

Sustainable Supply Chains



Global cooperative regional economies
for prosperity and resilience

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The 10 key messages of this paper

- 1 | COVID-19 is just one example of possible **future crises** that will massively shake up widely networked global value chains.
- 2 | Intensified transition to **resilient social and economic systems** is urgently needed to limit the effects of such developments.
- 3 | A promising resilience strategy requires commitment to **sustainability** at **regional, national and European levels**.
- 4 | Resilience strategy can only be conceived **globally**.
- 5 | Resilience strategy requires transformation of global trade and underlying **business and supply chain models** towards greater sustainability.
- 6 | Starting point 1: Implementation of **transformative cooperation networks: globalising** competencies and cooperation, **regionalising** material flows.
- 7 | Starting point 2: **Uniform standards and legislation** on **supply chains** to guarantee **human rights** and **environmental due diligence** (control and monitoring). Exemplary companies to gain competitive advantages.
- 8 | Starting point 3: **Transparent digital management systems** to ensure efficient data exchange along supply chains while ensuring data protection.
- 9 | Starting point 4: Sustainable **public procurement**: Concerted, globally networked procurement strategies by **federal, state and local authorities**.
- 10 | Resilient supply chains are **not a utopia**. Existing European and German laws, programmes and approaches simply need to be further developed and implemented.

Summary

Two thirds of today's world trade is based on **global value chains and supply networks**. Purely regional supply chains have become less important in recent decades. The effects of these globalised structures are manifold. On the one hand, they promote employment and generate prosperity. On the other hand, they are beset by extreme social, ecological and economic imbalances.

The COVID-19 pandemic has demonstrated the **fragility of existing supply chain systems**. The lockdown continues to disrupt complex supply chains and many problems of existing production and consumption continue to worsen. COVID-19 is one example of the crises that can shake globally networked supply chains in the short term. Other crises, such as climate change, develop more insidiously and are less immediately recognisable. Different as they are, such crises have one thing in common: they highlight the vulnerability of global social and economic structures and illustrate the impact of global trade on the regions and people of the world.

This is precisely where global sustainability strategy comes in – it aims to fundamentally reduce differences and inequalities in opportunities and quality of life. The COVID-19 pandemic has forced the entire world into upheaval, creating an opportunity to make **sustainability a central political resilience strategy**.

In the wake of the Corona pandemic, the discussion about resilient communities has flared up. In order to guarantee supply in the face of such crises, these should be more strongly **regional and circular** in their economic approach and **global and sustainable** in their perspective. *The aim should be sustainable, transparent, non-exploitative supply chains that guarantee the security of supply to cover basic needs and public services despite sudden changes and crises.*

The future scenario: Sustainable supply networks in globally cooperating, cyclically organised regional economies. This will entail cooperation across politics, business and local authorities to develop mutually supportive value-added, innovation, R&D, education and competency networks with the ability to react to social, ecological and economic crisis situations (e.g. pandemics, political conflicts and wars, natural and environmental disasters, financial crises). The development will affect municipal functions – social, health, education, environmental and governance systems – as well as political and economic systems as a whole.

Four **starting points** are suggested:

- 1:** Implementation of **transformative cooperation networks: globalising** competencies and cooperation, **regionalising** material flows in line with **international standards** (SDG orientation). The aim is to reduce inequalities between regions and municipalities, to strengthen cooperation and resilience, and to globally create added value in regions and municipalities.
- 2:** Mandatory **alignment of sustainable supply chains** (acting in shared responsibility), with **uniform standards and legislation** to guarantee **human rights** and **environmental due diligence** (control, monitoring and sanction

mechanisms). Enterprises manifestly taking steps to comply with standards must be able to differentiate themselves and gain competitive advantages.

3: Establishment of transparent **digital management systems** in line with United Nations SDGs: to ensure efficient data exchange along supply chains while safeguarding confidential business information and ensuring data protection.

4: Sustainable **public procurement** with concerted, globally networked strategies by **federal, state** and **municipal authorities**. This entails development of appropriate legislation to ensure procurement of sustainable and innovative products and services.

The proposed measures are **not a utopia**, but rather a consistent and inclusive further thinking of existing approaches. These include European and German circular economy programmes, the Paris Climate Protection Agreement, the EU Green Deal, the planned EU aid package “Next Generation EU”, German economic stimulus packages, the National Programme for Sustainable Consumption, and above all the objectives of the SDGs.

Starting point and goal

Two thirds of today's world trade is based on global value chains¹ and supply networks (Lange 2020). Supply chains organised purely on the basis of regional economies have lost importance in recent decades (EPRS 2019).

The effects of these **globalised structures** are manifold: on the one hand, they promote employment and generate prosperity (Lange 2020). Some Asian countries in particular have benefited from their integration into global value chains². For the people in the regions concerned this means jobs, income, consumption opportunities and access to education (Park et al. 2013). On the other hand, extreme social, ecological and economic differences are evident along the supply chains and in the value networks (UN 2020, Otten/Reinwald 2019, Reinwald 2020, cf. data from an exemplary supply chain Fig. 1). Opportunities are closely linked to the conditions of the place where one is born. These vary greatly.

UN global sustainability strategy "Agenda 2030" aims to fundamentally reduce inequalities of opportunity and quality of life. This is an essential prerequisite for climate and environmental protection and reduction of global population growth (Rosling 2014, BIB 2020, WBGU 2018). The core strategy adopted in 2015 is formulated in 17 sustainability goals (SDGs) and 169 subgoals (UN 2015). The SDG Report 2020, which traces developments in these target areas, shows clear inequalities between the regions of the world (UN 2020).

Germany has translated these international goals into a national sustainability strategy (Federal Government 2016) of great importance both for the country and for the global trade structures interwoven with it.

The corona pandemic has exacerbated many problems associated with existing production and consumption patterns (Decker 2020, UN 2020). In many countries, it has pushed health care systems to the brink of collapse. About half the world's working people now earn less or not at all, more than 1.6 billion students no longer attend school, and tens of millions of people have been pushed back into poverty and hunger (UN 2020).

COVID-19 is an example of a crisis powerful enough to shake globally networked value chains. Other crises – e.g. water shortages and resultant refugee waves – develop more insidiously and are less immediately recognisable. What all such crises have in common is that they highlight the **impact of global trade** on the regions and people of the world and the **vulnerability of social and economic structures**. Instability can only be prevented by developing **sustainable and resilient socioeconomic systems** (IRP 2020, SDSN 2020 b, WPN 2020, WPN & SDSN 2020, WBGU 2011).

¹ A global supply chain is defined as a division of production between two or more countries. This means that goods are often produced in a large number of production stages at a large number of locations and value is added at each stage. This high international interconnection means that value added directly or indirectly crosses national borders several times as an input in a final or intermediate good (Flach et al., 2020, S.17, translated by the authors).

² After initially serving primarily as cheap production locations for work-intensive manufacturing tasks, locations such as Hong Kong, Singapore or South Korea were gradually able to build up know-how and start manufacturing more complex products.

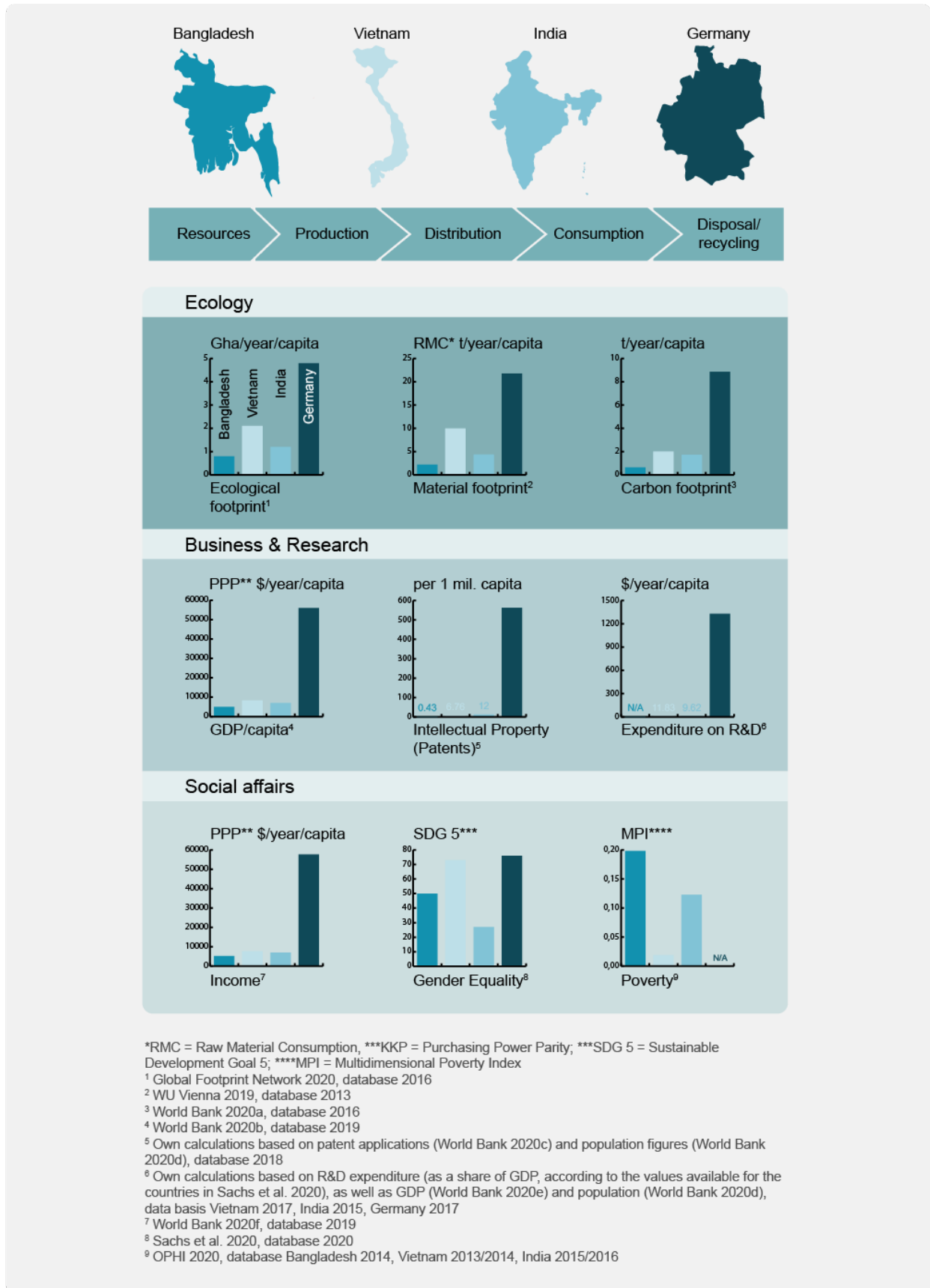


Figure 1: Global differences – Living, researching, working and doing business along a textile supply chain. (Source: Own presentation based on Liedtke et al. 2008 with data from Global Footprint Network 2020, OPHI 2020, Sachs et al. 2020, WU Vienna 2019, World Bank 2020a-f.)

The necessary **strategies** can only be conceived **globally** (Federal Foreign Office 2020, TWI2050 2020, SDSN 2020 a). The **United Nations sustainability goals** are the central political instrument to enable **globally resilient sustainability management**. Since the COVID-19 pandemic has forced the entire world into a situation of upheaval, using sustainability as a central **political resilience strategy** should be an appropriate response (**SDSN 2020 a**).

Germany has a responsible role to play in this process. After all, Germany profits from global trade, and its current economic model and prosperity are based on socially and ecologically unsustainable growth, with associated consumption of energy and resources. Germany has the financial means, as well as the responsibility, competence, ability, and opportunity, to implement an economic model based on sustainable consumption and production systems (Principles of a Bioeconomy-Oriented Closed-Loop Economy, IRP 2019, IRP 2020, Bringezu & Bleischwitz 2009, European Commission 2019).

This position paper describes:

- **Where to go?** – Shaping a future now of sustainable supply networks in globally cooperating, cyclical regional economies.
- **What to do?** – 4 starting points, 10 measures that can be taken today to promote long-term resilience in regional-global supply chains and networks.

Lack of transparency in complex supply chains

As a country which is poor in raw materials, **Germany** is a **hub and accelerator of global production and economic processes and networks**. Figure 2 illustrates the complexity of the global value-added system in which Germany and the EU play a driving role. Various product life cycles – development, production, use and recycling or disposal – take place in different enterprises, municipalities and parts of the world. The increasing **complexity and differentiation** of this network is often accompanied by **fragility and lack of transparency** (Engelhardt-Nowitzki et al. 2010) with regard to economic, living and working conditions as well as to supply chain flows and the origin and processing of raw materials. For complex product/service systems in particular (e.g. medical and healthcare technologies), globally cooperative production systems geared to regional material cycles are a central challenge for resilient dematerialised supply chains. However, if agreed goals are implemented, global trade structures can form the basis for sustainable regional-global value creation.

Future scenario – *sustainable supply networks in circular, globally cooperating regional economies*

The Corona pandemic has highlighted the fragility of existing supply chain systems. The lockdown has at times simply broken these chains off, usually with devastating consequences for people in the supplier countries (BZPN 2020). The World Trade Organization (WTO) predicts that global trade in goods could fall between 13-32% in 2020 (Lange 2020).

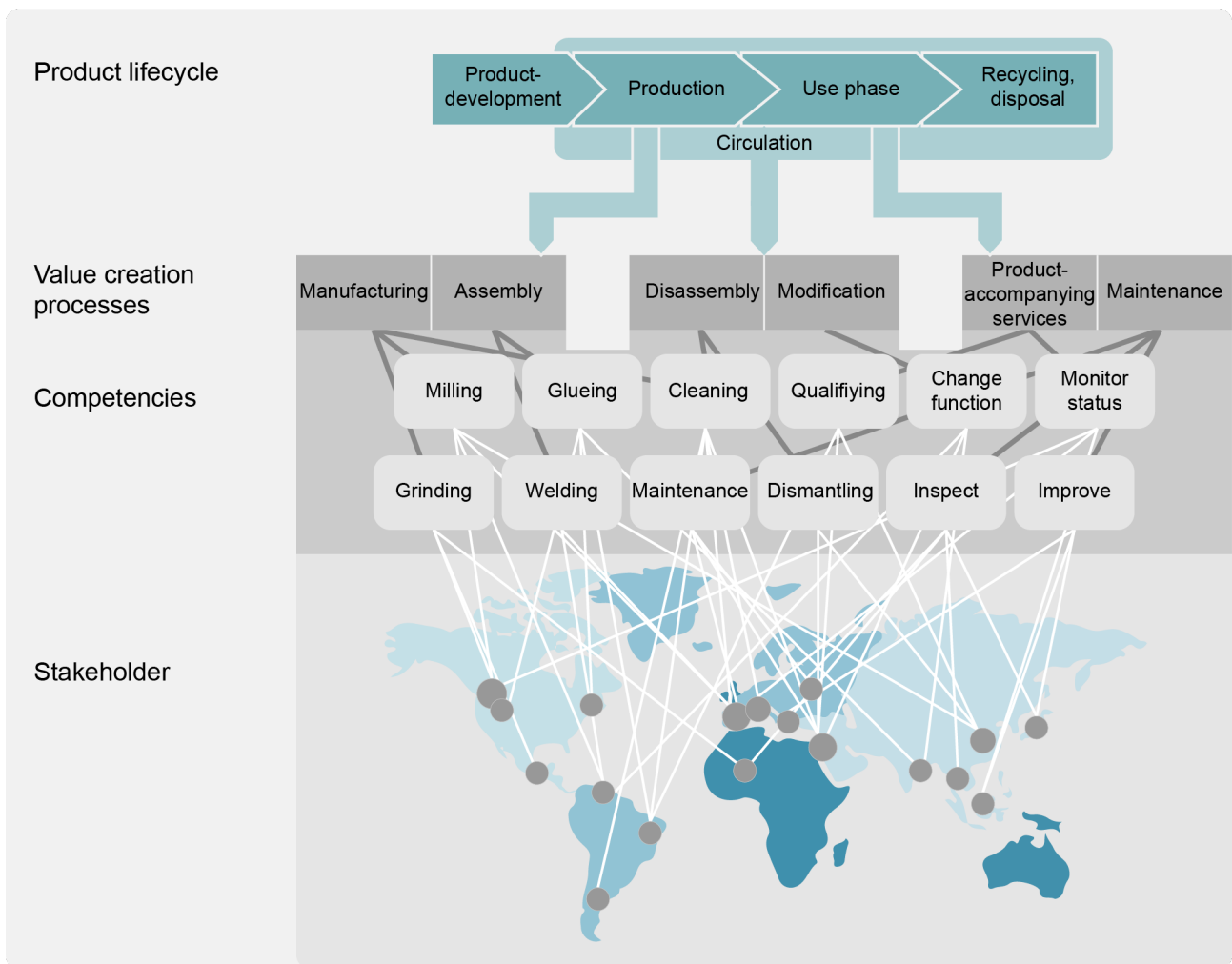


Figure 2: Complexity of globally networked value-added systems (Source: Own presentation based on Seliger 2007)

In Germany, the economic stimulus package is a billion-euro government programme to mitigate the impact of the pandemic on people and the economy (Bundesregierung 2020). In this context, the Corona pandemic has triggered discussion about the development of resilient cities and municipalities as the basis for regionally organised social and economic systems that are both resilient and capable of social and ecological development (Schneidewind et al. 2020, Haubner & Kubendorff 2020, VKU 2020). Programmes such as the European Green Deal with its Circular Economy Action Plan (European Commission 2020a) are already based on these principles. In its economic stimulus package, Germany has provided municipalities with a wide range of support measures, including €4 billion for accommodation costs, €5.9 billion for the Municipal Solidarity Pact and €0.1 billion for the Climate Initiative Support Programme. In contrast, only €1.5 billion was allocated to expanding humanitarian aid (Federal Government 2020).

As well as fostering a **regional** and **cyclical** economic approach, resilient communities must enjoy a **global** and **sustainable** perspective. In the current

Corona crisis, this requires that national economic development comply with human rights standards: **“The lower the social inequalities, the higher the average life satisfaction and the less violence and crime, disease, fear and social mistrust and, consequently, risks to social stability”** (WBGU 2016, p. 11). This applies to Germany as well as to other countries and regions.

Prosperity for all people (Erhard 1964) is only possible if a **sustainable ecosystem** is established globally as the basis of a **social market economy**. The German Advisory Council on Global Change (WBGU) formulated this in 2011 in terms of “a great transformation [...] involving the restructuring of the national and global economy [...] in order to avoid irreversible damage to the planet and its ecosystems and their impacts on humankind” (WBGU 2011, p. 417). Only through the interplay of sustainable economic growth and globalisation can people worldwide lead a life in dignity and preserve the natural foundations of life – in other words, attain the United Nations’ SDGs (Naidoo & Fisher 2020).

The International Resource Panel (IRP) – a panel of experts founded by the United Nations Environment Programme (UNEP) – identifies three decoupling effects necessary to ensure economic activity within planetary boundaries (see Fig. 3).

- decoupling of resource use and wealth – so that people are better off while needing fewer resources for their lifestyles
- decoupling of economic activity and resource use – so that a successful economy is not based on the exploitation of resources
- decoupling of economic activity from environmental pressures – so that a successful economy does not lead to environmental degradation.

Decoupling is relative or absolute. Relative decoupling means that the growth rate of the environmentally relevant parameter is lower than the growth rate of a relevant economic indicator. In absolute decoupling, on the other hand, resource consumption decreases independently of the growth rate (UNEP 2011, p. 5). Human activity is inevitably associated with resource consumption. Even in a theoretically purely cyclical economy, energy and resources would be needed for cycle management.

These three decoupling effects serve as the basis for the development of resilient economic and social systems – globally and regionally networked and interdependent. They can only be achieved if global production and consumption systems are reshaped accordingly.

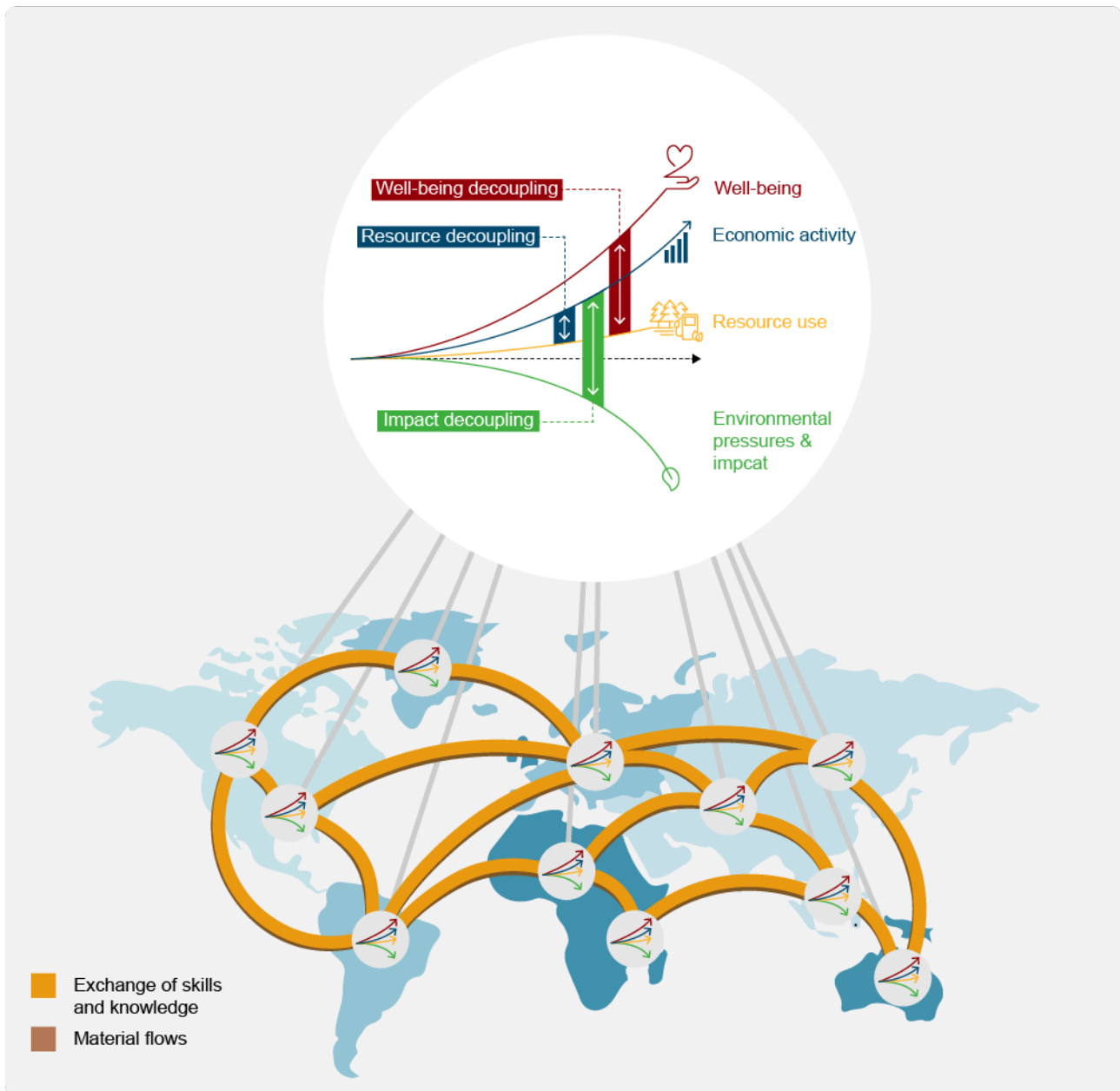


Figure 3: Three decoupling effects for prosperity development within planetary boundaries. (Source: Own presentation based on IRP 2019, p. 34.)

What needs to be done? 10 measures and 4 starting points to promote the resilience of global-regional supply chains and networks:

- Implementation of transformative cooperation networks: globalising competencies and cooperation, regionalising material flows in line with international standards
- Mandatory orientation of supply chains towards sustainability (acting in shared responsibility)
- Develop supply chain resilience through cooperation and digitisation (digital management systems)

- Establish sustainable public procurement

Starting points for sustainable resilient supply chains

Starting point 1: Implementation of transformative cooperation networks: globalising competencies and cooperation, regionalising material flows in line with international standards (SDG orientation).

Translated into the design of sustainable production and consumption systems, the decoupling effects described by the IRP mean obtaining as much added value as possible with as few resources as possible. In a circular economy this means: The use of primary raw materials is minimised³, reusable materials and components from products are reused or recycled, durable products are promoted, as well as sharing, exchanging, renting and repairing (sharing economy). The guiding principle is to design **sustainable supply networks** step by step in **globally cooperating, cyclical regional economies**. Some municipalities have already supported each other during the current pandemic (end of 2020). This must be expanded and strengthened both globally and locally. The aim is to reduce inequality between regions and municipalities, strengthen cooperation and jointly create added value.

Sustainable supply networks in globally cooperating, cyclical regional economies

Regional, European and global supply chains will always exist in a globalised world. The task of **decoupling global prosperity from resource consumption** is yet to be addressed. It will require largely **decarbonised and dematerialised production-consumption systems** – that means bringing **resource-light (and thus recyclable) products, services, business models and infrastructures** to the market. Concretely, this means obtaining as little primary raw material and as much service potential as possible from one ton of material. This can only be achieved by establishing circular regional-global bioeconomic structures.

- *What does this mean for supply chains?*
Many (but not all) will become more regional and shorter.
- *What does this mean for the regions?*
More (but not all) value-added processes will be anchored in the regions.
- *What does local value creation mean?*
Reducing inequalities, developing livelihoods for as many as possible.

³ Compare the approach of the Performance Economy in: Stahel 2019, p. 66 ff. and p. 70, Fig. 8.2, 100% is not possible, but it is much more than the current rule of 11.7% in EU28 (Eurostat 2020b, translated by the authors).

This will entail **cooperation across politics, business and local authorities** to develop mutually supportive value-added, innovation, R&D, education and competency networks with the ability to react in a timely manner to social, ecological and economic **crisis situations** (e.g. pandemics, political conflicts and wars, natural and environmental disasters, financial crises) and to ensure **security of supply**, especially to cover basic needs in participating regions.

Economic actors will form organisational **learning and management** networks with high **innovative competence** (Baedeker 2012), enhancing action and cooperation along existing material and immaterial exchange relationships. A sustainability and resilience management system with goals, measures and common performance indicators will be standard. Joint development will affect **regional and municipal functions** such as social, health, education, environmental and governance systems as well as **political and economic systems** (cf. also IzR 2020).

The **goal: non-exploitative, sustainable, transparent supply chains** that reduce global **inequalities**, create **prosperity** and ensure **resilience** (cf. Figure 4).

This is **not a utopia**, but rather the consistent and integrative further thinking of existing initiatives including

- European and German environmental service programmes
- Paris Climate Protection Agreement
- EU Green Deal
- German and European Corona economic stimulus programmes
- SDGs.

Ongoing German Sustainability Strategy (DNS) should draw “target and development pictures” in order to clarify the way ahead and its challenges. **Resilience orientation** means institutionalising and using **DNS** as a **central policy instrument** (SDSN 2020 b, WPN2030 2019, RNE 2020).

Top ten measures for resilience and sustainability

Implementation of transformative cooperation networks: globalising competencies and cooperation, regionalising material flows in line with international standards (SDG orientation).

1 | **Real laboratories: “Sustainable supply networks in globally cooperative regional economies” and roadmap development**

An international lighthouse project is needed to map companies and local authorities in a supply chain and integrate them into a sustainability and resilience management system with jointly defined development goals and initial measures – financing to be provided in accordance with the respective economic strength of governments, municipalities and companies, together with R&D funds/programmes, as well as development funds for the implementation of pilot projects.

2 | Design for good living (Liedtke 2018) – New product design along supply chains/networks

University faculties of design, engineering, economics of countries and municipalities involved in the lighthouse project to develop regionally-oriented product approaches in “living labs” (Liedtke et al. 2015, Geibler et al. 2018, 2014). Enterprises, local authorities and consumers to be integrated into real (digital/analogue) laboratories (Schäpke et al. 2018, Rose et al. 2019, Wanner & Stelzer 2019) for regional/global design innovation and business model development (Liedtke 2018, Stahel 2019) for own and common market.

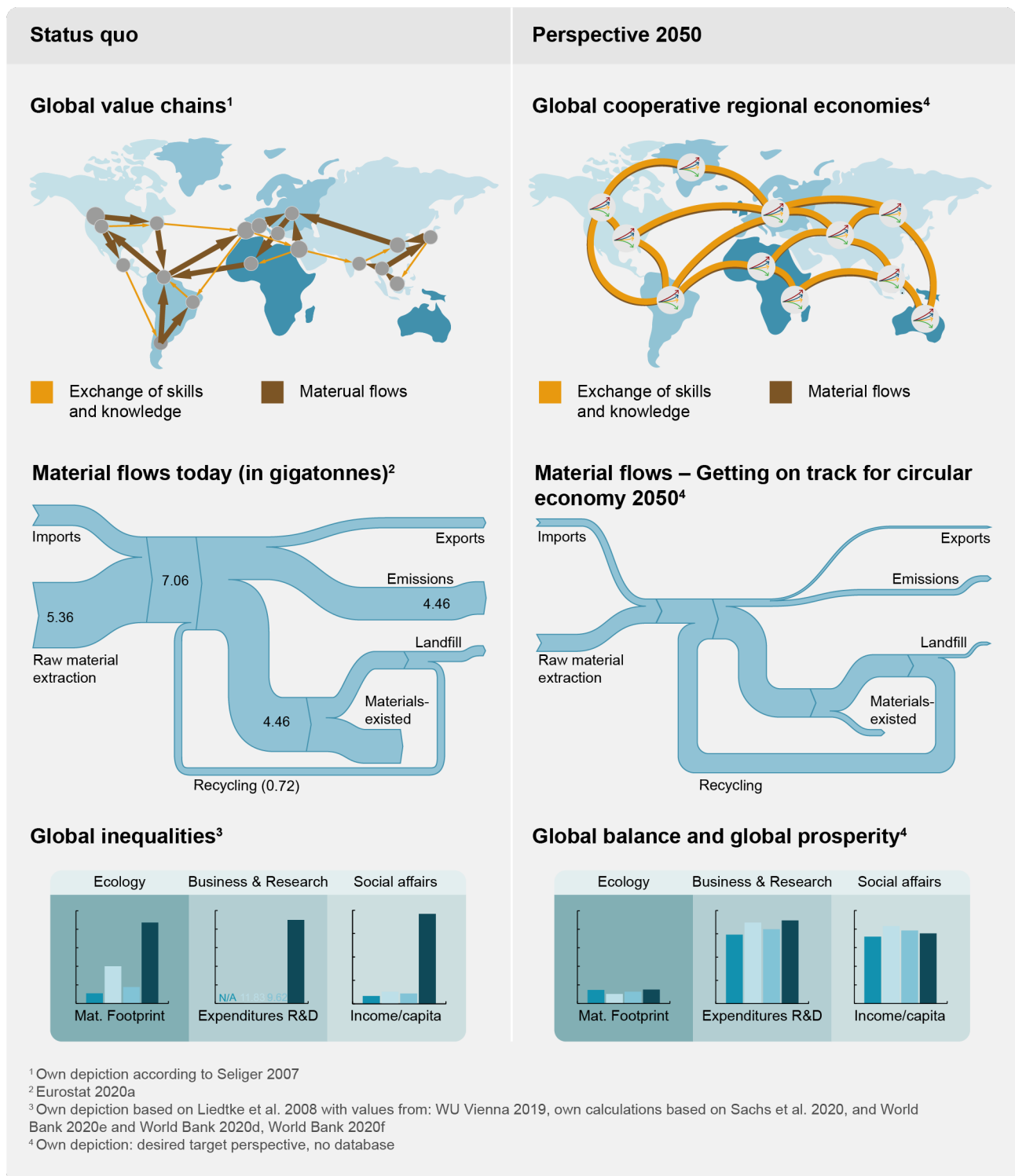


Figure 4: Status quo and target perspective in 2050 for globally cooperative regional economies. (Sources: Own presentation based on Seliger 2007 [top left, cf. also Figure 2], Liedtke et al. 2008 [bottom left, cf. also Figure 1], Global Footprint Network 2020, OPHI 2020, Sachs et al. 2020, WU Vienna 2019, World Bank 2020d-f.)

Starting point 2: Mandatory alignment of sustainable supply chains (acting in shared responsibility).

Businesses are key actors in the implementation of sustainable development objectives (in particular SDGs) through their supply chains. SDG 12.6, for example, seeks “to encourage companies, especially large and transnational corporations, to adopt sustainable practices and to include sustainability information in their reporting” (UN 2015, p. 24). The concluding target indicator here is the number of companies publishing sustainability reports (see SDG 12.6.1; Destatis 2018, p. 30).

Similarly, the German government measures progress by the number of organisations registered for the EMAS environmental management system (German government 2016, p. 178). Here it is already clear that German sustainability strategy (DNS) focuses on environmental management rather than supply chains and sustainability, which also address due diligence human rights obligations. The requirement of SDG 12.6 is thus only partially met. Moreover, according to the Federal Office of Statistics, the number of organisations whose environmental management was registered with EMAS dropped between 2010 and 2018 (Destatis 2020)⁴.

The **concept of due diligence** has recently gained in importance due to environmental damage, human rights violations and unethical business practices. The **United Nations' Guiding Principles on Business and Human Rights** (DGCN 2020), which focus on the potential and actual impact of companies on international human rights, were adopted as early as 2011. These principles stipulate that companies should establish procedures to identify potential and actual negative impacts on the environment and human rights and implement measures to prevent these impacts and to redress damage already done (UBA 2019).

The **National Action Plan on Business and Human Rights (NAP)** is intended to anchor these UN guiding principles in German business (Federal Government 2017; DNK 2020). The concept of due diligence was subsequently translated into **voluntary standards, (product) certification and industry initiatives**, as well as into already existing relevant standards of conduct, **such as the Guidelines for Multinational Enterprises of the Organisation for Economic Cooperation and Development (OECD Guidelines 1)** (UBA 2019).

These objectives, guidelines and standards make sustainable development tangible and feasible for entrepreneurial implementation at the production site and in the supply chain. They are an expression of the fact that **sustainability** has become firmly established as a **trend in business and society**, and that corporate stakeholders (e.g. consumers and investors) increasingly **scrutinise** non-sustainable business models and associated supply chains.

And yet, according to a recent monitoring exercise by the German government, **implementation** is alarmingly weak, and **monitoring of compliance** is inconsistent or non-existent. Less than one-fifth of the companies audited are based

⁴ In 2010, there were 1332 organizations with environmental management and registration with the Eco-Management and Audit Scheme (EMAS), whereas in 2018 there were 1183 (Destatis 2020, translated by the authors).

in Germany and more than 500 employees comply with the core elements of the NAP (Federal Foreign Office 2019). Not even the purely environmental DNS target mentioned above was attained (German government 2019).

Voluntary standards and guidelines for sustainable supply chains obviously have too little impact on corporate strategies and practices. Legally effective framework conditions and possible sanction mechanisms for companies – regardless of size, structures and ownership – are needed, so that those affected by human rights violations can effectively assert their rights (De Schutter 2020, p. 4). In this context, the differences in size of companies should be taken into account and Small and Medium sized Enterprises (SMEs) in particular should be supported by incentives and other measures to meet due diligence obligations (ibid., p. 4). Companies should no longer be able to gain competitive advantages by undermining social and ecological standards (German Bundestag 2019). For example, 70 companies from more than ten sectors currently advocate legal regulation of human and environmental due diligence obligations along the value chain in order to promote equitable competitive conditions without exploiting people and the environment (Business & Human Rights Resource Centre 2020, as of 09.10.2020). An expert report on “Anchoring human rights due diligence obligations of companies in German law” (Klinger et al. 2016) has already mooted concrete starting points for the legal design. This is the only way to establish sustainable management as a competitive advantage for the benefit of employees along the supply chain.

The German government responded to the insufficient impact of voluntary intervention approaches and in September 2020 submitted a discussion “Draft for key points of a federal act on strengthening corporate due diligence to avoid human rights violations in global supply chains” (Due Diligence Act). This would oblige companies based in Germany with more than 500 employees to fulfil their responsibilities in the value chain and check whether their business activities have a negative impact on the observance of human rights. It would also introduce appropriate preventive measures (BMAS & BMZ 2020). This brings the German government one step closer to the consistent implementation of the NAP (Federal Government 2018, p. 151) enshrined in the coalition agreement. Germans fundamentally support such a law. According to a representative study published in September 2020 by infratest dimap on behalf of Germanwatch e.V., 75% of the German population supports the implementation of a supply chain law (infratest dimap 2020). A total of 91% see the political sector as obliged to ensure that German companies comply with human rights and social standards (infratest dimap 2020).

At the **European level**, too, a **legally enshrined duty of care (“mandatory due diligence”)** including the supply chain is under consideration (European Commission 2020b, Business & Human Rights Resource Center 2020b). This initiative is not associated with the SDGs or the DNS, although both human rights and environmental protection are integrated goals of global and European sustainability strategies.

The three-level responsibility specified by UN Guiding Principles, according to which companies must address not only the negative impacts **caused** by their own activities but also those to which they **contribute** or with which they are directly **linked** through their business relationships, must play a greater role in globalised

supply chains than has been the case to date. This is also addressed by SDG 12 “Sustainable production and consumption”. Companies should be obliged by effective legislation to identify the human rights and environmental risk areas of their supply chains and to transparently communicate their efforts to exclude environmental damage and human rights violations (see also draft for key points of a Due Diligence Act, BMAS & BMZ 2020). Assessment approaches like integrated resource analysis (cf. Lettenmeier et al. 2009; Liedtke et al. 2014), hot spot analysis (Bienge et al. 2010, Wallbaum and Kummer 2006), or palmprinting methodology (Beckmann et al. 2017) show how social and environmental sustainability impacts along value chains can be quantified. In order to keep the cost of in-house surveys and monitoring low, corporate cooperation and mutual recognition of supplier audits should be promoted (cf. also the safe harbour principle, BMAS & BMZ 2020).

The above-mentioned three-tier responsibility also protects areas in the supply chain that pose a particular risk of employment in the informal sector, and initiates appropriate measures to provide protection for the employees concerned, including formal employment contracts, even in times of crisis. In particular structural discrimination against women in global value chains must be addressed. A supply chain law must ensure that gender-specific aspects are taken into account in all areas of human rights, especially as the Corona crisis has exacerbated existing gender inequalities in the economy (Borkenhagen et al. 2020). The loss of over 25 million jobs estimated by the International Labour Organisation (ILO) affects women in particular, as in many global value chains they are disproportionately employed in the informal and low-wage sector (Borkenhagen et al. 2020).

Due on the one hand to synergies, and on the other to possible conflicts of objectives, an **integrated view of human rights and the environment** along supply chains is important – SDGs encompass both and should be anchored in supply chain acts as an orientation framework. In many cases environmental damage leads to human rights violations (e.g. water or air pollution, health damage caused by the use of pesticides or lead battery recycling, etc.), while respect for human rights can have positive effects on environmental protection issues (e.g. poverty reduction, prevention of illegal logging) (UBA 2019). Research also shows that pandemics such as Corona are aided by the loss of natural habitats (IPBS 2019).

As a result, the introduction of an ambitious supply chain act should be harmonised with existing laws and standards (especially CSR reporting requirements⁵). Companies should establish legally anchored sustainability management within a DNS, SDG and human rights framework. Sustainable corporate strategies and practices should thus become established as a competitive advantage on the markets. Consumers, investors, civil society, politics and science should also play their part in the transformation process, so that sustainability management will be not only established as a procedure, but will actually have a positive impact on actors and the environment along the value creation line.

⁵ Further information on the CSR reporting obligation can be found at the following link: <https://www.deutscher-nachhaltigkeitskodex.de/de-DE/Home/DNK/CSR-RUG> (access 08.10.2020).

Top Ten measures for resilience and sustainability

Mandatory alignment of sustainable supply chains (acting in shared responsibility).

3 | German supply chain law to be geared to DNS and promoted in EU, using SDGs for orientation

Three-level responsibility specified by the UN Guiding Principles (*cause, contribute, link*) to form basis for sustainability management of supply chains and enterprises. A framework for monitoring and enforcement of legal prescriptions must be created. The principle of “enabling before withdrawal” (BMAS & BMZ 2020, p.1) is important. Best-in-class examples as well as regular infringements to be communicated transparently and the latter to be sanctioned.

4 | Supply chain law to make sustainability management in line with SDG 12 mandatory for companies based in Germany (cf. BMAS & BMZ 2020; Principle of enabling before withdrawal, BMAS & BMZ 2020, p. 1)

UN Global Compact on human rights, labour, environment and anticorruption (with basic sustainability principles) to apply in individual organisations and along the supply chain. Business cooperation with the aim of sustainable supply chains in line with industrial standards (BMAS & BMZ 2020, p. 5 and cf. Liedtke et al. 2020, § 4.1) to be promoted by policymakers (incentive mechanisms). Companies to establish sustainability management with focus on DNS and SDGs, ensuring that human rights and environment are respected and promoted along supply chains (Kessler and Hermann 2019, Liedtke et al. 2020).

5 | Creating competitive advantages for companies that (seek to) comply with standards – expanding the safe harbour principle (BMAS & BMZ 2020, p. 5)

State-recognised and monitored industrial standards (with appropriate company/product information and protection against imitation, e.g. through trademark law) to be used for market differentiation. “It would have to be examined whether §106a ff MarkenG, which came into force on 19 January 2019, would offer an option to grant innovative companies special protection against imitation” (Liedtke et al. 2020, p. 22).

Starting point 3: Developing supply chain resilience through cooperation and digitisation (digital management systems)

Corona has brought the issue of supply chain resilience into the focus of many industries. Making supply chains resilient does not just mean introducing early warning systems or maintaining appropriate stocks: sustainability is also a decisive factor. In order for companies to achieve resilience in their supply chains and implement improvements, they must know their supply chain beyond their direct suppliers – in other words, supply chains must be transparent (Sustainabill GmbH 2019). In fully transparent supply chains, all sites and materials involved in the manufacture of a product, right through to the extraction of raw materials, are known (for strength and weakness profiles of value chains see Bienge et al 2010; for climate risk assessment see Groth and Seipold

2020). Such transparency enables consumers, public authorities and companies to access reliable sustainability information for their purchasing decisions.

So far, however, **few companies** know their supply chains: around two-thirds of companies have only limited or no transparency beyond their direct suppliers, so they do not even know their upstream suppliers (Deloitte 2018). The reasons for this are manifold. A key challenge is to get suppliers to disclose pre-supplier chain data to their customers. In many cases, suppliers fear competitive disadvantages through disclosure, for example that the customer will use the findings in price negotiations or – if the supplier is an intermediary – even completely ignore the supplier (Kembro et al. 2017). In order to counter such concerns, close cooperation along the supply chain is required. Such cooperation (from which all companies benefit) can take the form of know-how sharing or joint investments to implement energy efficiency measures in the upstream chain. Collaboration along the supply chain can lead to greenhouse gas emission savings of up to 22% and significant cost savings (World Economic Forum, 2015). Companies that enter into longer-term relationships with business partners and other stakeholders and exchange information with them on a regular basis are also more willing to learn, and thus more innovative and efficient (Ji-ang et al 2019), as well as more sustainable (Kuhndt et al 2010).

However, creating the necessary trust to enable collaboration takes time. Clear common objectives need to be set and appropriate management systems implemented. New **digital technologies** create efficient data exchange along the supply chain while preserving trade secrets, providing “data management [...] for transparency in supply chains, for environmentally friendly production, informed consumer decisions, and responsible action by all social actors” (BMU 2020 b, p. 11).

However, pressure for action by companies at the end of the supply chain is not yet sufficient to trigger appropriate measures. Supply chain **legislation** and **incentive mechanisms** (e.g. competitive differentiation) must increase pressure on companies to act and enable fair competition. At the same time, **cross-industry standards** must be created in order to accelerate the implementation of digital technologies (e.g. platform technologies for data exchange) and enhance efficiency.

Sustainable supply networks in globally cooperative regional economies (Starting Point 1) can be appropriately supported at the local level by innovation and competency development networks. This with **two objectives**: to give as many companies as possible **access** to development opportunities, and to develop **cooperative cyclical value-added networks** at the regional level, generating prosperity and quality of life in the sense of the SDG (cf. starting point 1).

Top ten measures for resilience and sustainability

Development of supply chain resilience through cooperation and digitisation (digital management systems)

6 | **Fair legal conditions**

Fair competitive conditions – reinforced by legal frameworks and standards for assessing sustainability risks in the supply chain – are needed to enable supply chain transparency and sustainable purchasing.

Companies, especially SMEs, must be actively supported in the implementation of sustainable supply chain management, with structures similar to those already in place in Germany for resource efficiency. An international perspective must be integrated.

7 | Development of digital tools and platforms

Digital platforms make new cooperation and business models possible, using data for control, monitoring and communication with relevant actors. In order to accelerate the digitisation of supply locations, cross-industry standards on data type and scope are required. This will need pilot and implementation projects in relevant sectors.

8 | Support programmes and sector-specific pilot and implementation projects for globally cooperating regional economies

Support programmes for globally cooperating regional business networks should be developed along supply chains that also promote business cooperation at the respective location (innovation and competency development networks). Cooperation to be based on appropriately adapted SDGs with concrete overarching target indicators. Safe harbours to be implemented for companies and sectoral cooperations helping to develop other regions in the sense of the SDGs. Sector-specific pilot and implementation projects are necessary to identify success and obstacle factors and to create supportive framework conditions.

Starting point 4: Sustainable public procurement

Public procurement in Germany has an annual volume of up to €500 billion (BMU, 2020 a)⁶. In terms of volume, municipalities, followed by State and Federal Government, have the largest share in public procurement.⁷

“Due to its enormous leverage effect, the public sector has a special responsibility in enforcing sustainability issues in supply chains. This responsibility is also provided for in the UN’s guiding principles for business and human rights under the heading ‘State-Economy Nexus’” (RNE 2020, p.3). Initiatives such as the Alliance for Sustainable Procurement and the Competence Centres for Sustainable and Innovative Procurement (KNB) show that politicians increasingly recognise the responsibility of public procurement (BMU 2020 a). These bodies serve to significantly increase the share of sustainable products and services in public sector purchasing, providing information and advice on purchasing innovative products and optimising processes (BMW 2020).

With the Agenda 2030 for sustainable development, public procurement was already taken up in 2016 in the sustainability goals of the United Nations (Sustainable Development Goal 12.7) and in March 2020 in the EU Commission’s Closed

⁶ The purchasing volume grew from €359.7 million in 2015 to €430.7 million in 2016 and €523.6 million in 2017. This is in line with the EU - which also shows a 21% increase in purchasing since 2015 (EU, 2019).

⁷ 2016 the portion of the purchase procedures in the municipalities was with approximately 58%, 30% on regional level and 12% on federal level (Bundesregierung, 2018).

Substance Cycle Action Plan. Public procurement addresses all SDGs and can make an essential contribution to their achievement (Jaro 2019); it is also committed to the objectives of the National Action Plan for Business and Human Rights (NAP) – e.g. the **EU Action Plan** provides for a mandatory survey on sustainability criteria in procurement agency activities. Concrete starting points here include the **recyclability of products** and targeted procurement of **products with quality labels** such as the Blue Angel (BMU, 2020a). European and national law enable the establishment in the procurement process of **social and ecological requirements** for products relating to **life-cycle phases**. **Quality marks** can also be taken into account (cf. Act against Restraints of Competition GWB and Public Procurement Ordinance VgV). This also applies to all phases of the award procedure – specification of services, suitability test, evaluation of bids and conditions of execution (cf. Femnet, p. 4).

However, the catalogue of measures on the DNS provides for other aspects in addition to the Blue Angel and CO₂ emissions per kilometre driven, which have an impact on supply chains. For example, by 2020 50% of textiles are to be procured according to ecological and social criteria or, in the case of service contracts, companies with environmental management certifications are to be preferred (State Secretary Committee for Sustainable Development 2015). However, there is no implementation of different procurement categories in the indicator. With the support of the KNB, such monitoring could help to map overall procurement and gradually stabilise individual aspects of sustainable procurement.

Neither supply chains nor the impact of a forced circular economy are focal points of public procurement. Thus RNE (2020): “Public companies and the procurement agencies of federal, state and local governments should integrate sustainability criteria in their procurement guidelines to a greater extent than in the past. Supply chain legislation could create a reliable basis for the practice of sustainable procurement” (RNE 2020, p. 3). Social and ecological aspects should be anchored in value chains by means of a smart mix including legal requirements, binding framework conditions, the description of minimum requirements, and voluntary initiatives by industry and civil society (RNE, 2020).

At the municipal level, **demand-pooling** can be a proven means of developing buyer power. A merger of smaller with larger municipalities or districts can bring advantageous financial conditions through larger contract volumes. This relieves the burden on individual procurers and bundles joint competencies (Femnet 2020). Cooperative concepts between municipalities along existing supply chains are also possible with regard to a **circular economy** and the associated possible **break-up of supply structures**. According to SDG 17, partnerships should have an explicit global perspective in order to reduce ecological and health risks and enable cooperative resilience management (IzR 2020). **Town twinning** beyond countries makes it possible to incorporate perspectives of the **global South** in joint solutions which benefit all without encouraging dependencies (cf. Mende, 2020).

The German government’s strategy paper on “Effective international response by Germany to COVID-19” sees the need for global cooperation and coordination as a response to the pandemic. For Germany this means implementation of various foreign trade policy goals, supporting industry in ongoing projects and investments

and providing assistance to more severely affected countries. A reform by the WTO is to make it easier for developing countries to integrate into global trade. At the same time, dependence on individual supplier countries is to be reduced through diversification (Federal Foreign Office 2020). These goals actively involve public procurement. The following measures should be implemented, particularly with regard to the consequences of the pandemic:

Top ten measures for resilience and sustainability

Establishing a model of sustainable public procurement

9 | Concerted procurement strategy among federal, state and local authorities

– with sustainable target values, anchored in the DNS, in specific procurement areas; and with demand-pooling, where appropriate, using market power for sustainability – in order to set an example, an internal public authority perspective is insufficient.

10 | Local procurement initiatives along existing supply chains to establish regionally sustainable recycling management – for example through living-labs, public procurement and international cooperation

This will help maintain necessary supply chains and enable sustainable trade, as well as promoting regional cyclical value creation systems.

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