Section 3: Toward visibility for shared values and the creation of sustainable global value chains

#### **Increasing interest in shared values**

There are various challenges in global value chain (GVC) management, including natural disasters (e.g., large earthquakes and floods), infectious diseases (e.g., COVID-19), and supply disruptions due to geopolitical risks (e.g., the confrontation between the U.S. and China, the situation in Ukraine). Along with these challenges, another aspect of GVCs that should be addressed and has been garnering attention in recent years is the growing interest in shared values such as sustainability and inclusiveness, and the demand for corporate activities addressing them.

Individual companies are being called to develop their business from the viewpoint of corporate social responsibility (CSR) and adequately disclose information related to the environment, society, and governance (ESG) to various stakeholders such as business partners, financial institutions, investors, and evaluation organizations that evaluate companies' ESG-related efforts. An increasing number of companies are taking part in various international initiatives aimed at improving sustainability in their business activities, expressing their commitment to these initiatives, and disclosing relevant information. When doing so, it is important to disclose information on initiatives with the aim of achieving shared values not only for the company but also for the entire GVC related to it. A major management issue is how to visualize the issues regarding shared values in increasingly complex and multi-layered business relationships and take appropriate measures in a timely manner. In this section, we will look at trends in visualizing shared values, focusing on responses to climate change and responses to business and human rights issues, and examine companies' efforts and policy issues.

#### **1. Responses to climate change**

Addressing climate change is an urgent issue that the international community must tackle together. Since 1995, the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP) has been held annually to discuss how to effectively reduce greenhouse gas (GHG) emissions. <sup>66</sup>The Kyoto Protocol was adopted at COP3 in 1997 as a framework for reducing emissions by 2020. The Paris Agreement was adopted at COP21 in 2015 as a new framework for 2020 onward. At COP26 held from the end of October to November 2021 in Glasgow, the UK, countries made an agreement reaffirming their determination to endeavor to push down the temperature, which had increased by 1.5°C since pre-industrial times. There is growing interest in decarbonization even among companies and financial markets, and it is necessary to visualize and grasp the situation

<sup>&</sup>lt;sup>66</sup> "Recognizes that the impacts of climate change will be much lower at the temperature increase of 1.5°C compared with 2°C, and resolves to pursue efforts to limit the temperature increase to 1.5°C; Also recognizes that limiting global warming to 1.5°C requires rapid, deep and sustained reductions in global greenhouse gas emissions, including reducing global carbon dioxide emissions by 45 per cent by 2030 relative to the 2010 level and to net zero around mid-century, as well as deep reductions in other greenhouse gases;" (Excerpt from the Glasgow Climate Pact).

regarding carbon emissions in the activities of individual economic entities and in value chains in order to advance decarbonization efforts.

#### (1) CO<sub>2</sub> emissions in value chains

As an attempt to visualize GHG (CO<sub>2</sub> here) emissions in the value chain, the OECD's *CO<sub>2</sub> emissions embodied in international trade* estimates CO<sub>2</sub> emissions embodied in the production, exports, and final demand in various countries using an input-output table database (data available up to 2018. Figure II-1-3-1 is a conceptual diagram). For example, looking at the CO<sub>2</sub> emissions included in country A's final demand, emissions are inserted from industries that produce emissions in country A and overseas (countries B and C here) into the production processes of intermediate goods in each country through domestic trade and exports, and after being inserted into production processes of final goods in a similar manner, they are inserted into the final demand of country A through the domestic trade of final goods in country A and imports of final goods from countries B and C. The total exports of intermediate and final goods from country A indirectly include emissions from countries B and C that are inserted into the production process of each good. Country A's total imports of intermediate and final goods from countries B and C indirectly include emissions from country A that were inserted into country B and C's production processes.

#### Figure II-1-3-1. CO<sub>2</sub> emissions embodied in trade and final demand



## CO<sub>2</sub> emissions embodied in the final demand of country A

# CO<sub>2</sub> emissions embodied in the export of country A



Export of country A





Source: Yamano, N. and J. Guilhoto (2020), CO<sub>2</sub> emissions embodied in international trade and domestic final demand: Methodology and results using the OECD Inter-Country Input-Output Database (Original text in English).

Looking at the trends in  $CO_2$  emissions from the perspective of world production, it can be seen that they are declining in developed countries (OECD countries here) while increasing in emerging

countries (non-OECD countries), and continue to increase worldwide (Figure II-1-3-2). The percentage of emissions in non-OECD countries accounted for by emerging Asian countries (China, India, and ASEAN<sup>67</sup> countries combined) surpassed 60% in 2018, with an extremely high percentage of that accounted for by China (Figure II-1-3-3). The increase in CO<sub>2</sub> emissions in these emerging countries is largely due to their growing role as global production bases.



# Figure II-1-3-2. Global production-based CO<sub>2</sub> emissions

Source: *CO*<sub>2</sub> *emissions embodied in international trade* (OECD).

# Figure II-1-3-3. Global production-based CO<sub>2</sub> emissions (Percentage of emissions in non-OECD countries accounted for by emerging Asian countries)



Source: *CO*<sub>2</sub> emissions embodied in international trade (OECD).

Figure II-1-3-4 shows trends in domestic  $CO_2$  emissions from China divided into those toward domestic demand and those toward foreign demand ( $CO_2$  exports), and trends in foreign  $CO_2$  emissions toward China's domestic demand ( $CO_2$  imports). Emissions toward foreign demand increased rapidly at the beginning of the 2000s, declined temporarily, then remained level during the global financial crisis. They were on a downward trend in the latter half of the 2010s. Meanwhile,

<sup>&</sup>lt;sup>67</sup> Eight countries excluding Laos and Myanmar.

looking at  $CO_2$  emissions, emissions toward domestic demand and imports are increasing, indicating that China is changing its position as a global factory to that of a major consumer country.



# Figure II-1-3-4. Trends in domestic CO<sub>2</sub> emissions (toward domestic and foreign demand (exports)) and foreign emissions toward domestic demand (imports) in China

Source: *CO*<sub>2</sub> *emissions embodied in international trade* (CO<sub>2</sub> emissions embodied in domestic final demand, by source country and industry, Domestic CO<sub>2</sub> emissions embodied in foreign final demand, Foreign CO<sub>2</sub> emissions embodied in domestic final demand) (OECD).

For example, each country's domestic emissions embodied in foreign final demand and foreign emissions embodied in domestic final demand apply to each country's final demand baseline  $CO_2$ exports and imports. Figure II-1-3-5 shows the top five  $CO_2$ export destinations and countries of origin for various countries and regions using data on  $CO_2$  emission imports from the EU28 and ASEAN countries (2018) for reference. China's CO2 emissions are mainly exported to the United States, followed by Japan and India. China imported  $CO_2$  mainly from the Republic of Korea and Russia. India exported  $CO_2$  emissions mainly to the U.S. Every country and region, including Japan, imported  $CO_2$  emissions mainly from China. The U.S. is the main importer of  $CO_2$  emissions from China.

#### Figure II-1-3-5. Exporters and importers of CO<sub>2</sub> emissions for various countries (2018)



Source: *CO*<sub>2</sub> *emissions embodied in international trade* (Domestic CO<sub>2</sub> emissions embodied in foreign final demand, Foreign CO<sub>2</sub> emissions embodied in domestic final demand) (OECD).

The CO<sub>2</sub> emissions embodied in each country and region's gross exports can be classified by their share of domestic emissions, and shares of emissions from other countries and regions through raw materials, intermediate goods, and other items (Figure II-1-3-6). A breakdown of the foreign emissions included in China's exports shows that they include large amounts of emissions (CO<sub>2</sub> imports) from the U.S., Japan, the Republic of Korea, India, and other countries (Figure II-1-3-7).

Figure II-1-3-6. Breakdown of CO<sub>2</sub> emissions embodied in exports of countries and regions by domestic and foreign (2018)



Source: *CO*<sub>2</sub> *emissions embodied in international trade* (Domestic CO<sub>2</sub> emissions embodied in gross exports, Foreign CO<sub>2</sub> emissions embodied in gross exports) (OECD).



Source: *CO*<sub>2</sub> *emissions embodied in international trade* (Foreign CO<sub>2</sub> emissions embodied in gross exports) (OECD).

From this data, we can see that  $CO_2$  is embodied in trade and exchanged between countries and regions. It can be said that exchanging goods and services is a double-edged sword that creates added value along with a negative  $CO_2$  value chain. In order to achieve global carbon neutrality, it is necessary to make efforts to reduce emissions not only in one part of the value chain (in the case of

companies, internally) but also throughout entire value chains. It is necessary to address the entire economic activity life cycle, including production, import and export, consumption, and disposal and recycling.

# (2) Identifying CO<sub>2</sub> emissions in GVCs, trends in information disclosures, and issues faced by Japanese companies

In recent years, companies have been making rapid progress in identifying and disclosing information on CO<sub>2</sub> emissions in their value chains. Since the Paris Agreement, Japanese companies have actively participated in frameworks for disclosing climate-related financial information and environmental impacts (TCFD<sup>68</sup>, CDP<sup>69</sup>), initiatives related to setting decarbonization targets (RE100<sup>70</sup>, SBT<sup>71</sup>), and other efforts (Figure II-1-3-8).

<sup>&</sup>lt;sup>68</sup> The Task Force on Climate-related Financial Disclosures, established in 2015 by the Financial Stability Board (FSB) at the request of the G20. It encourages companies and other organizations to disclose climate change-related risks and opportunities.

<sup>&</sup>lt;sup>69</sup> A UK-based NGO established in 2000 that operates an information disclosure system to assess the environmental impacts of not only companies, but also governments, municipalities, and cities.

<sup>&</sup>lt;sup>70</sup> An initiative that aims to enable companies to use 100% renewable energy for their business operations.

<sup>&</sup>lt;sup>71</sup> An initiative that recognizes medium- to long-term greenhouse gas emission reduction targets set by companies.



# Figure II-1-3-8. Percentages of companies engaged in various decarbonization management initiatives by country or region

Note: As of March 2022. 3,150 organizations support the TCFD (757 of which are Japanese organizations), 1,267 companies have SBT certification (173 of which are Japanese companies), and 359 companies are participating in RE100 (66 of which are Japanese companies).
Source: The Ministry of the Environment's website (http://www.env.go.jp/earth/datsutansokeiei.html).

Source. The ministry of the Environment's weekle (http://www.envige.jp/early/autourbokerenne

One of the standards adopted in framework such as these for calculating and reporting companies' emissions is the GHG Protocol Corporate Accounting and Reporting Standard. The standard is classified into Scope 1 (direct emissions from businesses themselves), Scope 2 (indirect emissions from using electricity, heat, or steam supplied by another company), and Scope 3 (indirect emissions not included in Scopes 1 or 2 [other companies' emissions related to business activities]), and the sum of emissions in Scopes 1 to 3 is the total emissions generated from a company's GVC.<sup>72</sup> The percentage of companies that have incorporate Scope 3 into their emission reduction commitment is currently limited<sup>73</sup>, reflecting differences in business forms and the difficulty of the initiative.

Some large global companies have been asking their suppliers to use 100% renewable energy or take other measures in order to decarbonize their GVCs (Table II-1-3-9). Japanese suppliers are also taking steps to respond to these trends, and there are growing efforts using the UDA (User-Driven Alliance) model, in which these customers take the initiative in procuring renewable energy. Measures such as government support for these adoption models are gradually increasing. Figures II-1-3-10 and II-1-3-11 show<sup>74</sup> trends in costs of generating renewable energy (solar and wind power) in various countries on a levelized cost of energy (LCOE) basis. Power generation costs are declining in each country, but they are currently highest in Japan. A characteristic of renewable energy is that there are large gaps in cost competitiveness due to sunlight and wind conditions, amount of flat land, and other geographical conditions. Japan is at a disadvantage in these areas compared to other countries. However, if it does not meet customers' decarbonization demands, it will not be chosen as a supplier of products and services, causing it to miss out on business opportunities. In places where it is difficult to access renewable energy, companies will be encouraged to take steps to rebuild GVCs, such as withdrawing, increasing investments, or relocating to more accessible locations. Ensuring equal footing in terms of energy is an urgent issue for Japan.

# Table II-1-3-9. Examples of companies working to decarbonize their entire supply chain

Apple (U.S.)	Computers, mobile phones, other	Will have a 100% carbon neutral supply chain by 2030.
Unilever (U.K.)	Daily necessities, other	Will have zero substantial greenhouse gas emissions from products in the entire process from procurement of raw materials to sales by

<sup>&</sup>lt;sup>72</sup> Greenhouse Gas Protocol (2017), "A Corporate Accounting and Reporting Standard," ditto (2013), "Technical Guidance for Calculating Scope 3 Emissions," Ministry of the Environment, "SAPURAI CHEEN HAISHUTSURYOU SANTEI NO KANGAEKATA" (the Ministry of the Environment's website) (https://www.env.go.jp/earth/ondanka/supply\_chain/gvc/supply\_chain.html)

<sup>&</sup>lt;sup>73</sup> About 20% as of October 2020 (*White Paper on International Economy and Trade 2021* [Ministry of Economy, Trade and Industry (2021a)]. Source: New Climate Institute & Data-Driven EnviroLab, Navigating the nuances of net-zero targets.). In addition, in JETRO's FY 2021 Questionnaire Survey on Overseas Business Operations by Japanese Companies (2022), 23.1% of respondents (out of 490 respondents) said they are already working on decarbonization efforts overseas (of which 158, or 39.2%, are large companies, and 332, or 15.4%, are SMEs).

<sup>&</sup>lt;sup>74</sup> The LCOE is a calculation of the unit price of electricity per kWh by dividing the costs necessary over the lifetime of a power generation plant, such as capital, operating and maintenance, and fuel costs, by the amount of electricity generated.

		2039.
BMW (Germany)	Automotive	Will order only from suppliers that meet their sustainability requirements, and terminate contracts with bases that do not meet their standards.
Toyota (Japan)	Automotive	Asked major parts suppliers it does direct transactions with all over the world to decrease $CO_2$ emissions by 3% in 2021.
Ricoh (Japan)	Machinery, equipment, other	Asked suppliers to pursue in their code of conduct methods of tracking and documenting energy consumption and all related greenhouse gas emissions in Scopes 1 and 2, improving energy efficiency, and minimizing energy consumption and greenhouse gas emissions.

Source: Various media reports, press releases from each company and other materials.





Note: On a levelized cost of energy (LCOE) basis. Source: IRENA website (https://www.irena.org/Statistics/View-Data-by-Topic/Costs/Solar-Costs).



#### Figure II-1-3-11. Trends in renewable energy generation costs (wind)

Note: On a levelized cost of energy (LCOE) basis.

Source: IRENA website (https://www.irena.org/Statistics/View-Data-by-Topic/Costs/Wind-Costs).

# (3) Global trends in carbon pricing

We will now look at carbon pricing from the perspective of visualizing  $CO_2$  emissions. It is being adopted in many countries around the world as an economic method to encourage companies and other emitters to change their behaviors toward decarbonization. There are various kinds of carbon pricing, but typical methods include government carbon taxes (taxes proportionate to  $CO_2$  emissions from using fuel and electricity) and emissions trading systems (generally a method that sets caps on total emissions and allocates emission quotas and credits to companies and other organizations. Companies that exceed emission caps or credits can buy more from companies that fall below them), internal carbon pricing by companies and other organizations (companies price their own CO<sub>2</sub> emissions and use them for investment decisions and other processes), and credit trading (turning CO<sub>2</sub> reductions into credits and trading them).<sup>75</sup> When choosing and combining measures, systems, implementation bodies, and implementation methods, it is necessary to have a policy mix appropriate for the stage in the decarbonization process<sup>76</sup>.

As of April 2021, 64 countries and regions use carbon pricing, covering 21.5% of global CO<sub>2</sub> emissions. The level of carbon pricing adopted by countries and regions is not uniform. For example, the EU's emissions trading price (ETS auction price) has increased rapidly since the EU raised its emissions reduction target in December 2020 (Figure II-1-3-12), and industries in Europe (EUROFER) has expressed concern about the negative impact the rise in ETS prices will have on the competitiveness of companies outside the EU that do not face strict carbon emission regulations.<sup>77</sup> When evaluating carbon pricing, it is necessary to consider the impact it will have on the energy tax system and energy costs, including the base energy price and extra costs from renewable energy.

## Figure II-1-3-12. Trends in EU ETS prices



Source: Refinitiv.

## • EU Carbon Border Adjustment Mechanism

The EU's move to implement its Carbon Border Adjustment Mechanism can be understood in the context of emphasizing fairness both domestically and abroad regarding emissions reduction costs. The EU aims to achieve climate neutrality by 2050 and reduce CO2 emissions by 55% of those in 1990 by 2030. However, advanced efforts to reduce emissions carry the risk of encouraging incentives

<sup>77</sup> Takizawa, S. (2021), "European Iron and Steel Federation predicts recovery in steel demand We are concerned about the future environment of international competition" (May 12, 2021) (JETRO website), news release by the European Steel Association (May 1, 2021) (https://www.eurofer.eu/news/eu-ets-price-rally-rams-home-the-competitiveness-challenge-facing-the-sector/)

<sup>&</sup>lt;sup>75</sup> Ministry of Economy, Trade and Industry (2021b)

<sup>&</sup>lt;sup>76</sup> Ministry of Economy, Trade and Industry (2021c)

to avoid stringent regulations and produce in and procure from countries and regions with loose emission standards. In order to prevent the distortion of competitive conditions due to such free rides to emission reductions and carbon leakage<sup>78</sup>—in the sense that imports that are not carbon efficient threaten domestic markets—the European Commission published a draft of the Carbon Border Adjustment Mechanism (CBAM) in July 2021<sup>79</sup>. CBAM is a mechanism whereby importers in the EU bear carbon prices based on the EU-ETS according to the quantity, carbon emissions, and carbon costs of the products imported from outside the EU, and other factors. It is scheduled to be adopted in 2023 and will apply to iron, steel, cement, fertilizer, aluminum, and electricity. <sup>80</sup>There should be deeper discussions and studies from the viewpoint of international rules and standards, on topics such as ensuring consistency with WTO rules for the Carbon Border Adjustment Mechanism and adopting methods of measuring and evaluating carbon emissions that are reliable and balanced in terms of accuracy and feasibility. However, it must be borne in mind that companies that adopt measures will be required to make carbon emissions and costs more visible and improve information disclosures.

# 2. Addressing business and human rights issues

There is also growing interest in respecting human rights in economic activities. In 2011, the United Nations Human Rights Council unanimously endorsed the UN Guiding Principles on Business and Human Rights. The Guiding Principles categorize the relationship between business and human rights into three pillars: "State duty to protect human rights," and "corporate responsibility to respect human rights," and "access to remedies." It emphasizes the importance of mechanisms for victims to access effective remedies. Among these, corporate responsibility includes the formulation of human rights policies, the implementation of due diligence, and the establishment of grievance mechanisms, etc. To implement the Guiding Principles, countries are encouraged to develop a National Action Plan (NAP), and more than 20 countries have published it. In October 2020, the Government of Japan formulated an action plan on "business and human rights," expressing its expectation for companies in Japan to introduce a human rights due diligence process. Human rights due diligence was added in the 2011 Amendment of the OECD Guidelines for Multinational Enterprises (1976), including guidance for practice (Figure II-1-3-13).

<sup>&</sup>lt;sup>78</sup> The Institute of Energy Economics, Japan (2021)

<sup>&</sup>lt;sup>79</sup> The Institute of Energy Economics, Japan (2021)

<sup>&</sup>lt;sup>80</sup> Ministry of Economy, Trade and Industry (2021c)

#### Figure II-1-3-13. Main guidelines on human rights



Source: Explanatory material (March 9, 2022) of the Secretariat of the first meeting of the Study Group on Guidelines for Respecting Human Rights in Supply Chains (Ministry of Economy, Trade and Industry).

In Europe and the United States, efforts to link "human rights protection" with "external economic policies" are accelerating. In Germany, the Supply Chain Act was enacted in June 2021. The Act requires companies of a certain size or larger to conduct human rights due diligence and to prepare and publish reports, etc. on the results, and is scheduled to come into effect in January 2023. In the EU, in July 2021, the European Commission and the European External Action Service released the Guidance on Due Diligence for EU Businesses to Address the Risk of Forced Labour in Their Operations and Supply Chains. It provides companies with practical guidance on the measures necessary to address the risks of forced labor. In addition, although there have been moves to make human rights due diligence mandatory at the member state level, discussions are accelerating to extend this to the EU as a whole. In February 2022, the European Commission published a proposal for a Directive on corporate sustainability due diligence. The proposal requires large companies in the EU (including third country companies doing business in the EU) to conduct due diligence on human rights and the environment. In the future, if the proposal is adopted after discussions at the European Parliament, etc., each country will be required to make a domestic law based on it within two years. Furthermore, in December 2021, the United States enacted the Uyghur Forced Labor Prevention Act, which prohibits the import of all products wholly or partly produced in Xinjiang Uyghur Autonomous Region in China, as well as products produced by businesses listed by the U.S. government, to the United States, assuming that they were produced by forced labor. In order to avoid the import ban, importers must prove that all or part of the imported products do not rely on forced labor and so on.

Detailed rules and guidelines for the enforcement of laws ("enforcement strategy") are scheduled to be established and enforced in June 2022.

In light of the trends in the international community, it is necessary for companies to make efforts to respect human rights in their business activities. As with efforts to reduce CO<sub>2</sub> emissions and decarbonize, human rights issues need to be addressed and disclosed not only within the company, but also across the entire supply chain and value chain.

#### (1) Human rights issues in the value chain

The United Nations Sustainable Development goals (SDGs), a UN agenda for sustainable development by 2030, aim to end "modern slavery" such as forced labor, child labor and human trafficking. According to the ILO, as of 2016, about 40 million people are under modern slavery (about 25 million: forced labor; about 15 million: forced marriages)<sup>81</sup>.

It is necessary to pay attention to the risks involved in various transactions, such as the use of raw materials or parts extracted or produced, or the purchase of finished products, in a manner that entails such human rights violations. In particular, with the spread of GVCs, attention should be paid to the risk that goods and services will not remain in countries or regions with high human rights risks, and will be incorporated into trade and then GVCs. The ILO, the OECD, the IOM (International Organization for Migration), and the UNICEF, in their reports<sup>82</sup> on this point, have examined the possibility of the involvement of human rights risks during the raw material extraction stage or the production process in export and import, using the input-output table method.

From the perspective of GVC management, it is necessary to grasp the human rights risks of not only the company but also customers and suppliers in the global supply chain.

#### (2) Japan's efforts

In October 2020, the Government of Japan formulated an action plan on "business and human rights," expressing its expectation for companies in Japan to introduce a human rights due diligence process. In November 2021, the Ministry of Economy, Trade and Industry and the Ministry of Foreign Affairs released the results of the first Japanese government survey on business and human rights initiatives in order to grasp the status of corporate initiatives as part of the follow-up to the plan<sup>83</sup>. The results of the survey revealed that among respondents, companies with large sales volume or large overseas sales ratio tend to have a higher rate of implementation of human rights initiatives. The implementation rate of human rights due diligence was only about 50% of the total, and it became clear that improvement is still necessary for Japanese companies to implementation of human rights initiatives. It was also revealed that companies with a higher rate of implementation of human rights initiatives seek support for international system harmonization and other countries' systems. As for the request to the government, most of the respondents were expecting the development of guidelines, and half of the companies that have not made progress in their efforts to respect human rights responded

<sup>&</sup>lt;sup>81</sup> ILO et al. (2017)

<sup>&</sup>lt;sup>82</sup> Alsamwi, A. et al. (2019)

<sup>&</sup>lt;sup>83</sup> Ministry of Economy, Trade and Industry and Ministry of Foreign Affairs (2021)

that they do not know how to implement concrete measures. Based on such situation, in March 2022, the Ministry of Economy, Trade and Industry has established the Study Group on Guidelines on Respecting Human Rights in Responsible Supply Chains to work on formulating cross-industry guidelines. Together with the development of domestic guidelines to be formulated by summer 2022, the government is planning to work to achieve an environment in which companies can actively engage in respect for human rights under fair conditions of competition, and an environment in which individual countries' measures are more predictable.

#### • Efforts to achieve a responsible supply chain (in the textile industry)

The textile industry is characterized by a long supply chain from upstream to downstream, including the production of yarn and fabric, the planning, production, distribution, and sales of products. Due to the long supply chain and the difficulty of forecasting demand in advance, the industry is facing a variety of sustainability issues, including the difficulty of producing and supplying the proper amount of products, and the possibility of large supply and disposal, as well as human rights risks in the supply chain. In the international community, a stern eye has been casted on human rights issues in the industry, such as the collapse of a garment factory building (Rana Plaza) in Bangladesh in 2013 and the labor environment problems at local factories of multinational companies. At the 2015 G7 Summit (Elmau Summit), a "responsible supply chain" was also on the agenda, and the Leaders' Declaration included strengthening initiatives, including the textile and ready-made clothing sectors<sup>84</sup>.

The Ministry of Economy, Trade and Industry held a meeting of the Study Group on Sustainability of the Textile Industry in February 2021, and together with a wide range of experts, discussed and examined ways to promote sustainability initiatives in the textile industry, and compiled a report in July 2021. The report addresses environmental considerations, responsible supply chain management, gender equality, and supply structure. It says that the use of digital technology is useful in advancing such efforts<sup>85</sup>. With regard to responsible supply chain management, the government aims to respect human rights and improve the working environment, etc. through initiatives. Based on this report, in November 2021, the Japan Textile Federation and the ILO signed a memorandum of understanding on cooperation for promoting responsible business conduct in the textile and apparel industry. The singing was witnessed by the Director of the Lifestyle Industries Division, Manufacturing Industries Bureau, Ministry of Economy, Trade and Industry. Based on that, Responsible Business Conduct Guidelines in the Textile and Apparel Industry (tentative) are being formulated.

<sup>&</sup>lt;sup>84</sup> Ministry of Economy, Trade and Industry (2021d)

<sup>&</sup>lt;sup>85</sup> There have been cases such as demand forecasting for producing and supplying the proper amount of products (grasping product trends through SNS image analysis using AI) and efforts to manage all information related to production (process management of each staff using a tablet terminal, status management of machines in factories using IoT technology, and digitalizing communication with companies in the supply chain) (Ministry of Economy, Trade and Industry, 2021d).

#### 3. Diversified considerations

The movement to visualize non-economic values, such as shared values, has become particularly prominent in the international community after the global financial crisis. The limitations and contradictions of measuring "affluence" solely based on market value have been recognized, and efforts have been made to grasp the current state of the economy and society from a multifaceted perspective by visualizing the external effects of economic activity, its impact on the future, and its subjective value, etc. The OECD Better Life Index, which was developed based on the 2009 Report by the Stiglitz Commission, and the SDGs Index and Dashboards, which show the progress of the United Nations Sustainable Development Goals (SDGs) that countries are currently working on, Inclusive Wealth Index (IWI) promoted by the United Nations Environment Programme (UNEP) and published in 2010 as a way to comprehensively evaluate efforts related to the SDGs and macro statistics, etc. on social progress and well-being in each country are examples. In Japan as well, in the Green Growth Strategy formulated on June 18, 2021, it was expressed that "related ministries and agencies will cooperate in research and development of statistics (e.g., Green GDP (tentative name)) and indicators that take environmental factors into account, in line with the System of Environmental-Economic Accounting (SEEA) which provides standards stipulated by the United Nations, and research conducted by international organizations, etc."

In recent years, the shared values that should be taken into account in economic activities have diversified. In relation to the global environment, in addition to the issue of climate change, the issue of "depletion of natural capital (damage to biodiversity)" taking into account the global supply limit has been discussed (Dasgupta (2021), "The Dasgupta Review"). In addition, it was argued that the supply chain and value chain need to be perceived in a circular model by including not only the conventional one-way flow (arterial part) from upstream to downstream (consumers), but also the flow (vein part) from disposal to regeneration as a place for value creation. Development of indicators for the circular economy and investments, etc. based on the indicators are also being made<sup>86</sup>. In addition, some people have pointed out the widening income inequality in society and the decline of the middle class, and some other people have reconsidered the role of companies. In August 2019, the U.S. Business Roundtable changed its view of corporate role (purpose) from a shareholder-first approach to a focus on the interests of all stakeholders, causing a great response. However, in September 2020, the World Economic Forum (WEF) published the Stakeholder Capitalism Metrics (SCM) regarding the visualization of consideration for the stakeholders. In October 2021, the Japanese government held the Council of New Form of Capitalism Realization. Based on discussions on these various shared values, the following issues toward "a virtuous cycle of growth and distribution" and "developing a new post-COVID-19 society" have been examined: Issues related to the restructuring of capitalism, such as stakeholder theory, human investment, and distribution; and making a supply chain resilient, startups, digital transformation (DX), and innovation.

<sup>&</sup>lt;sup>86</sup> In the "Circular Economy Vision 2020" (May 2020), a case in which a French financial institution developed an investment trust product using indicators related to the circular economy developed in Italy was introduced (Ministry of Economy, Trade and Industry, 2020).

#### • Disclosure of information on shared values

It should be noted that the diversification and increase of non-economic value and shared value to be captured are two sides of the same coin as the diversification and increase of efforts by companies and of information to be disclosed. With the increasing number of international initiatives, evaluation organizations such as NGOs, and certifications, and with a wide range of information disclosure standards and guidelines, it has been pointed out that companies have not made sufficient progress in understanding and responding to these efforts<sup>87</sup>. It can be said that there is a need for specific definitions and guidelines, such as what sustainability is and what should be reported specifically in disclosing information.

With regard to the definition of sustainability, from the perspective of expanding investment (sustainable finance) to promote sustainable economic activities, etc., moves toward the development of a taxonomy, which is a standard for classifying sustainable economic activities, including those at the planned stage, have been seen in countries and regions, including the EU, Australia, and emerging countries in Asia. As for the transition to "greening," ASEAN countries and Canada are moving to establish a taxonomy<sup>88</sup>. The taxonomy aims to prevent superficial sustainability considerations (e.g., greenwashing) and promote investment in truly sustainable activities by clarifying criteria for concepts, such as "greening," which have previously been vaguely defined. On the other hand, various issues have been pointed out in securing the effectiveness of the taxonomy, noting security of scientificness, costs and risks associated with setting centralized and rigid standards, and the differences in development stages, geographic conditions, and energy conditions, etc. of each country in setting taxonomy standards. Japan is expected to appropriately participate in international discussions on the taxonomy, such as considering the IPSF (International Platform on Sustainable Finance).<sup>89</sup>

With regard to the disclosure standards for non-financial information by companies, etc., moves toward a certain international convergence has currently been seen, e.g., revising the EU's Non-Financial Reporting Directive (requiring disclosure according to the reporting standards established by the EU while paying attention to the aforementioned EU taxonomy, etc.) and establishing a new council ISSB (International Sustainability Standards Board) for the formulation of international sustainability standards by the IFRS Foundation. It is necessary for Japan to be involved in the setting of standards by disseminating its thinking and awareness of issues. Based on this awareness, the Ministry of Economy, Trade and Industry examined the direction of the guidelines for achieving high-quality non-financial information disclosure at the Study Group on Disclosure Policies for Non-financial Information, and compiled an interim report in November 2021. Furthermore, in March 2022, it has published a basic view on the Climate-related Disclosures Prototype published by the ISSB, which communicates the discussion of international non-financial information disclosure standards.

<sup>&</sup>lt;sup>87</sup> Business Policy Forum, Japan (2018)

<sup>&</sup>lt;sup>88</sup> Financial Services Agency (2021a)

<sup>&</sup>lt;sup>89</sup> Financial Services Agency (2021b)

#### 4. Digitally visualizing the global value chain

The challenges of GVC management are becoming more complex and sophisticated, such as responding to sudden supply disruptions due to disasters, infectious diseases, geopolitical risks, etc., and the achievement of various shared values that we have seen in this section. In order to respond to the new challenges for the GVC, it is necessary to make a bold review of the old management and legacy system.

The use of digital technologies and services is an important key to management innovation. In terms of GVC management, it is expected that by visualizing the entire GVC and clarifying the location of problems in real time, it will be possible to make quick management decisions, and by accumulating and analyzing information on the sustainability initiatives of customers and suppliers and their GVCs as data, the predictability of risks will be increased. Specifically, there are a wide range of uses, including optimization of the supply chain and value chain through cooperation between companies using IoT information (reduction of time loss at each stage, confirmation of production progress, identification of supply disruption points, etc.), improvement of the traceability of logistics using satellite information, demand forecasting and inventory management through big data analysis, improvement of operations and governance through the use of social media information (a rapid grasp of disasters and incidents, a grasp and analysis of the voices of consumers and other stakeholders, etc.), and optimization and sophistication of value chain design through various simulations in a virtual space (metaverse) using digital twin technology. The cost reduction of trade procedures through digitalization is also an important element in GVC management. In addition to the digitalization of customs documents and port clerical flows, a platform for the digitalization service of trade procedures using blockchain technology, such as TradeWaltz<sup>90</sup>, has been launched, contributing to supply chain management by centralizing the management of huge trade data, and there is a movement to create a single window for procedures in cooperation with the public sector of each country<sup>91</sup>. It can be said that GVC optimization and digitalization are closely related, and the importance of "connectivity" to digital networks and "data" are expected to increase further in GVC management.

#### (1) Challenges for Japanese companies

However, the speed of progress in digital GVC management by Japanese companies has been slow overall.

According to the results<sup>92</sup> of a survey on Japanese companies' efforts to visualize production processes using digital technology, which was covered in White Paper on International Economy and Trade 2021, only 2.9% of respondents use digital technology to visualize their supply chains, including their overseas factories, and 74.7% of them do not plan to do so.

<sup>&</sup>lt;sup>90</sup> TradeWaltz website (https://www.tradewaltz.com/).

<sup>&</sup>lt;sup>91</sup> Ministry of Economy, Trade and Industry (2021a)

<sup>&</sup>lt;sup>92</sup> Mitsubishi UFJ Research and Consulting (2020)

It is pointed out that while European and U.S. companies are advancing to the stage of enhancing supply chain resilience and ensuring sustainability through digital technology, many Japanese companies are still in the first stage (mainly by reducing manual work using telephone, e-mail, and fax, paperless operations, and digitalization of each stage of the supply chain)<sup>93</sup>. In addition, there is a high level of aggressiveness in the items focusing on IT utilization by Japanese companies, such as "optimization and accuracy improvement of accounting," "improvement and optimization of overall indirect operations," and "improvement and optimization of business processes related to procurement, production, and efficiency." The survey results also state that there is a relatively low aggressiveness in areas such as "development of new business areas and development of new business models," "introduction of new sales and sales channels and restructuring of the entire channel", and "optimization of the entire supply chain<sup>94</sup>." In addition, according to a comparative survey of Japanese and U.S. companies on factors that increase corporate IT budgets, there are relatively few cases of IT utilization from a strategic perspective, as the proportion of companies that cite "strengthening analysis of customer behavior and markets" and "swift response to markets and customer changes" is high in the United States, while the proportion of companies that cite internal "implementation of work style reform" and "improvement of operational efficiency and cost reduction" is high in Japan<sup>95</sup>.

It is also necessary to create a global environment for promoting corporate initiatives, e.g., transparency in each country's measures regarding shared values and data, perspicuity of implementation, and harmonization with existing frameworks. In terms of data, issues related to "ensuring transparency" of regulations and measures in each country (e.g., ambiguous definitions of "personal information" and "cross-border transfer" of data, ambiguous scope of requirements and regulations, and difficulties in responding to sudden changes in regulations and measures), and issues related to "technology and standardization" (e.g., difficulties in responses with corporate responsibility to conduct protection and control equivalent to those of countries from which transfer is made at the cross-border transfer of data to a third country, and large costs that may be required to obtain regional or country-specific certifications for the handling of security-related information)<sup>96</sup>.

Fukuoka and Sakamoto (2021) cited, as a policy approach to support companies engaged in shared values and DX, the support of construction of a reliable supply chain by establishing guidelines, supporting small- and medium-sized enterprises that do not have sufficient budgets and personnel, etc. (establishing consultation systems by experts, etc. and supporting supply chain visualization and redundancy), supporting the implementation of supply chain visualization (matching with companies that provide visualization services), establishing standards for data linkage, etc., and strengthening cooperation with Australia, India, ASEAN and other countries regarding digitalization and supply chains<sup>97</sup>.

<sup>&</sup>lt;sup>93</sup> Fukai, M. (2021), "Supply Chain Journey" (October 21, 2021) (https://blogs.opentext.jp/supply\_chain\_journey/)

<sup>&</sup>lt;sup>94</sup> Ariga (2020)

<sup>&</sup>lt;sup>95</sup> Japan Electronics and Information Technology Industries Association and International Data Corporation Japan (2021)

<sup>&</sup>lt;sup>96</sup> Interim Report of the Expert Group on Data Free Flow with Trust (February 28, 2022) (Ministry of Economy, Trade and Industry, 2022)

<sup>&</sup>lt;sup>97</sup> Fukuoka and Sakamoto (2021)

## (2) Value chain management through a data linkage platform

Europe is leading efforts to build an integrated data linkage platform that is deeply involved in GVC management. The International Data Spaces (IDS) from the International Data Spaces Association: ISDA defines and provides standard architectures for data sharing, rules, guidelines, technical elements (connectors) for data sharing, and other items in order to create data ecosystem structures with ensured data sovereignty. It is also preparing use cases on data linkage. 130 organizations have joined since its establishment in 2016, and it has accumulated use cases for business-level data linkages between companies of different industries, creating new services. Examples of use cases include a joint supply chain data management service for emergencies from the German company Bosch, the platform service COSMOPlat from the Chinese company Haier, and a demonstration project from NTT Japan and the German company Siemens to protect data sovereignty and ensure cybersecurity with the aim of reducing CO<sub>2</sub> emissions and creating a circular economy. In addition, IDS aims to become an open standard not only in Europe, but globally, and is taking steps to establish hubs in Japan, China, and other countries. GAIA-X published in October 2019 by the Government of Germany and France, is a technical mechanism that controls access to data based on authentication and contractual procedures, protects data sovereignty, and ensures interoperability with various cloud services<sup>98</sup>. There are assumed advantages, for example, sharing machine operating information by operators, machine manufacturers, parts manufacturers, and service providers that exist at sites where machine are used or at each stage of the supply chain on the GAIA-X platform enables to respond to arisen issues in a timely and appropriate manner, and also enables to exchange necessary solutions at each point in the machine life cycle<sup>99</sup>. In addition, in terms of sustainable energy use, it is assumed to build a comprehensive proof system for the entire value chain using blockchain technology<sup>100</sup>. There is also the Catena-X Automotive Network (hereinafter referred to as "Catena-X"), a secure data sharing alliance between automobile-related companies, which a German automobile manufacturers announced its establishment in March 2021. Catena-X includes not only automobile manufacturers, but also companies involved in the automotive value chain (materials manufacturers, machinery manufacturers, communication- and IT-related companies) and research institutes, etc. Sharing data on the Catena-X platform enables to implement quality control, logistics, maintenance, management, and to achieve sustainability, etc. throughout the supply chain and value chain. The participation of smalland medium-enterprises in these data linkage platforms is also seriously considered<sup>101</sup>.

Japanese companies are also very interested in the movement of developing a data linkage platform in Europe. In Japanese industry, for example, there are discussions and efforts to share manufacturing

<sup>&</sup>lt;sup>98</sup> *Comprehensive Data Strategy* (Cabinet Decision, June 18, 2021)

<sup>&</sup>lt;sup>99</sup> Website of German Federal Ministry of Economic Affairs and Climate Action (https://www.bmwi.de/Redaktion/EN/Artikel/Digital-World/GAIA-X-Use-Cases/integration-of-dataalong-the-life-cycle-of-production-machines.html)

Website of German Federal Ministry of Economic Affairs and Climate Action (https://www.bmwi.de/Redaktion/EN/Artikel/Digital-World/GAIA-X-Use-Cases/system-forautomated-certification-of-renewable-energy-and-management-of-certificates.html)

<sup>&</sup>lt;sup>101</sup> Website of Gaia-X European Association for Data and Cloud AISBL (https://www.gaia-x.eu/what-gaia-x/factsheet) and Catena-X website (https://catena-x.net/en/#intro).

data among companies for decarbonization and resource recycling, and there are moves to collaborate with IDSA and domestic data linkage promotion organizations<sup>102</sup>. The European approach to the data linkage platform is a model in which real data acquired for activities of companies, etc. in the real world is practically used among multiple companies, and it is also an area where the strengths of Japanese companies, such as data, know-how, and hardware superiority accumulated at manufacturing sites, should be practically used. From this perspective, it is urgently necessary to promote efforts for data sharing and linkage with companies in the Asian region, especially those deeply involved in Japanese supply and value chains, and to develop rules for that purpose.

The Ministry of Economy, Trade and Industry is studying ways to promote data sharing and linkage among companies in Asia toward the achievement of growth with Asia as a whole, from the perspective of enhancing the supply chain that Japan has long shared with Asian countries, strengthening the competitiveness of Japanese companies, and responding to shared values such as the environment and human rights. Specifically, we will create supply chain use cases that make full use of 100 pieces of data over the next five years, as stated in the ASIA-Japan Investing for the Future Initiative (announced in January 2022), which was launched to strengthen economic relations with Asian countries, while referring to the efforts of the data linkage platform (aforementioned IDS, Catena-X, and GAIA-X) that are advancing in Europe (Figure II-1-3-14).

# Figure II-1-3-14. Consideration of upgrading the supply chain in Asia through data linkage



Source: Explanatory material (February 4, 2022) of the Secretariat of the third meeting of the Committee on New Direction of Economic and Industrial Policies, Industrial Structure Council, (Ministry of Economy, Trade and Industry).

<sup>&</sup>lt;sup>102</sup> Conclusion of Collaboration Agreement with The International Data Spaces e. V. (IDSA) (Data Society Alliance Press Release, October 10, 2021) (https://data-society-alliance.org/notice/4592/)