

BERYLLS BY ALIXPARTNERS

STEER TO WIN: HOW TO MANAGE THE COMPLEXITY OF SUSTAINABILITY

AGENDA

BERYLLS BY ALIXPARTNERS INSIGHT

Berylls' steering framework enables automakers and suppliers to comply with stricter sustainability regulations and drive top and bottom-line improvements.

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1 INTRODUCTION: WHY MAKING REAL PROGRESS IN SUSTAINABILITY REQUIRES HIGH-QUALITY STEERING

Sustainability has become central to everything automakers and suppliers do, and for years they have been publishing sustainability reports that highlight their progress on reducing carbon emissions and transitioning to electric vehicles.

However, progress is still being made in a piece meal way by many companies, rather than as part of a holistic plan for the future of the business. This needs to change for two reasons: firstly, OEMs and suppliers are under increasing pressure

FIGURE 1: SUSTAINABILITY MATURITY STAIRCASE

STAGE 03

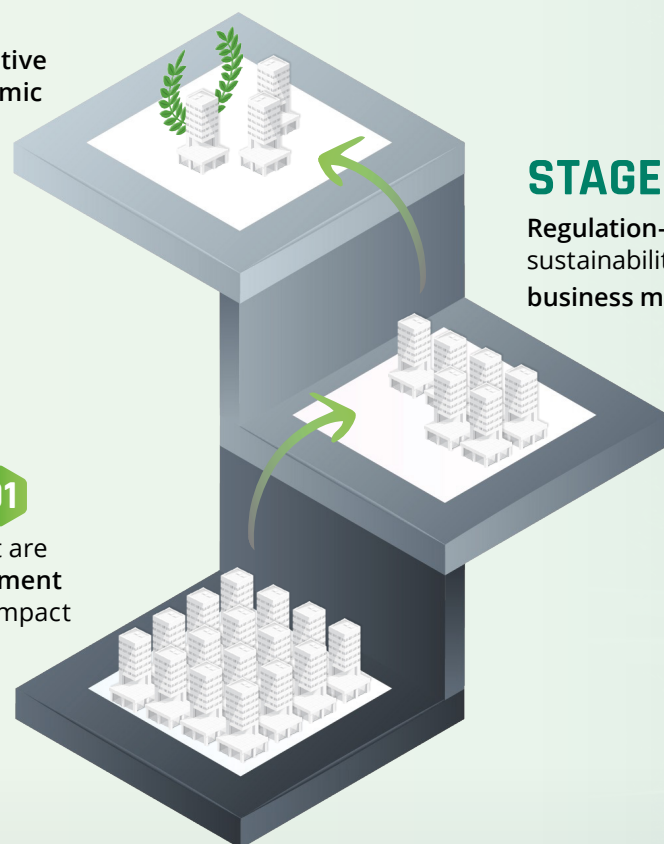
Initiatives with positive ecological & economic impact

STAGE 02

Regulation-driven sustainability initiatives without business model integration

STAGE 01

Initiatives that are easy to implement but lack true impact



from regulators, shareholders and customers to ensure their products, processes and supply chains meet the highest standards of sustainability. Secondly, well-coordinated measures to use energy and materials more efficiently and increase recycling offer opportunities to increase the top and bottom line: our estimates show potential profit impact of more than €260 per vehicle, for example.

In large, complex automotive businesses, the risk of implementing individual use cases without an overarching system to steer sustainability throughout the organization is that companies get stuck at **Stage 01** or at best **Stage 02** of what we define as the sustainability staircase (Figure 1).

To reach **Stage 03** and get the maximum benefit from new sustainable business opportunities, OEMs and suppliers must ensure that sustainability is properly steered. That means measuring and managing sustainability performance must become part of the overall governance of

the business, with key performance indicators (KPIs) that are tracked with the same level of rigor as financial performance indicators.

Given how wide the scope of new environmental, social and governance (ESG) regulation is, particularly in Europe, companies need a holistic steering system that brings together the different parts of the organization involved in issues such as reducing emissions and water use. They also need to translate their goals into KPIs that are manageable for each layer of the organization.

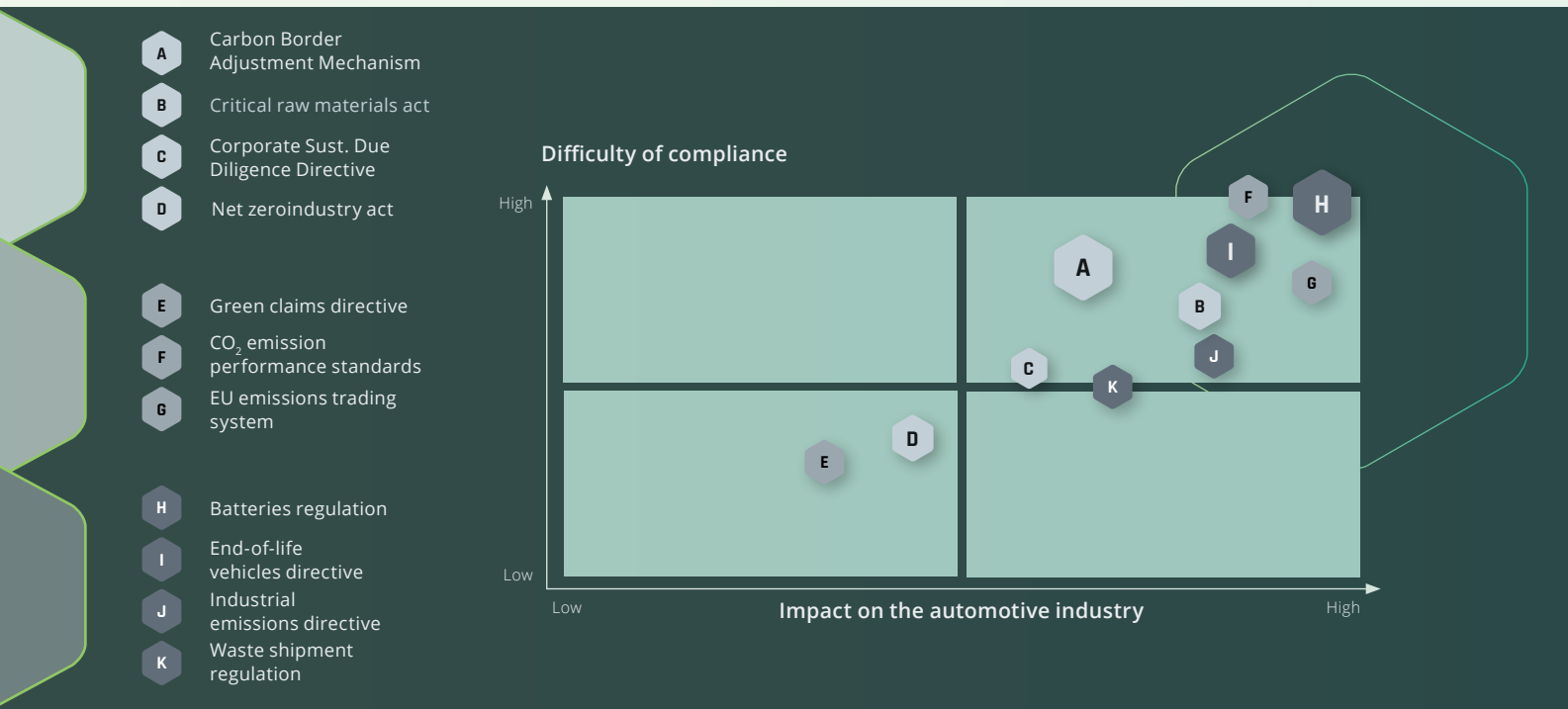
In this report we look in detail at both the new regulations the auto industry must respond to, and the business opportunities presented by sustainability. Then we set out how the Viable System Model (VSM) can be used to effectively steer sustainability, with a KPI “tree” as the operational backbone.

REGULATION IN FOCUS

What distinguishes today's ESG regulations from earlier environmental rules is their comprehensive coverage of the entire vehicle lifecycle, from design to disposal. As a result, understanding the implications of the different regulatory standards by having an early warning system in place is essential for OEMs and suppliers seeking to successfully navigate the complex landscape of sustainability governance and reach the top of the staircase described above (Figure 1).

In this chapter, we provide an overview of the regulations – with a focus on the European Union – having the greatest impact on the automotive industry, and which are most challenging for OEMs and suppliers to comply with. They are the Carbon Border Adjustment Mechanism, the Batteries Regulation and the End-of-Life Vehicles Directive. The EU's carbon dioxide emissions performance standards and the emissions trading system have also greatly impacted the automotive industry, however given their maturity we do not discuss them here.

FIGURE 2: SUSTAINABILITY REGULATION (EU) BY DIFFICULTY OF COMPLIANCE AND OVERALL IMPACT ON THE AUTOMOTIVE INDUSTRY



A

CARBON BORDER ADJUSTMENT MECHANISM

Why was the regulation introduced?

The Carbon Border Adjustment Mechanism (CBAM), in force since 2023, was introduced with the aim of mitigating greenhouse gas (GHG) emissions embedded in goods imported into the EU. The rules are also intended to prevent the risk of carbon leakage (that is to say, companies moving production out of the EU to countries with less strict emissions regulation, resulting in their overall carbon footprint increasing) by incentivizing emissions reductions globally. The CBAM targets various sectors including steel, aluminium, and chemicals, which supply automotive manufacturing.

What is the regulation's impact on the automotive industry?

Under CBAM, OEMs and suppliers are subject to a mandatory compensation scheme for GHG emissions embedded in the goods they import into the EU. They pay by purchasing CBAM certificates (the certificate price corresponds to the average weekly EU Emissions Trading System allowance price) or participating in an emissions trading system in the country the goods came from. The cost of compensating for embedded GHG emissions has a significant impact on the automotive industry, compounded by the difficulty of ensuring the company is compliant.

How high is the compliance standard?

To comply with CBAM, OEMs and suppliers must achieve complete transparency on emissions along the entire value chain, by installing a sound governance mechanism. Given the complex nature of automotive supply chains and all the interwoven players, as well as the challenge of effectively bringing in reduction measures by sourcing goods with lower emissions, CBAM compliance has a high degree of difficulty.

H

BATTERIES REGULATION

Why was the regulation introduced?

The Batteries Regulation, effective from 2023, aims to prevent and reduce the adverse impacts of using batteries by mitigating the environmental footprint of battery production, use, and disposal. It seeks to promote sustainable practices, reduce resource depletion, and limit the potential environmental harm from waste batteries.

What is the regulation's impact on the automotive industry?

The regulation has a high degree of impact on the automotive industry because it applies to a battery's full lifecycle. In the production or 'cradle-to-gate' phase, OEMs and suppliers must adhere to restrictions on hazardous substances and include a minimum share of recycled contents for cobalt, lead, lithium and nickel. That applies from 2031, with higher thresholds from 2036. In the use phase, from 2027 onwards a digital battery passport must be provided containing information on the battery model, including carbon footprint, performance and durability. At the end of the battery's life, it is an OEM's or supplier's responsibility to collect each one brought into the market and assess its 'second life' potential for re-use in another industry.

How high is the compliance standard?

Compliance with the Batteries Regulation requires complete transparency throughout the entire battery lifecycle. Based on the insights of the value chain assessment, adjustments to supplier selection and the battery development process may be required, enabled by "4Rs" capabilities (refurbish, remanufacture, reuse and recycle) and effective steering mechanisms. These requirements present the risk of increased stress on the way OEM and supplier organisations are run, as well as significantly increased operational costs, making compliance difficult.



END-OF-LIFE VEHICLES DIRECTIVE

Why was the regulation introduced?

Like the Batteries Regulation, the proposed End-of-Life Vehicles (ELV) Directive – initially introduced in 2000 – sets out to incentivize circularity throughout a vehicle's lifecycle by setting standards for reusability, recyclability and recoverability.

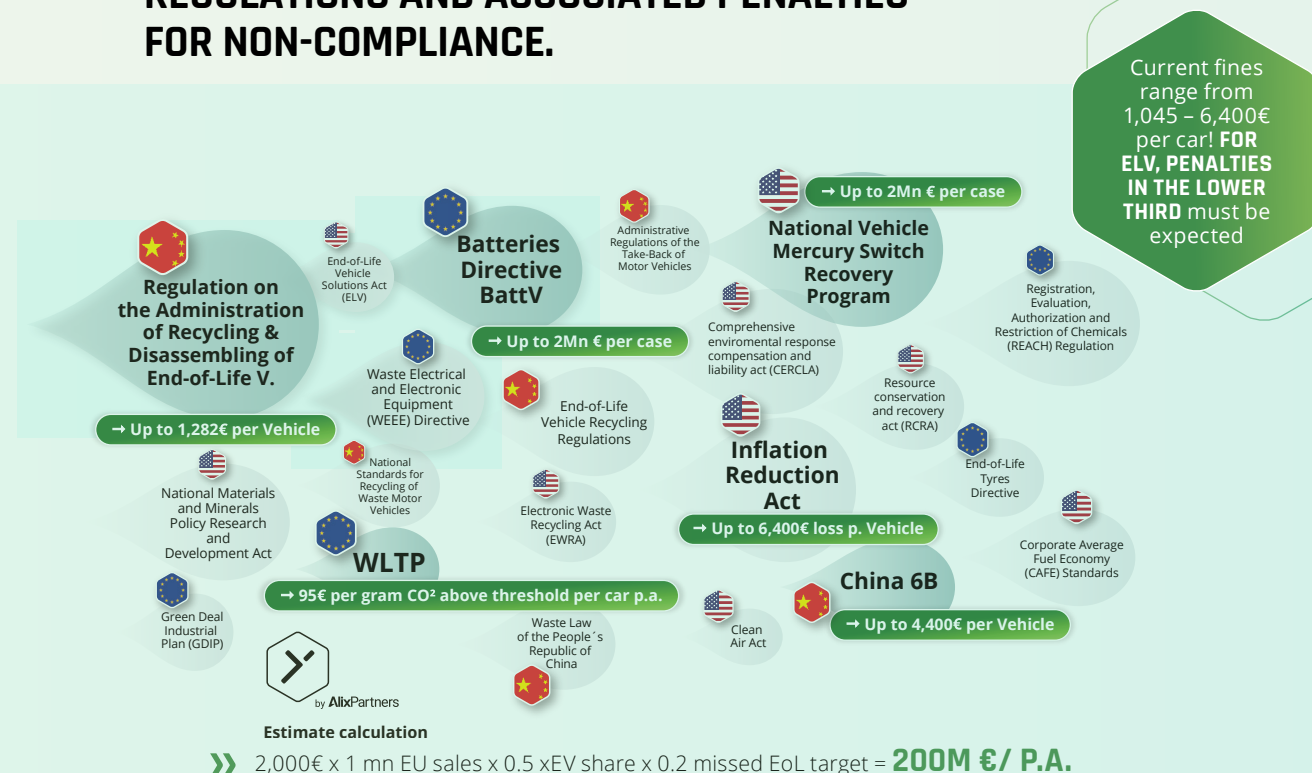
What is the regulation's impact on the automotive industry?

New regulation that would replace the original directive was proposed in 2023. The existing directive already has high standards, including that 95% of the weight of an ELV should be recovered or reused. However, the proposed new rules include ensuring carmakers are financially responsible for vehicles when they become waste, so that the right ELV processes are carried out by recycling and reuse facilities. OEMs and suppliers will also have to ensure at least 25% of the plastic used to build a vehicle is recycled, and that more materials are recovered, including steel and aluminium.

How high is the compliance standard?

As with the Batteries Regulation, compliance with the proposed ELV regulation can only be achieved via complete transparency across the entire value chain. Effective steering mechanisms are required to successfully achieve circularity, and non-compliance is not only a threat to the environment and an OEM or supplier's brand image. There is also a financial risk: our estimates indicate that if 20% of a company's vehicles failed to meet end-of-life targets, they may face fines in the region of €200 million, assuming a penalty per vehicle of €2,000 and annual EU-wide combined sales of 500,000 electric vehicles, of which 20% fail to meet end-of-life targets.

FIGURE 3: SELECTED GLOBAL SUSTAINABILITY REGULATIONS AND ASSOCIATED PENALTIES FOR NON-COMPLIANCE.



Source: Berylls by AlixPartners

3

THE UPSIDE OF SUSTAINABILITY: TURNING GREEN INTO GOLD

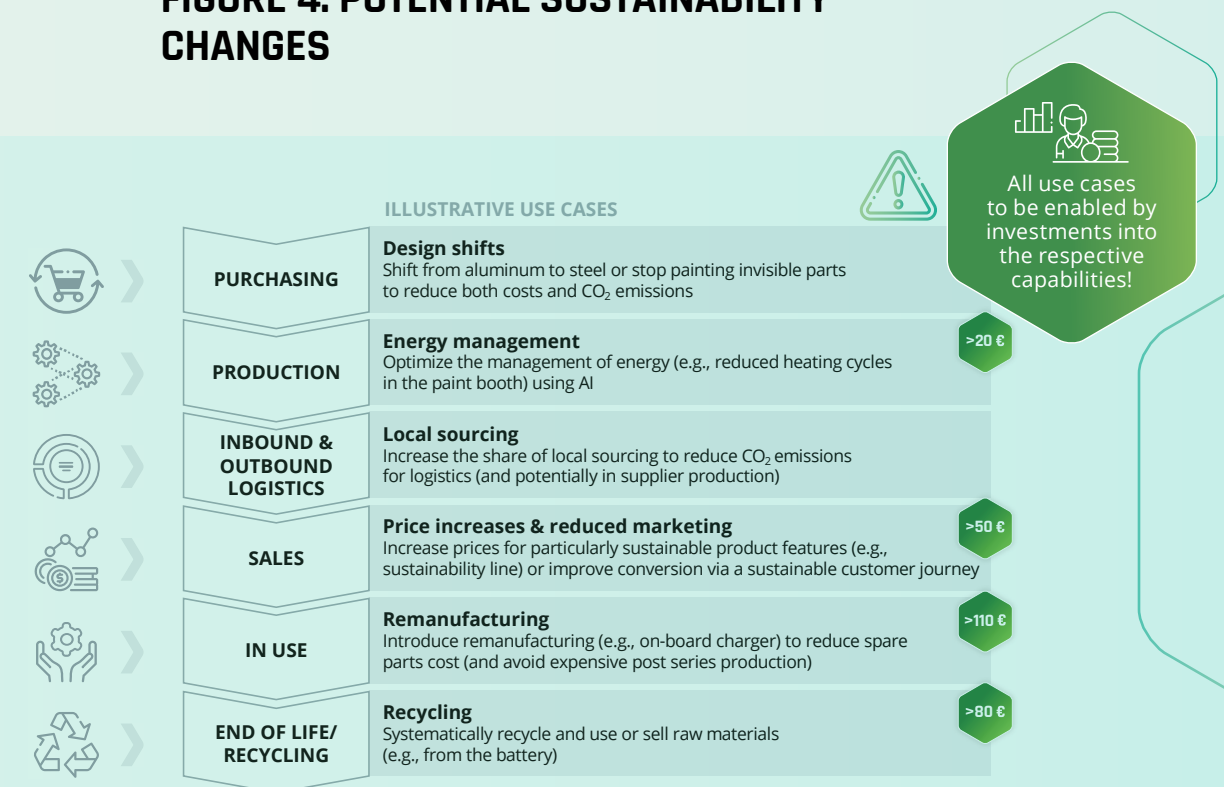
In conclusion, the evolving automotive regulatory landscape presents significant challenges to automotive players, necessitating complete transparency and advanced governance mechanisms throughout the entire value chain. Proactive ad-

aptation to these standards is imperative for long-term competitiveness and environmental stewardship, as non-compliance poses significant financial risks, including substantial fines.

However, sustainability is not just about meeting regulatory requirements and avoiding fines – there is a **positive business case** both for OEMs and suppliers. In Figure 4 below, we set out potential

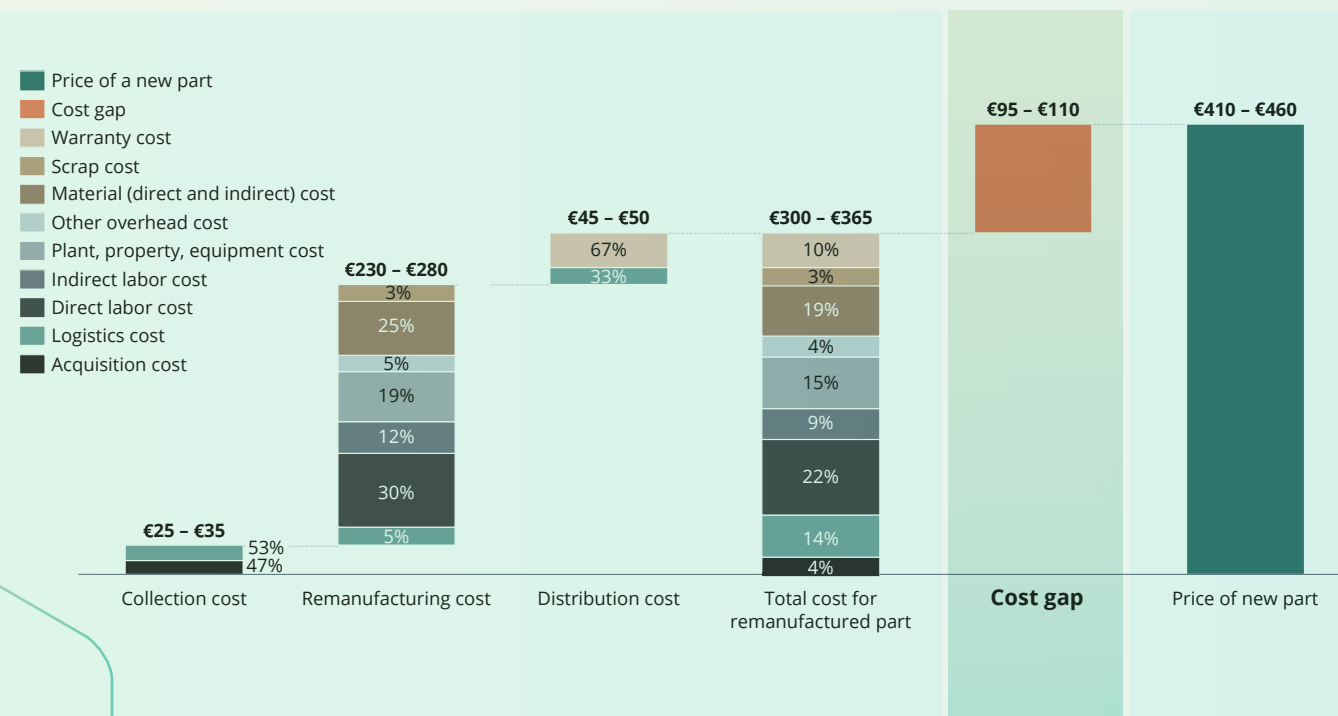
changes that can significantly increase profit per vehicle. We found an **upside potential of more than €260 per vehicle** – and we believe this is very much the tip of the iceberg.

FIGURE 4: POTENTIAL SUSTAINABILITY CHANGES



€ Approximate profit impact per vehicle

FIGURE 5: INDICATIVE COST CALCULATION FOR A REMANUFACTURED ON-BOARD CHARGER



One promising potential use case is remanufacturing the car's on-board charger, which can then be sold as a spare part in the aftermarket. Comparing the price of a new part and the cost of remanufacturing, **savings of around €110** per part can be realized (see Figure 5). In addition, the cost savings can increase over time, since after series production ends, the price of spare parts can go up because they are produced in lower volumes. And of course, further savings might be achievable via the refurbishment of different types of parts.

(If you want to learn more about refurbishment, please refer to our earlier study, which will soon be followed by a new publication assessing the carbon emissions savings from refurbishment.)

Each measure which increases energy efficiency does not just reduce the manufacturer's energy costs, but also the **cost of emissions certificates** under the EU's Emission Trading System. Furthermore, all emissions reduced along the value chain can reduce costs for **volun-**

tary CO₂ compensation if it is the auto-maker's goal to sell a carbon-neutral vehicle.

Sustainable use cases also extend to other companies involved in the sales process, such as dealers. If dealers aim to hand over fully charged battery electric vehicles (BEVs) to customers to facilitate the switch to e-mobility, they can reduce their emissions and save money by having solar power cells installed. We estimate this can easily lead to savings of around **€12 per BEV charged**.

Depending on the sustainability maturity of each company in the various parts of the value chain, some top- or bottom-line improvements will be easier to achieve than others. That's why sustainability needs to be closely steered across the company, to understand where the opportunities can be found. Of course, this also holds true for assessing the sometimes-significant investments required to turn potential use cases into reality.

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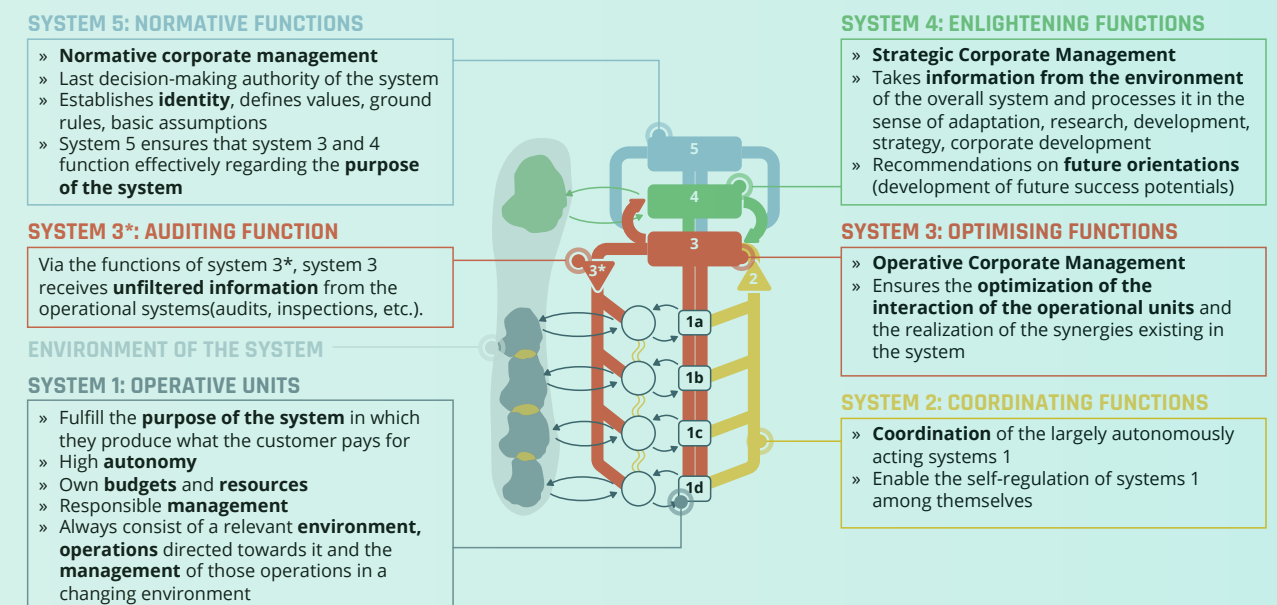
MAXIMIZING THE SUSTAINABILITY BENEFIT: THE ANSWER LIES IN THE STEERING SYSTEM

Companies must now urgently integrate all the dimensions of sustainability into their operations, strategy, and decision-making processes. Yet doing so is not at all straightforward. Organizations need to measure the performance of all their functions and partners along the value chain, at all management levels, in all regions and across the entire lifecycle of the product.

The complexity extends from the strategic level down to the operational level, involving multiple stakeholders, processes, and systems. We believe the answer to making complexity controllable lies in a steering system such as the Viable System Model, developed by the operations research theorist Stafford Beer in his 1972 book *Brain of the Firm*. The model works in the following ways:

- The primary focus of the Viable System Model (VSM) is not to define structures such as the established divisions and departments within an organization, but to define the relationships between them. This principle, called "recursivity", enables problem-solving strategies for dealing with complexity across the organization.
- Using the VSM, the operational units of a company must be organized as five viable systems, as Figure 6 below shows:

FIGURE 6: THE VIABLE SYSTEM MODEL (VSM)



Source: Berylls by AlixPartners, following Pfiffner (2020) – Die dritte Dimension des Organisierens

5

Applying the model to the complexity of measuring and managing sustainability throughout an automotive organization, each system within the company must answer these fundamental questions:

» System 5

Are the purpose, mission and role of sustainability clearly defined, meaningful and anchored across the whole organization? What effect do the normative guidelines have in today's steering system?

4

» System 4

Is the strategic orientation for sustainability clear (the basic sustainability requirements vs. current purchasing criterion, for example)? Is the sustainability strategy communicated clearly throughout the organization?

3

» System 3

Are sustainability priorities set in a targeted manner across, for example, the functions (System 1)? Are resources being used in the best way? What is the "currency" for sustainability?

2

» System 2

Can the operational units of System 1 coordinate their sustainability efforts and avoid overlaps? How is sustainability handled in System 2 processes such as policies and guidelines?

1

» System 1

What are the sustainability requirements of each specific group you interact with (customers and regulators for example)? How are competitors responding to those requirements? What contribution to overall sustainability goals can this largely autonomous system make, and at what cost?

Key decisions in designing the target sustainability steering system include determining which unit has day-to-day responsibility for making sure changes happen (System 1), implementing centralized or decentralized control, and how to create a system that can cope with a certain amount of friction, to accommodate the autonomy of the product teams or functions. Leaders must also translate the overall goals into measurable variables within each VSM system.

Following the model frees up management time while delivering the critical interplay of operational, strategic and norma-

tive management shown in Figure 6 above. In plain terms, companies that apply the VSM are at least one step ahead of their competitors in seizing the opportunities created by this period of industry transition and transformation.

However, effective sustainability steering relies on clear targets for each level of the organization. The business units in System 1 need measurable KPIs derived from the strategic goals (set in System 4) to work autonomously to meet the company's sustainability goals and obligations. In the following section, we set out our approach to target setting and measuring.

5

A KPI TREE IS THE OPERATIONAL BACKBONE OF THE STEERING MODEL

As described above, sustainability affects every level of an organization in interconnected ways. A target set by one department to reduce greenhouse gas emissions, for example, is very likely to also affect the activities of other functions and departments further up or down the value chain. Additionally, a company aiming to improve its overall sustainability performance, must consider further environmental impacts besides greenhouse gas emissions (global warming), including but not limited to land use change, particulate matter formation or soil acidification.

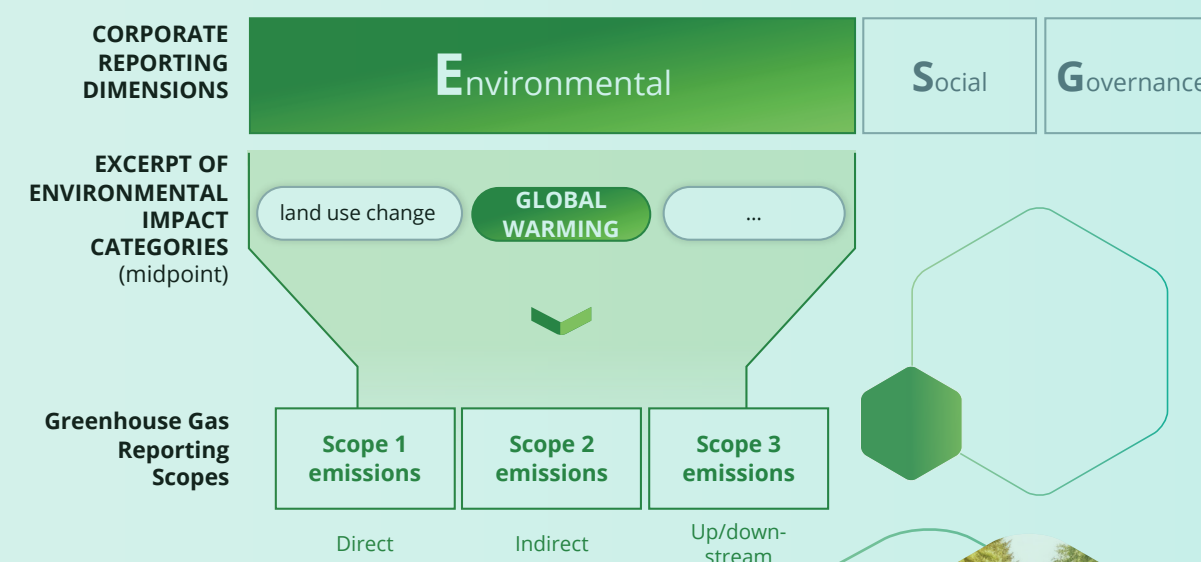
To effectively steer actions to reduce a company's carbon footprint, accurately measuring greenhouse gas emissions as drivers of global warming is essential. These emissions can be categorized in three ways: direct emissions from sources owned by the company, such as its factories (Scope 1), indirect emissions from energy bought by the company to power its operations (Scope 2), and other

indirect emissions along the value chain such as use-phase greenhouse gas emissions like driving combustion engine vehicles produced by a car-manufacturer (Scope 3).

Integrating measures that reduce Scope 1 to 3 greenhouse gas emissions into corporate strategies remains challenging. It is crucial for companies to break down the overarching sustainability objectives into measurable actions across all levels, ensuring alignment and accountability throughout the organization.

Using a KPI tree supports companies' efforts to do this, and also helps them fulfil regulatory requirements such as those outlined in Germany's Corporate Social Responsibility Reporting Regulation (CSRRUG). It gives leaders oversight of the KPIs each level of the organization is pursuing and helps them to visualize the links throughout the company, ultimately driving sustainable business practices.

FIGURE 7: BREAKING DOWN CARBON EMISSIONS KPIS WITHIN AN ESG FRAMEWORK



Establishing the KPI tree

In establishing a KPI tree, the first step is to define specific KPIs across all organizational tiers, from top management down to the Bill of Materials (BOM) level (see Figure 8 below). A main objective is to formulate KPIs that facilitate the budgeting of sustainability impact drivers such as lower carbon emissions and financial goals, for which each organizational level is assigned clear targets.

These targets contribute to an overarching goal – such as a company-wide carbon budget – enabling internal emissions trading. Through such measures, the organization works to optimize resource

allocation across the enterprise and move toward the most cost-effective sustainability measures.

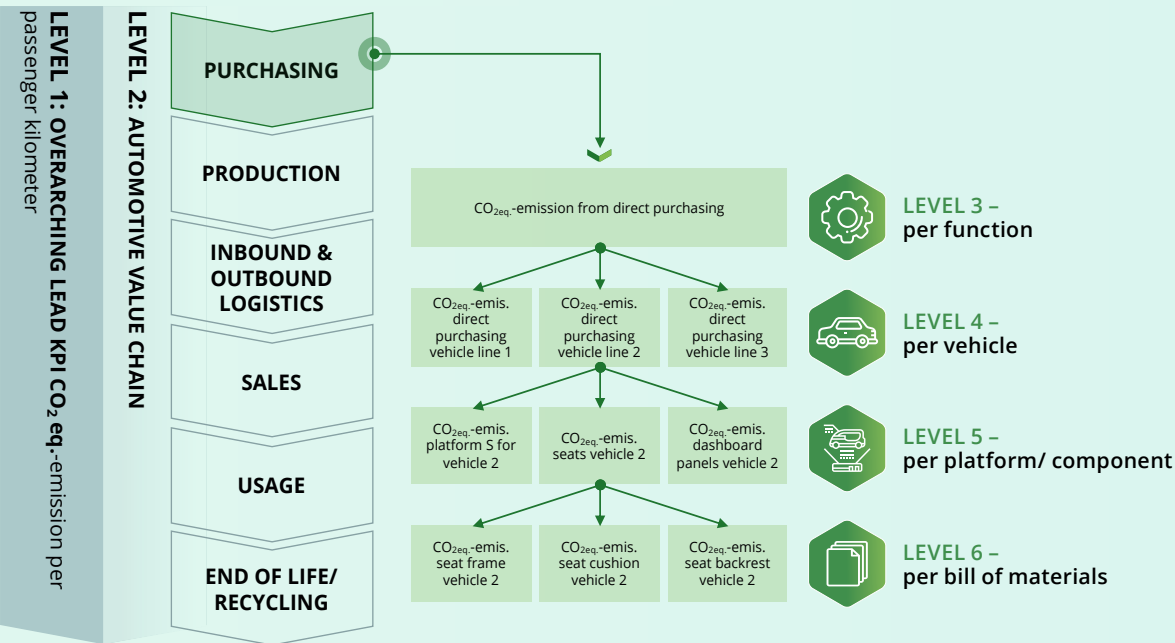
To implement the KPI tree, robust IT systems are vital for measuring progress and generating compliance reports. The right data and analytics tools are needed to collect and analyze data across organizational levels, providing real-time insights into sustainability performance and streamlining reporting processes. Effective IT integration is essential for maximizing the efficacy of the KPI tree and driving continuous improvement in sustainability efforts.

The automotive value chain provides a natural structure

In structuring the KPI tree, organizations can leverage the automotive value chain as the foundational framework. Sustainability goals can be seamlessly integrated into existing organizational processes,

which helps to minimize implementation barriers. The example below shows the hierarchy of KPI levels for purchasing, for example:

FIGURE 8: EXAMPLE LEVELS OF THE KPI TREE ALONG THE AUTOMOTIVE VALUE CHAIN

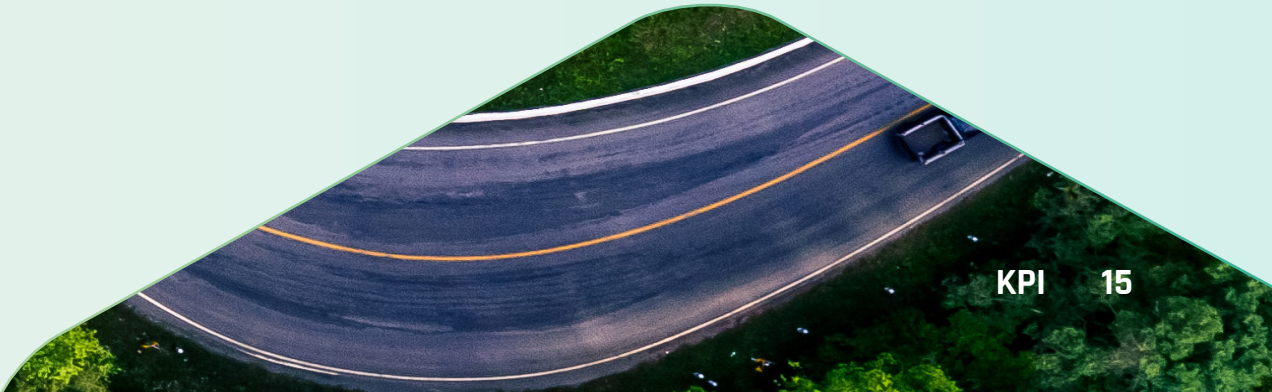


As the example shows, the Level 1 KPI is the overarching goal – to measure carbon dioxide equivalents per passenger. Level 2 represents each step of the automotive value chain, ensuring sustainability considerations linked to the overarching goal are considered in the procurement, production, development and sales processes.

Level 3 KPIs focus on actions for specific functions such as direct purchasing or inbound logistics within the procurement department. Level 4 KPIs are linked to the vehicle itself, tracking sustainability metrics tailored to individual vehicle model lines, while Level 5 KPIs provide further granularity through sustainability metrics at the platform and component level. Level 6 KPIs, at the component or bill of materials (BOM) level, track specific sustainability indicators to ensure compliance and identify optimization opportunities.

In addition to setting the KPIs and organizing them within the framework of the KPI tree, organizations must align KPI ownership with process owners to drive accountability and designate a single source of truth. Making sustainability KPIs part of individual employee goals and clarifying dependencies between different metrics, such as carbon emissions and recycling quotas, are also critical steps in fostering sustainable practices.

Using a KPI tree supports companies' efforts to do this, and also helps them fulfil regulatory requirements such as those outlined in Germany's Corporate Social Responsibility Reporting Regulation (CSR-RUG). It gives leaders oversight of the KPIs each level of the organization is pursuing and helps them to visualize the links throughout the company, ultimately driving sustainable business practices.



BRINGING PEOPLE WITH YOU ON THE SUSTAINABILITY JOURNEY: THE ROLE OF PURPOSE

Establishing an effective steering model is critical, but the effort will achieve nothing if employees do not accept that change is needed and pull in the same direction. To ensure that the whole workforce stands united behind implementing sustainability, a clear purpose must be communicated that makes the transformation meaningful for individual employees.

Companies still often neglect this stage, but in times of transformation, purpose

acts as a valuable glue to unite the workforce. It keeps teams pursuing the same North Star even through difficult times. In the context of sustainability, many employees have already taken on board the importance of the issue as individuals, and this makes it easier for companies to communicate their target picture for a sustainable future and to create incentives for implementation.

There are three steps to developing a compelling purpose:

1. Reflect on the company's core values and beliefs: what do you want to stand for in the context of sustainability?
2. Understand the needs and expectations of all stakeholder groups, including employees, customers and local communities
3. Craft a clear and inspiring purpose statement based on these insights

As well as making implementation more effective, having a clear sustainability purpose can become a competitive advantage in recruiting skilled workers. This is because employees are increasingly motivated if their work contributes to a higher,

societal goal – working for a company with a clearly defined purpose is the second most important criterion for employees, directly after remuneration and even before the actual role (see Harvard Business Review 1/2021, "Calling Brands").

To make sure that employees are united behind the sustainability purpose, automotive companies need to address two different groups: new employees should be hired based on their intrinsic drive to contribute to sustainability, while existing employees need to be taken along. This can be done best by:

- Defining clear sustainability responsibilities for every employee
- Offering training in the necessary skills to monitor sustainability KPIs
- Incentives for employees and managers linked to sustainability KPIs
- Managers leading by example with a sustainability mindset

CONCLUSION

The days of automakers competing to promote the most ambitious sustainability goals are passed. Actually executing the ambitions is now an urgent necessity, to satisfy regulatory obligations and customer expectations. And the answer to making this happen? It's the steering system, stupid – to paraphrase the famous words of Bill Clinton's election strategist.

Our experience working with OEMs and suppliers has shown that the key to solving the complex challenge of sustainability, and staying ahead of rivals, is through effective steering. Just as automotive companies have mastered the control of their financial resources over the last 100 years, now they must embed a similar level of oversight of their environmental and social impact and resources.

The key steps that OEMs and suppliers should take now are:

- » Set a clear strategy that goes beyond regulatory demands to reap top- and bottom-line benefits in the sustainability transformation
- » Set up an early-warning system and watch regulations closely to be prepared for different regulatory scenarios
- » Set up a holistic steering model for sustainability that has the same management attention and detailed design as today's financial steering
- » Define sustainability targets in alignment with the company's overall strategy and break down central targets into manageable KPIs for each organizational unit
- » Don't underestimate the power of a clear purpose on sustainability – purpose-driven organizations are performing better in their transformations

An effective sustainability control system must be tailored to the individual organization. Berylls brings a proven methodology to the table, using the VSM to analyze the company's current steering model and design the target sustainability control system. The model becomes reality by using the operational backbone of the KPI tree and managing employees' response to change, building support with a clear sustainability purpose. We have deep expertise working with all parts of the automotive value chain and are committed to working with clients to embed sustainability.

Get in contact with us to start your organization's sustainability steering journey.

GET TO KNOW US.

Berylls by AlixPartners – The expertise of our top management consultants extends across the complete value chain of automobility – from long-term strategic planning to operational performance improvements. Based on our automobility thought leadership Berylls by AlixPartners stand out with their broad experience, their profound industry knowledge, their innovative problem-solving competence and, last but not least, their entrepreneurial thinking.

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