms and supply companies. The concept of govern-

ance is referred to here (Humphrey & Schmitz, 2002a). Three intermediate forms of governance in global value chains can be distinguished between purely *market* and *hierarchical relationships* (Gereffi, Humphrey, & Sturgeon, 2005):

- › *Dependent value chains*, whereby suppliers are dependent on the lead firms, which exercise a high degree of control over production parameters.
- › *Modular value chains*, in which suppliers manufacture intermediate products according to the buyer's specifications in a standardised way, with the suppliers themselves deciding which technologies and processes to use.
- › *Relationship-based value chains*, in which relationships between buyers and suppliers are characterised by high levels of complexity and mutual dependence.

The various forms of governance of global value chains make it clear that lead firms do not have unlimited control over their value chains. Depending on the form of value chains, there are strong discrepancies regarding the impact on development and the distribution of profit between lead firms and supplier companies in some cases.

Chart 2: Global Exports, 1990–2017, in Trillion US Dollars



Source: Own representation on the basis of the World Integrated Trade Solution (WITS) database, online: <https://wits.worldbank.org/> (accessed on: 16/04/2019)

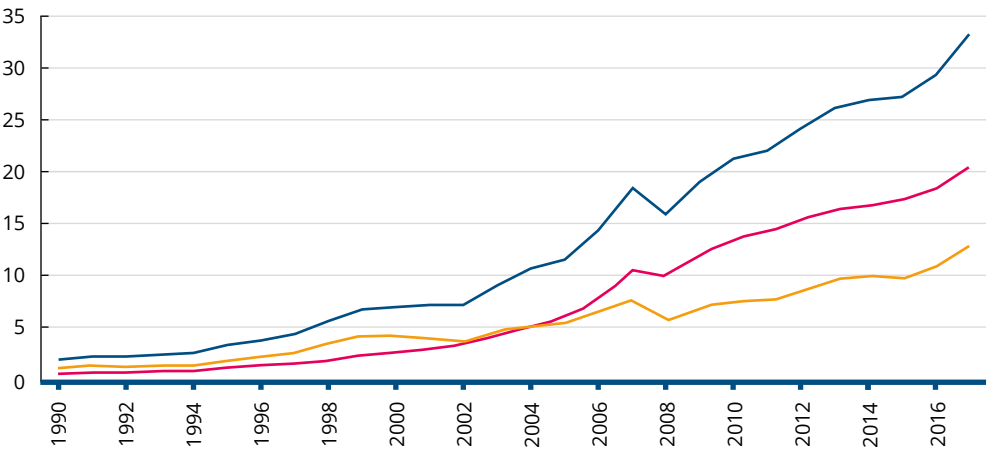
The spread of value chains resulted in a sharp growth in world trade, which has increased from 1.4 trillion US dollars to 17.8 trillion US dollars since the 1990s (Chart 2). Global trade stagnated in the wake of the financial crisis and collapsed again in the year 2014. It is especially striking that exports from G7 countries¹ have stagnated since the mid-1990s, while exports from other national economies dramatically increased since the turn of the millennium. Emerging and developing nations have considerably boosted their share of trade within global value chains. While the share of global trade from this group of countries, measured against actual value added, was still 20 per cent in the year 1990, it rose to 30 per cent in 2000 and to 40 per cent in 2010 (UNCTAD,

2013, p. 133). If we look at foreign direct investments, too, it becomes clear that the G7 states are losing their former supremacy (Chart 3). Since the mid-2000s, countries not belonging to the G7 have recorded higher FDI-inflows (measured against FDI stock), than the G7 countries. The foreign direct investment stock from non-G7 countries has surpassed that of the G7 countries since 2014.

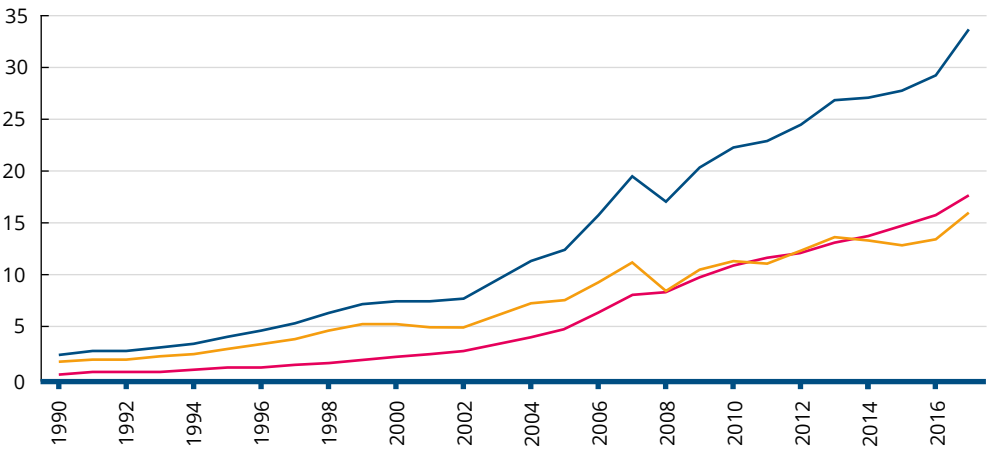
Only a few countries were able to reap long-term benefits from the revolution in the value chain. The economic growth of the Global South is a geographically highly concentrated phenomenon. Baldwin (2016, pp. 86–89) analyses the worldwide production capacities in the manufacturing industry, and illustrates that merely

Chart 3: Global Stocks of Foreign Direct Investments, 1990–2017 in Trillion US Dollars

FDI Inward Stock



FDI Outward Stock



— World — G7 — Non-G7

Source: Own representation based on UNCTAD (2013),
online: [https://unctad.org/en/pages/DIAE/World Investment Report/Annex-Tables.aspx](https://unctad.org/en/pages/DIAE/World%20Investment%20Report/Annex-Tables.aspx) (accessed: 16/04/2019)

six emerging and developing nations benefited from the loss of industrial production in G7 nations (China, India, Indonesia, Korea, Poland and Thailand). Industrialisation in these countries is the result of their tight integration into the value chains of Western European, Japanese or US American companies.

Recent investigations suggest that the spread of global value chains is stagnating and leading to important structural changes in the world economy, which in turn has ramifications on the promotion of sustainability. Global value chains thus reached their zenith in the mid-2000s, and hence prior to the global financial and economic crisis (Lund et al., 2019). This is evidenced by the fact

that value chains are less trade-intensive, fewer intermediate products are traded across national borders and the importance of services within value chains is on the increase. Global value chains are also becoming progressively knowledge-intensive, to the benefit of well-trained workers in particular. Ultimately, lead firms more and more frequently decide to locate production processes in their geographical vicinity. These changes, which are especially reinforced by digitalisation, may in future make it difficult for developing nations that are not geographically close to the growth poles of North America, Europe and Asia, to achieve economic development by integrating into global value chains (Lund et al., 2019).

1 The G7 consist of Germany, Great Britain, France, Italy, Japan, Canada and the United States of America.



3. Potentials and Challenges Surrounding Global Value Chains

This chapter discusses the potentials and challenges connected with the spread of global value chains. The prevalent opinion in scientific literature is that integration into global value chains is a prerequisite for fostering economic growth and development. Not all countries, companies and employees benefit from this integration into the global economy in equal measure, however. The proliferation of globally

networked production chains as a central component of global market integration, presents a number of challenges that are discussed in this chapter with regard to the three dimensions of sustainability explained below. Finally, key conflicting goals concerning the creation of economic, social and environmental sustainability are discussed.

3.1 Economic Sustainability

The spread of global value chains opens up new opportunities for developing nations to integrate into the world economy, and to promote national development. While their integration into the world economy was previously restricted primarily to the export of unprocessed raw materials, value chains make it easier for them to establish processing industries since they no longer have to manufacture entire products, but can instead specialise in individual production steps (World Bank, Institute of Developing Economies, Organisation for Economic Co-Operation and Development, University of International Business and Economics & World Trade Organisation, 2017). Countries that are more tightly integrated into value chains exhibit higher growth rates in most cases (UNCTAD, 2013, p.151).

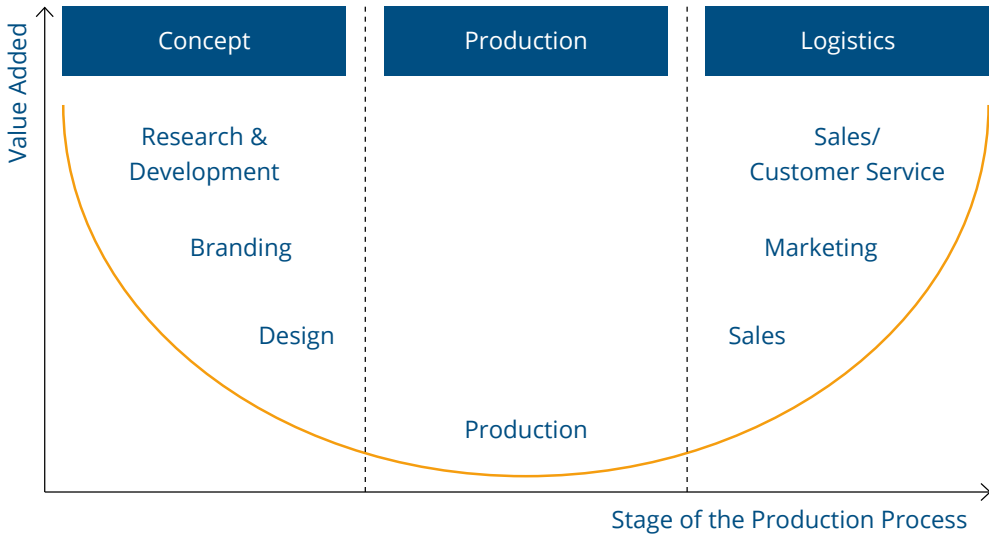
Cooperation with lead firms makes it possible for companies from developing nations to acquire skills enabling them to generate higher shares of value added. These learning processes are documented in the research literature (Kawakami & Sturgeon, 2012; Pietrobelli & Rabellotti, 2011). Especially in the context of FDI, subsidiary companies can learn how to use high-grade technologies and to acquire (intangible) knowledge. What is more, this knowledge is not only transferred directly to the subsidiary companies themselves; imitation processes and job changes by well-trained workers enable other national companies to benefit from the positive effects of FDI, too. However, research

also reveals that these processes do not occur automatically and depend on the absorption capacities of local companies, the general economic environment, and the education systems in those countries (Taglioni & Winkler, 2014).

Irrespective of the many advantages associated with integration into global value chains and FDI, developing nations face the challenge of not getting stuck in low value added segments, as the example of the textile industry shows. The manufacturing of textiles, particularly the cutting and sewing together of materials, is labour-intensive and requires a relatively low usage of both capital and technology. Owing to the low entry barriers in labour-intensive segments, companies from developing nations often face high levels of competitive pressure. The primary determining factor is a low price, which means these companies can only generate very low levels of value added. Using modern technologies and stimulating national innovation processes are necessary in order to increase productivity. Should this fail, then economic development will stagnate. Hence, these countries are stuck in a middle-income trap, where they are unable to offset rising wages by means of innovation (Eichengreen, Park & Shin, 2013; Kharas & Kohli, 2011; Ohno, 2009).

Companies from developing nations are thus presented with the challenge of improving their position in global value chains so as to generate higher shares of value added. In most cases, this challenge is described as upgrading and

Chart 4: Amount of Value Added According to Stage in Production Step (Smile Curve)



Source: Own representation according to Stan Shih, the founder of Acer, based on Rodrigue, Comtois & Slack (2016).

can be illustrated using the *Smile Curve* (Chart 4). The labour-intensive production steps, in which entry barriers are low and price competition is high, lie in the middle of the *Smile Curve*. These production steps are often characterised by low value added. Companies can pursue various strategies in order to achieve higher value added (Humphrey & Schmitz, 2002b): they can design their production processes more efficiently or enhance the design and quality of their products. Companies can also generate higher value added by expanding into upstream and downstream production segments such as research and development, branding, or by creating their own marketing structures. Ultimately, companies can branch

out into industry sectors that boast higher value added potential. For these upgrading strategies, a greater use of modern technologies and the acquisition of (intangible) knowledge is necessary, which usually rank among the core competencies of lead firms. The entry barriers to these production steps or segments in value chains with high value added are accordingly high.

The majority of companies, especially small- and medium-sized enterprises (SME), face difficulties when integrating into global value chains. This affects both SMEs in developing nations as well as in less-developed regions in industrialised nations. The reasons for the low

industrialisation of SMEs are high transaction costs associated with the search for suitable production sites and suppliers, or coping with different regulation systems, customs clearance or trade policy barriers. In most cases, export-oriented (large) businesses are characterised by higher levels of productivity, and place greater emphasis on the use of capital and modern technologies than (small and medium) enterprises, which mainly focus on the national market (Bernard, Jensen, Redding & Schott, 2007; Mayer & Ottaviano, 2008). Notwithstanding these particular challenges, networks of SMEs can be competitive on the international market by harnessing geographical proximity, intensive coordination, and local competitive advantages (e. g. thanks to a well-trained workforce) (Schmitz, 1995).

3.2 Social Sustainability

Integration into value chains has far-reaching implications for employment, wages and working conditions; yet these vary between industrial and developing nations. The research literature often points towards the positive impact of global economic integration on employment. Developing nations mostly integrate into labour-intensive segments of global value chains so that new jobs can be created by developing export-oriented industries. For companies in industrial nations, value chains afford the opportunity to design their production more efficiently in order to survive in global competition and secure jobs. Research shows

that national economies also benefit from investments in their national companies overseas.

Integration in global value chains is a necessary, but far from sufficient step for ensuring that deeper world economic integration actually translates into social development. National economies not only face the challenge of promoting economic upgrading, but of encouraging social upgrading as well. This can be defined as improvements to working conditions and remuneration, as well as securing fundamental workers' rights (Barrientos, Gereffi & Rossi, 2010, p. 301). In this context, reference is often made to the ILO *Decent Work Agenda*.

The challenges for social upgrading differ strongly according to sector, type of value chain, and the position of companies and countries in the respective value chain (Taglioni & Winkler, 2016, p. 200). In a number of sectors in which consumer goods are manufactured, such as the clothing, electronics and food industries, lead firms are coming under increased pressure from consumers and civil society actors to enforce strict labour, health and safety standards in their value chains. In principle, enforcing higher standards is exacerbated by the fact that a high price pressure often prevails in global value chains, which is determined by lead firms' production decisions and is passed on in the supplier relationships. That is why working conditions are usually the most difficult in second- and third-tier supplier companies.

A crucial factor for social upgrading² is wage development, which may vary depending on the worker categories. These differences can be illustrated by comparing wage trends for different employee groups in the information and technology industry in the USA and China between 1995 and 2009 (World Bank et al., 2017, p.3–6). Whereas in the USA wages for well-trained employees almost doubled, they only grew slightly for employees with an intermediate level of training, and even stagnated for low-qualified workers. By contrast, in China, all three employee groups benefited, albeit workers with good and intermediate training benefited more than the low-qualified.

This analysis of wage trends using the example of the information and technology industry, which has a strong international network, elucidates how integration into global value chains leads to a highly unequal distribution of winners and losers. Current research results demonstrate that imports from China have negative effects on employment and wage developments in processing sectors in the USA (Acemoglu, Akcigit & W., 2016; Acemoglu, Autor, Dorn, Hanson & Price, 2016).³ Moreover, empirical evidence indicates that globalisation goes hand in hand with increased levels of inequality, especially in developed countries (Jaumotte, Lall & Papageorgiou, 2013; Milanovic, 2013). A consequence of these developments is the growing scepticism in industrial nations towards the integration in the world market. This scepticism is mirrored

in the election of protectionist politicians such as during the US presidential elections, and the Brexit referendum in Great Britain. A survey conducted by the Pew Research Center (2018) highlights how only 30 to 40 per cent of the population in the USA and Europe believe that international trade creates jobs. In developing nations, on the other hand, approval of globalisation is particularly high among population groups working in sectors with strong international networks (Harms & Schwab, 2018).

3.3 Environmental Sustainability

Scientific literature has levelled criticism against the relationship between environmental sustainability and international trade for many years. Critics argue that a growth in trade – also due to the expansion and consolidation of global value chains – stands in conflict with environmental goals. As a rule, a distinction is made between three different effects of international trade on the environment (Copeland & Taylor, 1994; Grossman & Krueger, 1992). The *scale effect* emphasises the additional burden on the environment owing to higher economic activity, which usually arises in the wake of liberalising trade relations. By the same token, economic growth and increasing wages may lead to a higher demand for environmental standards and the use of environmentally-friendly technologies (*technology effect*). The extent to which the scale effect results in a greater, or the increased efficiency due to technology

effects, results in a lower environmental impact, is not least dependent on the right political framework conditions that help promote new and more efficient technologies (Altenburg & Assmann, 2017, p. 24).

According to the *composition effect*, trade liberalisation may lead to a redistribution of environmentally-intensive economic activities, in which they migrate from industrial states with high environmental standards, and settle in developing nations with lower standards. Current research shows that international trade and global value chains give rise to a transfer of emissions into (developing) nations, which have lower regulatory and financial capacities when it comes to dealing with their effects. In this context, we refer to embedded carbon. A large share of emissions arising from the production of export goods in developing nations must therefore be attributed to consumption in industrialised nations. UNCTAD (2013, p. 164) estimates that the production of export goods was responsible for 8.4 billion tonnes of emitted CO₂ in the year 2010, which is equivalent to 27 per cent of globally emitted CO₂. The distribution of embedded carbon varies considerably: in industrialised nations, merely eight per cent of emissions serve to satisfy consumption in other countries, whereas in developing nations this value is more than twice as high at 17 per cent (UNCTAD, 2013, p. 164).

In this context, recourse is often made to the environmental Kuznets curve, which depicts the relationship between economic growth and environmental

protection in the shape of an inverted U. According to this, initial economic growth in poor countries at first results in increased environmental pollution. As the level of development increases, the relative environmental burden decreases again (Selden & Song, 1994). The empirical evidence for the environmental Kuznets curve is ambiguous and often depends on the emissions under consideration.

However, even in those cases where the relationship between environmental pollution and economic growth confirms the predictions of the environmental Kuznets curve, it is most likely that the peak of emissions has not yet been reached in many industrial nations, too, and that economic growth and environmental pollution continue to be intrinsically linked (Ekins, 1997). On the basis of this ongoing link, it is argued that further regulatory measures are necessary in order to enforce higher environmental standards in both industrial and developing nations (Rodrik, 2014).

3.4 Conflicting Goals

Attempts to promote sustainability in global value chains are not only exacerbated by the complexity of necessary interventions, there are also a range of key conflicting goals to consider. These conflicting goals arise not only through the simultaneous promotion of the three sustainability dimensions; they also emerge with regard to different types of countries (industrialised, emerging and developing

nations), types of companies (large companies vs. SMEs) and time horizons. Some of the key conflicting goals will be presented in detail below:

- 1. Integration into global value chains has different effects for certain groups of countries.** Notwithstanding the necessity of a more differentiated assessment, it can be ascertained that, in industrialised nations, highly qualified specialists tend to benefit, whereas in emerging and developing nations, wider categories of employees, including low-skilled workers, are those who reap the benefits. The rise of a number of emerging and developing nations, primarily China, has led to economic inequality now being more of an interstate problem than an intrastate one (Rodrik, 2017). The crisis of the middle classes in a number of industrialised nations is at least partly due to the outsourcing of jobs to emerging and developing nations.⁴ It is therefore hardly surprising that low-skilled workers in industrialised nations in particular, are increasingly sceptical about global economic integration. By contrast, for developing nations, which have scarcely participated in global value chains until now, the question concerns the degree to which they can attract jobs in labour-intensive industries that become vacant due to wage increases in countries like China as a result of economic growth, or whether these jobs will disappear because production becomes increasingly automated.
- 2. Only a small proportion of large companies with high levels of productivity and technological competence are affected by the spread of global value chains.** Against this backdrop, it is essential to cooperate with these lead firms in order to promote sustainability in value chains. By virtue of their capacity for coordination, it is these companies which enforce the product, process, environmental and working standards in value chains, and can therefore influence sustainable development in other countries. It should not be forgotten, however, that in most countries the vast majority of economic output and jobs is produced by (small and medium) enterprises, whose production has scarcely if any international focus. Hence, measures for promoting sustainability should not be strictly limited to the small group of internationally oriented major businesses, but should also bear small and medium-sized enterprises in mind.
- 3. In light of this, the enforcement of (excessively) high sustainability standards may have unintended consequences for developing nations.** The enforcement of high standards, particularly for protecting the environment and workers, is important for advancing sustainability in global value chains. Yet, there are a series of conflicting goals that are often overlooked in current debates on development policy (Altenburg, 2007, pp. 26–27). It is precisely the

relatively lower environmental and labour standards which enable developing nations to integrate into the global economy and generate economic growth, employment and tax revenues. The promotion of high environmental and social standards in supplier companies from individual sectors or countries, may result in them becoming less competitive and being displaced by companies in countries subject to lower levels of regulation. Furthermore, excessively high environmental and social standards may lead to small suppliers from the informal sector being driven out of the market. Beyond the necessary implementation of a number of minimum standards such as the ILO core labour standards, it is essential to design sustainability standards according to the countries' level of development and ability to compete. What is more, the advancement of environmental and social standards should be linked to measures for private sector development in order to enhance local businesses' ability to compete. Boosting the administrative capacity of governments and business associations also plays a role here, since they are important for acquainting national companies with higher standards.

4. **A further conflicting goal within global value chains lies between economic and social upgrading.** As already described above, the goal of economic upgrading is to generate higher shares of value added through greater levels of productiv-

ity in companies and national economies. Social upgrading, on the other hand, means improving working conditions and wages and complying with workers' rights. However, economic upgrading achieved by higher labour productivity in order to reduce wages and work safety standards through the increased use of machines, may provoke a deterioration in the social dimension of sustainability. Better training of workers plays a crucial role in light of this.

5. **Many decision-makers and businesses, especially in developing nations, are faced with the inherent conflict between economic and environmental sustainability.** Many national development strategies are still based on the motto "grow first, clean up later". On the one hand, this refers to the fact that developing nations bear only little historical blame for climate change. While, on the other, it is assumed that environmental and climate protection will be easier in future because environmental technologies will be available at lower costs, for example. In light of the growing awareness of endangering planetary limits, such as climate change or pollution of the world's oceans, as well as the contamination of local air, water and soil systems, it is necessary to decouple economic development from environmental pollution. It is thus vital that industrial policy measures are designed to decouple economic growth from environmentally-hazardous emissions.

6. **The promotion of sustainability in global value chains is impeded by a further conflicting goal, namely between the different time horizons (Altenburg, 2007).** For instance, not promoting higher productivity through the use of modern technologies may secure jobs over the short term. This, however, prevents structural change that is indispensable for ensuring long-term competitiveness. Yet, this competitiveness can only be guaranteed if industrial policy strategies are mindful of planetary limits, which necessitate long-term decoupling of economic growth from emissions. The same applies to enforcing higher standards which contribute towards the long-range development of a well-trained workforce, and the safeguarding of social peace.

2 Barrientos, Mayer, Pickles and Posthuma (2011) identify three different paths that may enable social upgrading: 1) The living conditions of people who work from home or under informal conditions can be improved through safer and better contracts or individual health care; 2) the living conditions of low-qualified workers can be improved by them finding employment in labour-intensive industries in which they, for example, transfer from subsistence agriculture to the textile industry; and 3) workers can, by means of enhanced training and education, switch to better paid employment requiring higher levels of education.

3 Similar developments can be observed in a number of other countries. By contrast, in spite of high import competition from Eastern Europe and China, Germany has been able to offset its loss of jobs by increasing exports to precisely these countries (Dauth, Findeisen & Suedekum, 2014).

4 An overview of the research literature shows that, in addition to international trade, technological advancements have significantly contributed towards wage inequalities (Helpman, 2016).



4. Promoting Sustainability in Global Value Chains

The advancement of sustainability in global value chains is shaped by a high degree of complexity and numerous conflicting goals. This complexity is reflected in the 2030 Agenda, with its 17 goals and 169 sub-goals. The 2030 Agenda is based on the understanding that development is more than just the increase of material well-being, which formed the focus of the Millennium Development Goals (2000–2015). The 2030 Agenda makes it clear that long-standing material well-being can only be achieved and ensured

if the planetary limits are not exceeded, in other words, only if dangerous climate change beyond 1.5° C, pollution of the oceans, the erosion of soil, the loss of biodiversity and local air pollution, can be prevented. At the same time, progress towards achieving economic and ecological sustainability must not be sought at the expense of social development, whereby workers are exploited, certain social groups, in particular women, are marginalised and inequality increases both globally and nationally.

4.1 Designing Complexity

To ignore this complexity and the associated conflicting goals, for example by emphasising one or the other sustainability dimension or goal, would represent an obstacle to achieving development success over the long term. Even a sole focus on developing nations is a reduction that contradicts the spirit of the 2030 Agenda, with its explicitly universal claim. Therefore, if the growing inequality in industrialised states is ignored, this may undermine social support for international cooperation vital for promoting sustainable development on a worldwide scale.

The promotion of sustainability and thus sustainable value chains, also requires a change of thinking with regard to clearly demarcated areas of responsibility. This is because it is only through more cooperation across “policy silos” that illusory solutions, which view progress in a sustainability dimension to be merely feasible when made at the expense of other dimensions, can be prevented. There is a growing awareness of the necessity for greater interministerial cooperation at both national and international level. In Germany, for example, the National Contact Point for implementing the OECD Guidelines on Multinational Enterprises is supported by an interministerial steering group. The so-called Climate Cabinet was recently established in the policy field of climate policy, which is so important for successfully implementing the 2030 Agenda. At the international level, the example of the G20 illustrates how the 2030 Agenda should become a

guideline principle for all strands of work within G20 (Scholz & Brandi, 2018). It is important to further build on these initial approaches towards an integrated policy understanding, which brings interdependencies between the three sustainability dimensions and national as well as global problems to the fore.

The complexity facing actors from politics, the economy and civil society requires a special focus on inclusive processes. The promotion of sustainable value chains is tantamount to constantly balancing the potential conflicting goals between the three sustainability dimensions, between various country groups and generations. Against this backdrop, multi-stakeholder processes appear to be an appropriate means through which the different interests and needs can be balanced (Fessehaie & Morris, 2018). Above all, it seems to be particularly important to involve the affected population groups – in developing and industrialised nations – in the necessary discussion on the sustainable design of global value chains.

4.2 Working with Lead Firms

The complexity surrounding the promotion of sustainability in global value chains is not only reflected in the diversity of goals, but also in the number of actors involved. In the course of the second half of the twentieth century, an increasing number of trade barriers such as customs and quotas were dismantled. During this process, the significance of regulations and standards, crucial for access to and

progression within global value chains, increased (Kaplinksy & Morris, 2017). Regulations are mostly enacted by nation states but also by international organisations, are usually legally binding, and determine the market access for foreign producers. Moreover, there are a number of standards whose requirements often exceed the level of (inter)state regulations. With the help of standards, lead firms “govern” their value chains by determining which products are manufactured by suppliers in which quality, and at what price. Here, the lead firms often use externally defined standards, such as the quality and environmental standards (ISO 9000 and ISO 14000) of the International Organisation for Standardisation. Furthermore, lead firms also develop their own sustainability standards, the observance of which determines whether suppliers can access global value chains. By introducing and enforcing these standards, lead firms are reacting to the increasing pressure by consumers and civil society groups, but also international organisations, which urge them to impose more environmental and occupational safety in their value chains.

Encouraging sustainability in global value chains thus starts at the top of the value chains, with the lead firms. They often have a vested interest in enforcing quality, environmental and social standards given that they are faced with changing preferences of consumers in the sales markets, which call for compliance with high social and environmental standards. State measures can work towards integrating suppliers in the value chains,

focusing on improving capacities and financing supplier companies (particularly among small- and medium-sized enterprises), or promoting sustainability standards. In the cooperation with lead firms, particular attention should be paid to advancing technology and knowledge transfer in order to ensure that the participation of suppliers actually results in broad and effective development processes. National governments play a vital liaison role when implementing international obligations such as the UN Guiding Principles on Business and Human Rights, or the OECD Guidelines on Multi-national Enterprises by national businesses. Germany is pursuing an ambitious objective here: by 2020, half of all businesses with over 500 employees are expected to have integrated the human rights obligations of the UN guiding principles into their corporate processes.

A legal obligation to observe fundamental human rights in global value chains at the national level may support the implementation of international initiatives. In light of the fact that lead firms also face fierce international competition, many national (legislative) initiatives, often focusing on national companies, fall short of the mark. Effective, industry-wide initiatives should therefore be coordinated and put into practice at the European and international level.

Beyond cooperating with lead firms, policy-makers should also aim to advance the capacities of host countries. This should not be limited solely to developing a favourable business environment

for national and international investors. Strong institutions are one of the essential requirements for promoting sustainability in global value chains, which can formulate, enforce and monitor regulatory measures (UNCTAD, 2013). It is not only a matter of advancing these regulatory capacities in governments, but also in businesses and associations, trade unions and non-governmental organisations. Business development in developing nations should not merely take place within the scope of bilateral measures, but also through multilateral and regional development organisations such as the World Bank, UNCTAD or the Asian Development Bank. Not only do these organisations have specific knowledge, particularly at a national level, they can also help to enhance the effectiveness of invested resources.

4.3 Making Sustainability Standards Inclusive

An instrument for promoting sustainability in global value chains that has become more important over the last two decades is voluntary sustainability standards. These standards aim to create market incentives for sustainable production. The standards have their origins in private initiatives, and are thus initiated by businesses or non-governmental organisations (UNFSS, 2018). There are now over 240 different voluntary sustainability standards encompassing a great number of countries and sectors. Examples are the standard systems of the Forest Stewardship Councils (FSC) for sustainable

forestry, or the Roundtable on Sustainable Palm Oil (RSPO) for sustainable palm oil production; both of which are supported by multi-stakeholder initiatives. For example, in light of the complexity surrounding existing sustainability standards and seals, Germany witnessed the founding of the *Siegelklarheit-Initiative* (Seal Clarity Initiative),⁵ which aims to promote sustainable consumption, and the sustainability compass for sustainable public procurement.⁶

Voluntary sustainability standards are also gaining in significance because an increasing number of lead firms are making their purchase decisions based on these standards (Lee, Gereffi & Beauvais, 2012). Furthermore, there is a global focus on the potential of these standards for fulfilling the 2030 Agenda (WWF, 2017). The potential of sustainability standards to provide businesses, especially from developing nations, with access to high value added segments in global value chains and hence to attractive markets in industrialised nations, is confronted by a number of challenges. Fulfilling the standards incurs costs since production processes need to be adapted, workers trained and certificate costs have to be borne. It is easier for large businesses to meet these costs than it is for small-and medium-sized enterprises. Due to the fact that there are often several standards for one product class or industry, businesses frequently have no other option than to fulfil several standards at once, which in turn further increases costs. Voluntary sustainability standards may represent a real barrier to market access in this context. Against this background, national

governments and international organisations, such as the United Nations Forum on Sustainability Standards, are called upon to enhance the transparency and comparability of the different standards (UNFSS, 2018). What is more, particularly small- and medium-sized enterprises in developing nations require technical and financial support in order to navigate the increasingly complex system of voluntary sustainability standards, and harness it so as to advance economic, environmental and social sustainability (Sommer, 2017).

4.4 Making Economic Development Environmentally-Friendly

The ongoing process of climate change and the transgression of a number of planetary limits (Rockström et al., 2009), make intensified efforts towards environmentally-friendly global value chains urgently necessary. Without a fundamental decarbonisation of the global economy, economic development in industrialised and developing nations will be at risk. One example for this is the fact that a majority of economic output is produced in coastal regions, which are under threat from rising sea levels owing to climate change. The welfare losses due to environmental pollution are estimated at more than 4.6 trillion US dollars, or 6.2 per cent of the global economic output (Landrigan, 2017). These environmental costs are mostly understood as externalities, the costs of which do not have to be borne by the polluters. Considering that market prices alone cannot

foster environmental transformation, the incentives for economic actors need to be fundamentally adapted so as to decouple economic production from emissions and resource consumption.

Economic policy instruments that have been used in industrialised and developing nations since day one, should thus be geared more strongly towards achieving a decoupling of economic production from emissions (Altenburg & Assmann, 2017). In this respect, it is important to promote certain technological developments – such as renewable energies, electromobility or the recycling of raw materials – which contribute towards this decoupling. At the same time, it is important to create incentives in order to limit the use of climate and environmentally harmful technologies and production processes. Important instruments in this regard are emissions trading schemes and environmental taxes, which have already been introduced in some countries. These systems need to be further expanded and increasingly linked both within Europe and worldwide. Moreover, government policies for the advancement of development and research, technological innovation processes and international cooperation should be reinforced. Instigating and speeding up these transformation processes requires a change of perspective, particularly in the political sphere, since many companies are already promoting environmentally-friendly value chains – not least because they are linked to a range of co-benefits (lower resource consump-

tion, recycling of waste products etc.). The introduction of environmental standards not only enables efficiency gains, but also boosts competitiveness as it facilitates access to premium markets.

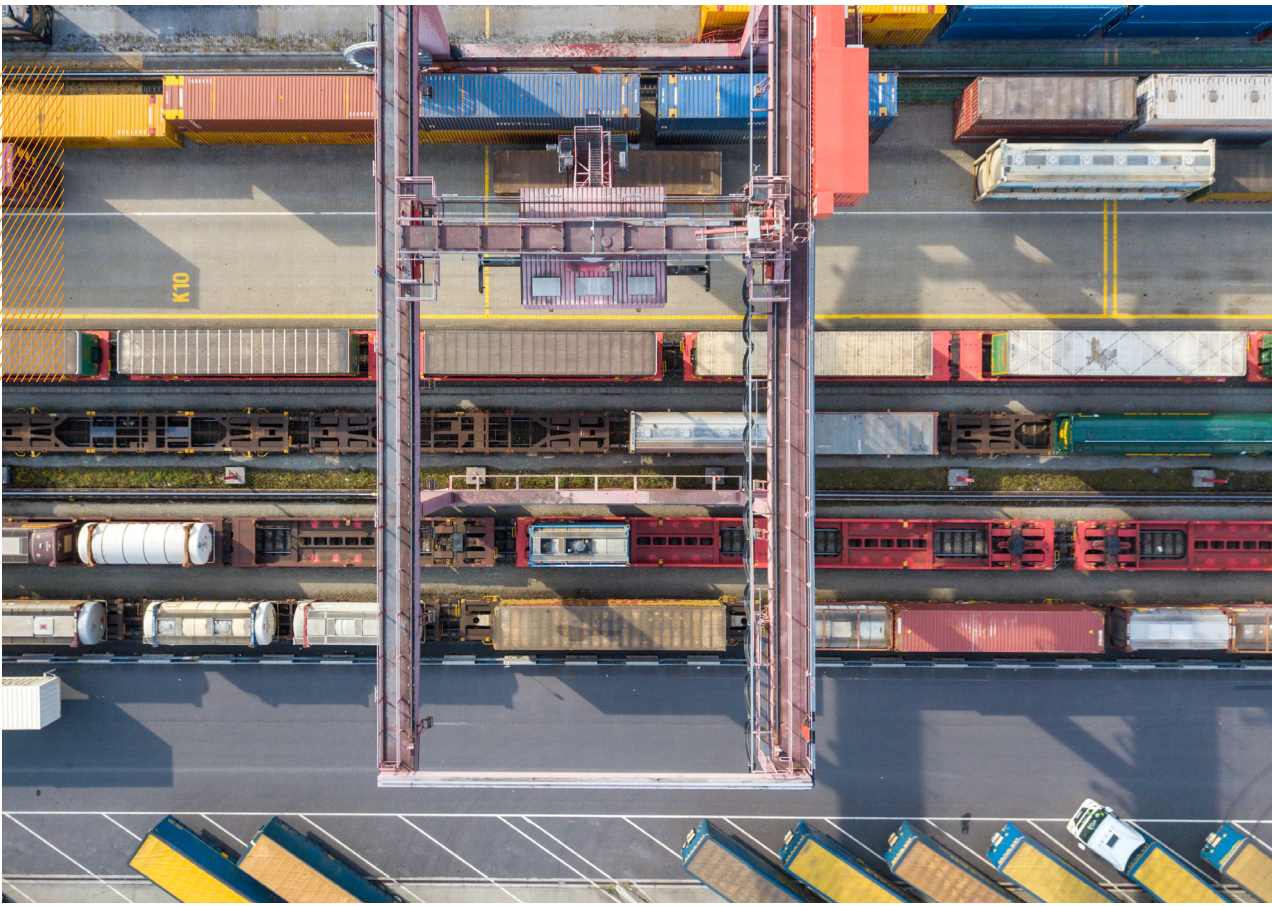
4.5 Realigning State Adaptation Policies

If economic policy and entrepreneurial decisions willingly accept growing inequality between various population groups, then they increase the risk of protectionist counter trends as we can currently observe in a number of industrialised states. These trends not only pose a danger to economic development in industrialised states. The contagion effects within global value chains mean that developing nations are affected by these negative repercussions, too. In lieu of reducing international networks by creating barriers to imports and foreign investments, greater focus should be placed on enhanced national adaptation policies. These measures should not only aim to absorb the negative shocks caused by international trade, but also help workers adapt to technological change. These measures are gaining in importance, particularly due to the progressive digitalisation of the economy.

State measures for promoting social sustainability should therefore not only be targeted at compensating or retraining workers whose jobs disappear due to international trade (Akman et al., 2018). These programmes are usually for a limited period and unsuitable for offsetting job losses triggered by technological changes, which are often more significant than the effects of trade (Acemoglu et al., 2016). In order to curtail the effects of international economic integration and promote its acceptance, investments need to be made in the development of national social security and education systems. Within international bodies such as the G7 or G8, Germany should continue to highlight the importance of social security systems as a prerequisite for successful economic integration. Furthermore, an emphasis is placed on active labour market policies that can facilitate the mobility of workers as regards transferring to new jobs within and between sectors (International Monetary Fund, World Bank & World Trade Organisation, 2017).

5 See online at <https://www.siegelklarheit.de/home> [accessed on: 27/05/2019].

6 See online at <https://kompass-nachhaltigkeit.de/> [accessed on: 27/05/2019].



5. Summary

Global value chains are the central structuring element of the global economy and thus one of the most important target areas for promoting sustainable development. The spread of global value chains has resulted in a fragmentation of production processes across national borders, which a number of emerging and developing nations have benefited from. Lead firms play a key role in global value chains because they determine the parameters which, in turn, define the production processes of subsidiary and supplier companies on a global scale. Value

chains are becoming increasingly regionalised in the wake of economic growth in a series of emerging nations, changing preferences on the part of businesses as well as digitalisation and automation.

The study focused on the three dimensions of sustainable development as expressed in the 2030 Agenda. The 2030 Agenda makes a number of references to global value chains, including with respect to alleviating poverty and inequality, promoting inclusive industrialisation, decent work as well as climate- and environmen-

tally-friendly production processes. For politics, businesses and civil society, the 2030 Agenda, the UN Guiding Principles for Business and Human Rights and the OECD Guidelines on Multinational Enterprises, represent a central frame of reference for the advancement of sustainable value chains.

This study emphasises that measures for promoting sustainability in global value chains need to observe a series of conflicting goals:

- Integration into global value chains has varying impacts on certain country types and population groups; whereas in industrial states it is mainly highly-qualified employees who reap the benefits, the advantages are more widely spread in emerging and developing nations.
- Only a small number of businesses are integrated into global value chains. However, promoting sustainability must not be restricted to these internationally integrated businesses, but must also address businesses operating in national markets.
- When enforcing high sustainability standards, attention needs to be paid to unintended negative consequences for countries and businesses that cannot bear the greater costs of implementing these standards.
- Economic upgrading, in other words improving the productivity of businesses, can result in social

downgrading; this is why it is necessary to renew efforts for improving the training of workers.

- One-dimensional measures for stimulating economic development are confronted with the necessity of decoupling production processes from environmentally hazardous emissions.
- Finally, there is another conflicting goal between short-term measures and long-term sustainability, which is greatly significant as regards the necessity to decarbonise the global economy and adapt businesses to climate change.

Against the backdrop of these six conflicting goals, the study deduced five key recommendations for better regulations and standards for the promotion of sustainability in global value chains:

Firstly, entrepreneurial and political initiatives for advancing sustainable value chains need to recognise the complexity described at the outset, and avoid prioritising dimensions of sustainability in a one-sided manner. The above-mentioned conflicting goals cannot be circumvented in most cases, and thus require inclusive political processes; these include multi-stakeholder forums in order to balance the different interests of the actors concerned.

Secondly, lead firms must be defined as the key players in global value chains and hence as primary partners for policy-

makers; for example to promote sustainability standards in global value chains and to foster the competitiveness of supplier companies through technology and knowledge transfer. Here it is important to refrain from purely national support programmes and regulations, and instead to coordinate these at the European and international levels.

Thirdly, it is imperative to ensure more transparency and comparability between individual standards in view of the spread and growing importance of voluntary sustainability standards achieved via international cooperation. What is more, small- and medium-sized enterprises in developing nations require financial and technical help in order to facilitate sustainable development with the aid of these standards.

Fourthly, the ongoing burden placed on our planetary limits requires additional measures to decouple production from environmentally hazardous emissions. Economic policy measures should therefore be orientated more towards climate- and environmentally-friendly technologies and production processes, in order to support this transformation.

Fifthly, better adaptation measures by policy-makers are necessary owing to the unequal distribution effects through international trade in global value chains – but increasingly as a result of automation processes in the wake of digitalisation, too. These should not specifically target the workers whose jobs are negatively affected by international trade, but should instead generally promote mobility within and between sectors as well as improving social security and education systems.

Bibliography

- A** Acemoglu, D., Akcigit, U., & W., K. (2016). Networks and the Macroeconomy: An Empirical Exploration. *NBER Macroeconomics Annual*, 30, 273–335.
- Acemoglu, D., Autor, D., Dorn, D., Hanson, G., & Price, B. (2016). Import Competition and the Great US Employment Sag of the 2000s. *Journal of Labor Economics*, 34, 141–198.
- Akman, S., et al. (2018). Mitigating the Adjustment Costs of International Trade. *T20 Policy Brief*.
- Altenburg, T. (2007). *Donor approaches to supporting pro-poor value chains*. Report prepared for the Donor Committee for Enterprise Development Working Group on Linkages and Value Chains.
- Altenburg, T. & Assmann, C. (Eds.). (2017). *Green Industrial Policy. Concept, Policies, Country Experiences*. Geneva, Bonn: UN Environment, German Development Institute/Deutsches Institut für Entwicklungspolitik (DIE).
- B** Baldwin, R. (2016). *The Great Convergence. Information Technology and the New Globalization*. Cambridge, Mass.: Harvard University Press.
- Barrientos, S., Gereffi, G., & Rossi, A. (2010). *Economic and Social Upgrading in Global Production Networks: Developing a Framework for Analysis*. Manchester: Manchester University. *Capturing the Gains Working Paper 2010/03*.
- Barrientos, S., Mayer, F., Pickles, J., & Posthuma, A. (2011). Decent Work in Global Production Networks: Framing the Policy Debate. *International Labour Review*, 150(3–4), 299–317.
- Bernard, A. B., Jensen, J. B., Redding, S. J., & Schott, P. K. (2007). Firms in International Trade. *Journal of Economic Perspectives*, 21(3), 105–130.

- C** Copeland, B. R., & Taylor, M. S. (1994). North-South Trade and the Environment. *The Quarterly Journal of Economics*, 109(3), 755–787.
- D** Dauth, W., Findeisen, S., & Suedekum, J. (2014). The Rise of the East and the Far East: German Labor Markets and Trade Integration. *Journal of the European Economic Association*, 12(6), 1643–1675. doi:10.1111/jeea.12092.
- E** Eichengreen, B., Park, D., & Shin, K. (2013). *Growth Slowdowns Redux: New Evidence on the Middle-Income Trap*. NBER Working Paper No. 18673.
- Ekins, P. (1997). The Kuznets Curve for the Environment and Economic Growth: Examining the Evidence. *Environment and Planning A: Economy and Space*, 29(5), 805–830.
- F** Fessehaie, J. & Morris, M. (2018). *Global Value Chains and Sustainable Development Goals: What Role for Trade and Industrial Policies?* Genf: International Center for Trade and Sustainable Development.
- G** Gereffi, G. (1994). The Organisation of Buyer-Driven Global Commodity Chains: How US Retailers Shape Overseas Production Networks. In G. Gereffi & M. Korzeniewicz (Ed.), *Commodity Chains and Global Capitalism* (pp. 95–122). Westport, CT: Praeger.
- Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, 12(1), 78–104.
- Grossman, G. & B Krueger, A. (1992). *Environmental Impacts of a North American Free Trade Agreement* In P. M. Garber (Ed.). *The Mexican-US Free Trade Agreement*, Cambridge: MIT Press, 1–10.
- Grossman, G. M. & Rossi-Hansberg, E. (2008). Trading Tasks: A Simple Theory of Offshoring. *American Economic Review*, 98(5), 1978–1997.
- H** Harms, P. & Schwab, J. (2018). Like it or not? How the economic and institutional environment shapes individual attitudes towards multinational enterprises. *The World Economy* 42(3), 636–667.

Helpman, E. (2016). Globalization and Wage Inequality. *NBER Working Paper No. 22944*.

Humphrey, J. & Schmitz, H. (2002a). *Developing Country Firms in the World Economy: Governance and Upgrading in Global Value Chains*. Duisburg: Institut für Entwicklung und Frieden, INEF Report, Heft 61/2002.

Humphrey, J. & Schmitz, H. (2002b). *How Does Insertion in Global Value Chains Affect Upgrading in Industrial Clusters?*. *Regional Studies* 36(9), 1017–1027.

- I International Monetary Fund, World Bank, & World Trade Organization (2017). *Making Trade an Engine of Growth for All: The Case for Trade and for Policies to Facilitate Adjustment*. Washington, Genf: International Monetary Fund, World Bank and the World Trade Organization.

ISEAL. (2013). *Principles for Credible and Effective Sustainability Standards Systems. ISEAL Credibility Principles*. ISEAL Alliance.

- J Jaumotte, F., Lall, S., & Papageorgiou, C. (2013). Rising Income Inequality: Technology, or Trade and Financial Globalization? *IMF Economic Review*, 61, 271–309.

- K Kawakami, M. & Sturgeon, T. J. (Eds.). (2012). *The Dynamics of Local Learning in Global Value Chains: Experiences from East Asia*. London: Palgrave Macmillan.

Kharas, H. & Kohli, H. (2011). What Is the Middle Income Trap, Why do Countries Fall into It, and How Can It Be Avoided? *Global Journal of Emerging Market Economies*, 3(3), 281–289.

- L Landrigan, P. J. e. a. (2017). The Lancet Commission on pollution and health. *The Lancet*.

Lee, J., Gereffi, G., & Beauvais, J. (2012). Global value chains and agrifood standards: Challenges and possibilities for smallholders in developing countries. *Proceedings of the National Academy of Sciences*, 109(31), 12326–12331.

- Lund, S., Manyika, J., Woetzel, J., Bughin, J., Krishnan, M., Seong, J., & Muir, M. (2019). *Globalization in Transition: The Future of Trade and Value Chains*. McKinsey Global Institute.
- M** Mayer, T., & Ottaviano, G. I. P. (2008). The Happy Few: The Internationalisation of European Firms. *Intereconomics*, 43(3), 135–148.
- Milanovic, B. (2013). Global Income Inequality in Numbers: In History and Now. *Global Policy* 4. 198–208.
- O** Ohno, K. (2009). *Avoiding the Middle-Income Trap: Renovating Industrial Policy Formulation in Vietnam*. Hanoi und Tokio: Vietnam Development Forum (VDF), National Graduate Institute for Policy Studies (GRIPS).
- P** Pew Research Center. (2018). Americans, Like Many Other Advanced Economies, Not Convinced of Trade's Benefits. *Pew Research Center*.
- Pietrobelli, C. & Rabellotti, R. (2011). Global Value Chains Meet Innovation Systems: Are There Learning Opportunities for Developing Countries? *World Development* 9(7): 1261–1269.
- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.
- R** Rockström, J., et al. (2009). A safe operating space for humanity. *Nature*, 461(7263), 472–475.
- Rodrigue, J.-P., Comtois, C., & Slack, B. (2016). *The geography of transport systems*. New York Routledge.
- Rodrik, D. (2014). Green Industrial Policy. *Oxford Review of Economic Policy*, 30(3), 469–491.
- Rodrik, D. (2017). *Is Global Equality the Enemy of National Equality?* Harvard University.
- S** Sato, M. (2012). Embodied carbon in trade: a survey of the empirical literature. *Journal of Economic Surveys*, 28(5), 831–861.

Schmitz, H. (1995). Collective efficiency: Growth path for small-scale industry. *The Journal of Development Studies*, 31(4), 529–566.

Selden, T. M. & Song, D. (1994). Environmental Quality and Development: Is There a Kuznets Curve for Air Pollution Emissions? *Journal of Environmental Economics and Management*, 27(2), 147–162.

Scholz, I. & Brandi, C. (2018). Implementing the 2030 Agenda for Sustainable Development: Achievements and Limitations of the G20 Presidency in 2017. *Global Summitry*, 3(2), 156–175.

Sommer, C. (2017). *Drivers and Constraints for Adopting Sustainability Standards in Small and Medium-sized Enterprises (SMEs)*. Bonn: Deutsches Institut für Entwicklungspolitik Discussion Paper 21/2017.

T Taglioni, D. & Winkler, D. (2014). Making Global Value Chains Work for Development. Washington: World Bank. *Poverty Reduction and Economic Management Network Economic Premise No. 144*.

Taglioni, D. & Winkler, D. (2016). *Making Global Value Chains Work for Development*. Washington: The World Bank.

U UNCTAD. (2013). *World Investment Report 2013. Global Value Chains: Investment and Trade for Development*. New York and Geneva: United Nations.

UNFSS. (2018). *Voluntary Sustainability Standards, Trade and Sustainable Development*: United Nations Forum on Sustainability Standards.

W World Bank. (2011). *Global Development Horizons 2011. Multipolarity: The New Global Economy*. Washington: The World Bank.

World Bank, Institute of Developing Economies, Organisation for Economic Co-Operation and Development, University of International Business and Economics, & World Trade Organization. (2017). *Global Value Chain Report 2017. Measuring and Analyzing the Impact of GVCs on Economic Development*. Washington D.C.: World Bank.

WWF. (2017). *SDGs Mean Business: How Credible Standards Can Help Companies Deliver the 2030 Agenda*. WWF-ISEAL joint report.

- Z Zhang, Z., Zhao, Y., Su, B., Zhang, Y., Wang, S., Liu, Y., & Li, H. (2017). Embodied carbon in China's foreign trade: An online SCI-E and SSCI based literature review. *Renewable and Sustainable Energy Reviews*, 68, 492–510.

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Global value chains are the central structuring element of the global economy and thus one of the most important target areas for promoting sustainable development. In addition to opportunities for economic growth and development, the expansion of globally networked production chains also presents a number of challenges as reflected in the conflicting goals between the three dimensions of sustainability (environmental, social and economic), as well as the priorities of various actors. Against the background of these conflicting goals, the study provides recommendations for better regulations and standards so as to promote sustainability in global value chains.