

SUSTAINABILITY INITIATIVES OF LEADING AUTOMOTIVE SUPPLIERS TOWARDS ACHIEVEMENT OF SDGS: A COMPARATIVE ANALYSIS

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Abstract: Sustainability has gained increasing importance within the last decade. Therefore, the approach of sustainable development pushed its execution. The 2030 Agenda for Sustainable Development, published by the United Nations and signed by all members, offers a blueprint for peace and prosperity for people and the planet, now and into the future. Every business is encouraged to contribute towards a sustainable development. Especially Original Equipment Manufacturers observe the chance to add this to their brand value and push the implementation. To provide a comprehensive 'green' product or service, also suppliers need to achieve certain sustainability goals within their supply chain. Initiatives published in sustainability reports or on official websites of the top five automotive suppliers, according to Beryll's top 100 Supplier study 2022, provides the basis for this article. The individual contribution and achievement towards the sustainable development goals has been analyzed by a qualitative comparative analysis. This analysis was performed using the desk method. Consequentially, it can be said that all investigated suppliers point out specific initiatives and actions towards the goals of sustainable development. Four out of five even provide a separate sustainability report which indicates that sustainability gains significant importance within the business as well as within the future strategy.

Keywords: automotive suppliers, sustainability, sustainable development goals, sustainability strategy

JEL Classification: L10, O19, Q01, Q45

INTRODUCTION

The automotive industry can look back to very strong decades. From not even 60 million produced vehicles in 2000, the global motor vehicle producers increased their production up to almost 100 million vehicles in 2018. Realising this progression by serving markets all over the globe, Original Equipment Manufacturer (OEM) were strongly focusing on globalization strategies. Globalization enables not just the increase of cross-border investment and economic growth but also significantly influences relationships between carmakers and their key suppliers. The need for capable suppliers to coordinate and deploy component manufacturing on a global scale was born. (Sturgeon & Florida, 2000) These potential global suppliers were forced to choose whether they stick to their local or regional manufacturing footprint, remaining stable in an unpredictable global market, or strive towards growth potentials in foreign markets and therefore extend their own production network as well as the whole supply chain. (Freyssenet & Lung, 2000) Ensuring a sustainable supply chain in today's fast changing environment forces companies not to consider financial aspects only, but also integrate non financial information and values into core steering tools and the overall strategy. Hardly any term increased its importance as quickly as 'sustainability'. Even it is a very general word, it describes a major pulse of the time. (Lukin, Krajnović, Bosna, 2022) Its notion was amplified by environmental policies, such as the 'The 2030 Agenda for Sustainable Development', which has been adopted by all United Nations Member States in 2015. 'It provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for

action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.’ (United Nations, 2022)

1. SUSTAINABLE DEVELOPMENT GOALS (SDG)

‘In the field of ecologically oriented economy, it has significantly revived research and become the starting point for a new approach for research. There is even talk of a paradigm shift, where sustainability is seen as a driver of innovation, and the growing debate on global environmental issues has highlighted and further strengthened this trend.’ (Lukin, Krajnović, Bosna, 2022)

The 17 SDGs, shown in table 1, have been defined to ensure a balanced development in social, economic and environmental sustainability. Therefore, the member of UN committed to work towards the end of poverty, hunger, AIDS and discrimination against woman and girls. Knowhow, innovation, technology as well as financial resources should ensure the global achievement. (United Nations Development Programme)

Table 1. Sustainable Development Goals.

Goal	1	End poverty in all its forms everywhere
Goal	2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal	3	Ensure healthy lives and promote well-being for all at all ages
Goal	4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal	5	Achieve gender equality and empower all women and girls
Goal	6	Ensure availability and sustainable management of water and sanitation for all
Goal	7	Ensure access to affordable, reliable, sustainable, and modern energy for all
Goal	8	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
Goal	9	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation
Goal	10	Reduce inequality within and among countries
Goal	11	Make cities and human settlements inclusive, safe, resilient, and sustainable
Goal	12	Ensure sustainable consumption and production patterns
Goal	13	Take urgent action to combat climate change and its impacts*
Goal	14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
Goal	15	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal	16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels
Goal	17	Strengthen the means of implementation and revitalize the global partnership for sustainable development

* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

Source: United Nations, 2022

The United Nations Information Centres (UNICs) provides together with other agencies and organizations, support whenever countries face obstacles which might impede progress on the 2030 Agenda. As each country is just able to contribute with many organizations and businesses pushing own and individual tasks towards the achievement of the sustainability development goals, this paper focus on such kind of projects and activities. While Lukin, Krajnović, and Bosna were analysing the top leading automotive manufacturers, the automotive suppliers, which enqueue a level down within the value stream, are being focused on in respective research.

2. MATERIALS AND METHODS

According to Dr. Timmer, Dr. Simon and Kirchhefer, the automotive supplier industry was mainly influenced by five significant developments:

- Shortage of semiconductors
- Reduction of availability of raw material
- Sales price increase for raw material
- Chinese suppliers strengthen market position
- Increased relevance for suppliers of autonomous driving and electromobility equipment

These topics force the industry to evolve more and more different stages of the supply chain to ensure a sustainable and reliable production. The ranking of top automotive suppliers according to sales, shows no change from last year. Bosch is ranked on place number one, followed by Denso from Japan and Continental from Germany. Place number four is ZF Friedrichshafen, before Magna hold the fifth place in 2022. (Dannenberg, 2022)

For each individual company, the latest available sustainability report for 2021 was taken into consideration as well as additional information provided on their websites to evaluate within a case study, the contribution towards the achievement of the UN Sustainable Development Goals. (Bosch Sustainability Report, 2021), (Denso Integrated Report, 2021), (Continental Integrated Sustainability Report, 2021), (ZF Annual Report, 2021), (Magna Sustainability Report, 2021) The comparative analysis of business strategies in terms of sustainability consists of its connection to the 17 Sustainable Development Goals, defined by the UN in 2015.

3. RESULTS

The desk method-analysis of non-financial reports and official information on websites of the top five automotive suppliers in 2022 was performed to provide observations regarding actions, initiatives, and goals. Specific projects are displayed in Table A1 (in Appendix A). It shows, shaded in green color, activities dedicated by each company, clearly to a specific SDG. That leads to the statement, that all five top leading automotive suppliers have dedicated tasks for several sustainability goals. Sections, without any marking indicate, that initiatives mentioned within the sustainability report, the integrated report or on official company websites might also lead towards the achievement, even when not directly assigned by the company for a specific SDG.

Table 2. Automotive Supplier Strategies towards UN Sustainable Development Goals.

		Bosch	Denso	Continental	ZF Friedrichshafen	Magna
1.	End poverty in all its forms everywhere	✓		✓		
2.	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	✓		✓		
3.	Ensure healthy lives and promote well-being for all at all ages	✓	✓	✓	✓	✓
4.	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	✓	✓	✓	✓	✓

5.	Achieve gender equality and empower all women and girls	✓	✓	✓	✓	✓
6.	Ensure availability and sustainable management of water and sanitation for all	✓		✓	✓	
7.	Ensure access to affordable, reliable, sustainable, and modern energy for all	✓	✓	✓	✓	
8.	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	✓	✓	✓	✓	
9.	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation	✓	✓	✓	✓	✓
10.	Reduce inequality within and among countries	✓	✓	✓		✓
11.	Make cities and human settlements inclusive, safe, resilient, and sustainable	✓	✓	✓	✓	
12.	Ensure sustainable consumption and production patterns	✓	✓	✓	✓	✓
13.	Take urgent action to combat climate change and its impacts*	✓	✓	✓	✓	✓
14.	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	✓		✓	✓	
15.	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	✓		✓		

16.	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels	✓	✓	✓	✓	
17.	Strengthen the means of implementation and revitalize the global partnership for sustainable development	✓	✓	✓	✓	

Source: United Nations, 2022; Bosch Sustainability Report, 2021; Denso Integrated Report, 2021; Continental Integrated Sustainability Report, 2021; ZF Annual Report, 2021; Magna Sustainability Report, 2021

Bosch and Continental are the only two suppliers, which promote individual projects or actions to all 17 Sustainable Development Goals. Especially Continental dedicates its initiatives to all SDGs (all cells shaded in green color). Table 2 shows that goal numbers 3, 4, 5, 9, 12, and 13 have individual input from all five analyzed companies, which indicates that their sustainable strategies are mainly developed in this section. As only two out of five suppliers define clear tasks on, for example goal 1 and goal 2, that might not be focus of their business direction. Comparing the results of the automotive suppliers to the analysis performed by Lukin, Krajnović, and Bosna of OEMs, the focus can be easily understood. (Lukin, Krajnović, Bosna, 2022) Fields, which experience strong focus of OEMs (e.g. 9, 12, 13) experience strong focus of suppliers, too. This relation is strengthened by the intensifying focus on supply chains and partnerships. Additionally it can be seen, that goals like goal number four is threatened very similar through all top five automotive suppliers in 2022. The education and lifelong learning opportunities should be provided by specific development and cooperation initiatives. For goal number 15 very different approaches could be observed. Very active initiatives might push the topic in a very specific way, while others focus on general codes of conduct to provide a sufficient environment.

4. DISCUSSION

This research paper analyzed the sustainability reports (non-financial reports) and additional provided information on official websites of the top 5 automotive suppliers in 2022 according to their individual initiatives towards the achievement of the 17 Sustainable Development Goals of UN within 'The 2030 Agenda for Sustainable Development'. Finding out the extent to which the suppliers contribute within their organization, available projects dedicated to the defined SDGs were collected. The SDGs cover all main areas of a global sustainable society. As linked by Lukin, Krajnović, and Bosna, sustainability strategies with fulfilment of individual UN Sustainable Development Goals, the paper strives to an acquired result to which extent the top leading automotive suppliers contribute to global sustainability. (Lukin, Kranović, Bosna, 2022)

All observed suppliers, Bosch, Denso, Continental, ZF Friedrichshafen, as well as Magna have significant actions implemented into their strategy. Sustainable brands include actions in different sections of their companies. From production, over product performance up to provided services, a wide range of influencing opportunities could be observed.

As the ranking on Top Automotive Suppliers is only based on sales values, it could be conducted that sustainability values do not affect the value of a company right now. Sustainability initiatives are usually long-term investments and might not display a fast payback. Therefore, strategic evaluation models need to be further developed.

CONCLUSION

This paper aims to the provision of a broader understanding of sustainability in the automotive supplier industry. Not only environmental impacts promote sustainable development. The 17 SDGs, developed, published and promoted by all member states of the UN focus on different sections like economy, sociology and ecology. Within the sustainability reports and other official information shared on the websites of the five top automotive suppliers, it could be seen that sustainability is threatened very similar in some major fields like healthy life, well-being for all ages and inclusion. These areas of focus are not just addressed by automotive suppliers only, also researches in OEMs lead to the same results. Targets which might play a more important role for OEMs might be also taken more attention on for their suppliers along the whole supply chain. The way how specific targets are being addressed might vary from company to company. While actions across the automotive suppliers are very similar towards some of the goals, also a variety can be seen for others. General approaches like the Code of Conduct as well as specific actions and initiatives addressing the goal. In further research the connection of OEMs and their suppliers might be analyzed, as well as a larger number achieving a more comprehensive picture. Additionally, diverse teams might provide a more holistically view. Limitation is also provided by the quantity of analyzed automotive suppliers.

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APPENDIX

Table A.1. Analysis of Automotive Supplier Strategies in 2021 about their initiatives towards UN Sustainable Development Goals.

	Bosch	Denso	Continental	ZF Friedrichshafen	Magna
1. End poverty in all its forms everywhere	Initiation of Corporate citizenships, Bosch China Charity Center		Raising Heartbeats Challenge - Global Fund-Raising Campaign Marking the Company's Anniversary		
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Intelligent Planting Solution Systems, smart spraying				
3. Ensure healthy lives and promote well-being for all at all ages	Continuously upgrading materials data management	Support working people by offering technologies that help resolve the issues of a declining workforce	Principle, guidelines, and trainings, risk analysis and mitigation, complaint mechanism and review and reporting is Continental's management approach to human rights	...,seeks a broad spectrum of experience and expertise, and seeks to be well prepared for demographic change	Contribution towards medical infrastructure to aid with global disaster relief efforts
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Ensure equal opportunities	Promote the development of people, organizations, and the working environment to encourage our employees to maximize their abilities and work with enthusiasm and peace of mind	Long-term employee benefits like pension plans and defined benefit plans	Aiming to achieve a global learning culture of innovative learning and development	First organizes mentor-based programs that help participants build science, engineering and technology skills while also fostering self confidence, communication skills and leadership

5.	Achieve gender equality and empower all women and girls	Increasing the proportion of female executives to 20 percent	Corporate Foundation for Diversity and Inclusion	Gender diversity - the share of female executives and senior executives - has also been part of the LTI plans for the members of the Executive Board and global managers since fiscal 2020	ZF Group strives for a balanced gender ratio, promotes an international workforce.	Magna's Women's exchange Employee Resource Community strives to empower, develop and recognize is female employees and encourage students to pursue STEM careers
6.	Ensure availability and sustainable management of water and sanitation for all	Improving the quality of wastewater flows		Operational Environmental Protection Strategy: Water	Saving water resources and supporting clean water quality	
7.	Ensure access to affordable, reliable, sustainable, and modern energy for all	Increasing own renewable generation at our sites and significantly expanding purchase of green electricity from new plants by 2030	Address the need for ensuring a safe air environment and provide comfortable spaces	Operational Environmental Protection Strategy: Energy	Reducing CO ₂ emissions caused by plant operations	
8.	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	Ensuring human rights are respected along the value chain	Pursue business activities that take into account environmental issues	Long-term Value Creation: The goal is the sustained increase in the Continental Group's value --> Value management	Improve safety performance by conducting professional incident management, Safety Leadership and Behavior Based Safety actions as well as improving functional safety areas	
9.	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation	Energy-efficient machines: cross-technology expertise by Rexroth 4EE	Popularize safe products in order to eliminate traffic accidents	Innovation & Digitalization: Mobility of the future is sustainable, automated and connected -->	Data Handling & Analytics focuses on vehicle connectivity and communication with the infrastructure, from embedded components to the IoT platform, ...	Completion of hundreds of energy/sustainability projects in 2021, resulting in significant and ongoing energy, emission, and cost

					Driving Planner for highly automated driving; Shy Tech displays - essential information at a glance or touch		savings throughout is global operations.
10.	Reduce inequality within and among countries	Promoting inclusion	Ensure that each employee acts in a fair, honest and ethical manner while complying with laws and regulations in each country and region	The Continental Group's Code of Conduct sets out the cornerstones for good working conditions as the basis of global collaboration, including respect for human rights and fair working conditions. Employees regularly receive training on the Code of Conduct		Unconscious bias training is required for all managers and available to any Magna employee	
11.	Make cities and human settlements inclusive, safe, resilient, and sustainable	Extending product life cycle and reusing materials and components from old appliances	Contribute to an eco-friendly and sustainable society by reducing environmental burden and realizing highly efficient mobility	Emission-free Mobility and Industries: Continental strives for 100% emission-free mobility and industry by 2050	Zero accidents and zero fatalities through smart product solutions and highest quality assurance		

12.	Ensure sustainable consumption and production patterns	Operating climate neutral in scopes 1 and 2 and continuously improving the mix of measures by 2030	Reduce environmentally harmful substances, emissions, and waste to help permanently preserve the global environment	Operational Environmental Protection Strategy: In addition to focusing on climate protection, the strategy for operational environmental protection also includes the additional focal topics of energy, water, and waste.	Waste: Supporting recycling management and reducing hazardousness of waste	Implementation of a zero waste to landfill target, with the aim of eliminating landfill bound waste by 2022
13.	Take urgent action to combat climate change and its impacts*	Lowering absolute scope 3 CO ₂ emissions by 15 percent by 2030	Contribute to realizing a carbon-neutral society through technologies that collect and reuse CO ₂	Development of Material Sustainability: Carbon Neutrality	Slowing down climate change and working towards healthier environments	Magna committed to carbon neutrality (Scope 1 and 2) by 2025 in is European operations and by 2030 in is global operations
14.	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	Company locations were identified using WWF's Water Risk Filter		CO ₂ emissions, energy use, water consumption and waste generation at the locations are to be reduced, and the waste recycling quota and energy efficiency at the locations increased. Focus area: water	Production processes use recycled water for washing, rinsing and cleaning operations and for the application of cooling lubricants	

15.	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Development of high-tech sensors to protect against forest fires		Operational Environmental Protection Strategy		
16.	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels	Dimension of diversity: Gender, Generations, Internationality, People with disabilities, LGBT*IQ	Respect the rights of all our stakeholder, including employees and people throughout our supply chain, in our business activities	Code of Conduct: Trust, Passion to Win, Freedom to Act, and for one another as well as sustainability of our actions	Managing Diversity, Equity and Inclusion (DEI): Diversity Day, Diversity Guide, Diversity Advocacy Council, Employee Resource Groups	
17.	Strengthen the means of implementation and revitalize the global partnership for sustainable development	Suppliers are involved at an early stage in strategic initiatives and development projects and can adapt to gain given requirements and grow in tandem with Bosch	Pursue business activities that take into account human rights issues, and compliance together with our suppliers	Management Approach: We strive for 100% responsible sourcing and business partnerships by 2050 at the latest together with our partners along the value chain.	Sustainability@ZF	
* Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global						

Source: United Nations, 2022; Bosch Sustainability Report, 2021; Denso Integrated Report, 2021; Continental Integrated Sustainability Report, 2021; ZF Annual Report, 2021; Magna Sustainability Report, 2021

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