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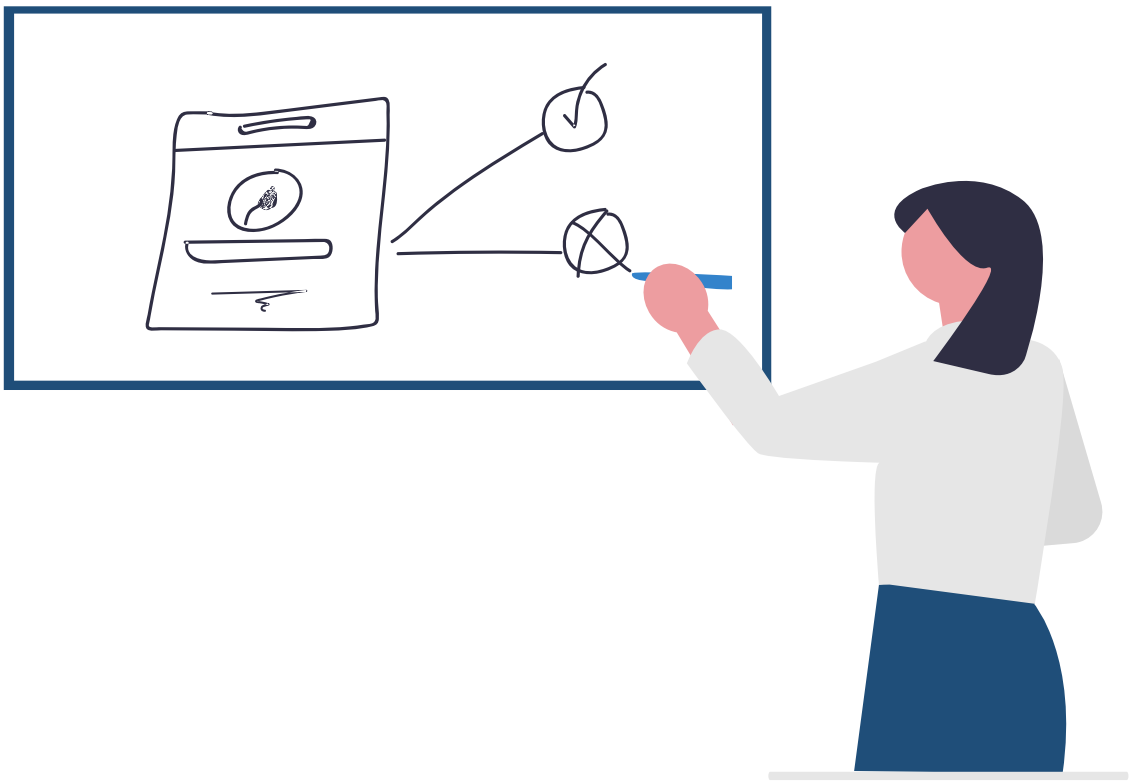

Identifying Synergies between Efficiency, Resilience and Sustainability

Report 5

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Synergies as Important Drivers for Supply Chain Viability

Supply Chain Viability (SCV) requires companies to develop efficiency, resilience and sustainability simultaneously and in a balanced manner. However, our analysis of trade-offs (Report 2) shows that, in practice, decisions are predominantly made based on short-term cost logic. Efficiency dominates, while resilience and sustainability are primarily assessed by whether they pay off in the short term. As a result, capabilities that only have an impact in the medium to long term are systematically neglected. The consequence is obvious. Affected companies will not be viable in the medium term, as their competitiveness may be drastically reduced.

In practice, companies could prioritise SCV measures that deliver the greatest possible impact with the least possible capital expenditure. The potential for synergies lies in measures that simultaneously improve several SCV dimensions, thereby reducing the need for costly compensation. Synergies that strengthen resilience and sustainability and improve efficiency and cost position in the long term, are particularly valuable.

Despite their strategic importance, there is no systematic approach to identifying synergies, either in research or in practice. While companies are aware that synergies are possible, they do not know where they arise, what triggers them or how to realise them. This report highlights the areas of the supply chain where synergy potential arises, the drivers that influence it and how companies can leverage this potential to develop SCV strategies.

The benefit of identifying synergies

Synergies offer companies the greatest return on investment, as a single measure can simultaneously improve several SCV dimensions. A systematic search for synergies can expand strategic options and help reduce, or even eliminate, existing trade-offs. Many of these options only become apparent when the three dimensions are considered together rather than in isolation, and when the drivers and mechanisms are examined in depth. Synergies also strengthen the argumentative basis when communicating with top management.

Measures that serve multiple objectives provide a stronger economic rationale and make it easier to prioritise SCV investments. However, the most significant benefit is the potential for gaining new competitive advantages. Synergies can unlock unexpected innovation potential. In conclusion, we present examples of companies whose unintended synergies have yielded a wholly novel and distinctive competitive advantage.

Definition of a synergy in the context of SCV

A synergy occurs when a measure has a reinforcing effect that simultaneously strengthens at least two SCV dimensions without worsening a third. Synergies, therefore, enable a cross-dimensional effect with limited capital investment. They shift trade-offs towards integrated solutions.

Synergies often arise when integrated viability measures (IVMs) are applied in ways that reinforce their effects. Please refer to Report 4 for further details. This requires companies to consider the long-term benefits of investments, rather than focusing solely on short-term cost impacts.

Objectives of this report

This report outlines how companies can systematically identify and leverage synergies to develop SCV. To achieve this, we have structured the synergy analysis around drivers, mechanisms, and synergy fields.

Our analysis shows that only a few synergies are applicable universally. For example, measures such as nearshoring can act as synergies in one context but represent a clear trade-off in another. Therefore, a generic set of synergies would be analytically imprecise and of little practical use. Instead, we present a framework to help companies identify synergies in their own contexts.

Finally, we outline how the results can be used to develop SCV strategies and thereby move from trade-off analysis to the practical implementation of SCV.

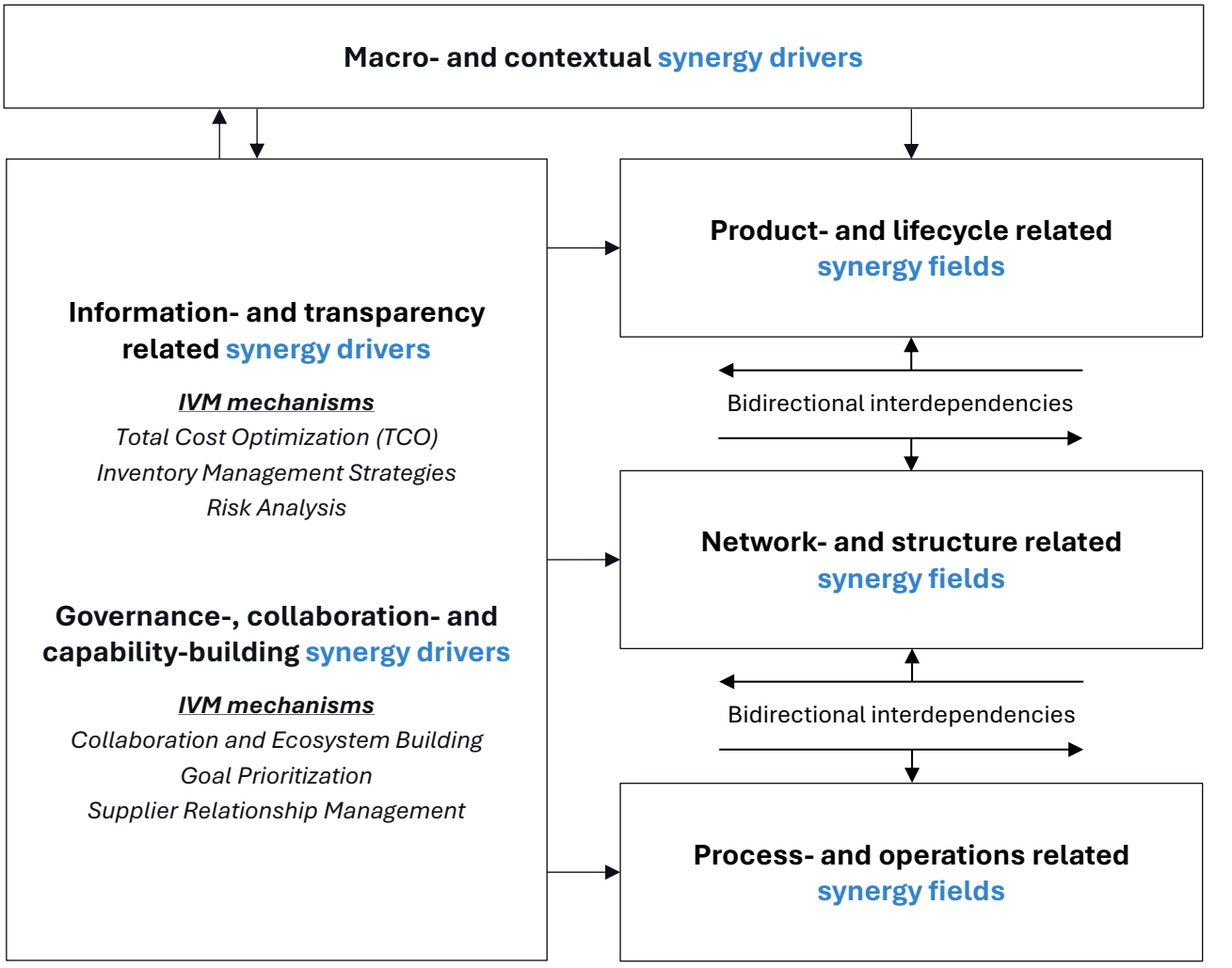
Applied research methodology

The identification of synergy drivers and areas was based on an exploratory research approach. After performing a semi-systematic literature review, we conducted 28 expert interviews, during which we identified specific synergies and approaches to managing trade-offs. All statements were then organised in a multi-stage coding process.

The Relationship between Synergy Drivers, IVMs and Synergy Fields

Synergy drivers are factors that trigger and reveal the potential for synergies. They transform information and decision-making processes in ways that create new connections among efficiency, resilience, and sustainability. **Integrated viability measures (IVMs)** act as central mechanisms. Applying them improves several SCV dimensions simultaneously and unlocks hidden synergies. **Synergy fields** are areas in which IVMs lead to particularly high levels of mutual reinforcement. This is why most synergies arise in these fields. Figure 1 illustrates the relationship between these three elements.

Figure 1
SCV-Synergy Framework



Macro- and Contextual Synergy Drivers

These drivers describe external developments that force companies to make structural adjustments, thereby unlocking new synergy potential. They include regulatory requirements, geopolitical shifts, market volatility, technological changes and societal expectations regarding sustainability.

Synergy Driver	Short Description
Industry-based structural change	– Changes in the industry require adjustments to the supply chain. – Examples might be raw material shortages, new market structures, and technological upheavals. – Typical responses include securing environmental and operating permits at an early stage or anticipating technological shifts.
Regulatory shifts and global compliance pressure	– Regulatory changes often require processes to be adapted. This often leads to higher costs in the short term. But it offsets in the long term. – Typical examples of this are environmental regulations, due diligence obligations and transparency requirements.
Societal value change towards sustainability	– Changing social values are leading to rising consumer expectations, for example in terms of transparency, product quality and corporate integrity. – New competitive advantages based on sustainability can be established, since may show greater purchasing power. Additionally, changing values within the company itself reduce reputational and regulatory risks.

Information- and Transparency-related Synergy Drivers

These drivers arise from insufficient data quality, a lack of standardisation or a lack of end-to-end visibility. They indicate when data-based interventions are necessary to make conflicts between efficiency, resilience and sustainability visible and quantifiable. Information and transparency drivers work by enabling decision-makers to understand cause-and-effect relationships.

Synergy Driver	Related IVM	Short Description
Digitalized multi-tier visibility and transparency systems	Risk Analysis	– Building end-to-end visibility with digital technologies, AI and digital twins to allow real-time data support faster responses to disruptions. – At the same time, transparency about all SCV-KPIs, also lead to more balanced decisions in favor of SCV. – The combination of high data quality and digital twins can thus drive the identification of interesting synergies.

Synergy Driver	Related IVM	Short Description
Enterprise-wide IT platform integration and data standardization	Inventory Management Strategies	– Company-wide IT platforms and uniform data standards allow for a better information flow. Important are identical and consistent data formats to reduce analysis and coordination effort. – Bundling of experienced knowledge is great for better learning, greater responsiveness and improved forecast quality. Might result in faster scaling of best practices.
Market intelligence and price monitoring	Risk Analysis	– With market and price information, companies can faster identify risks and volatility. This also makes procurement and stock decisions more accurate. – Early warning systems provide indications of capacity bottlenecks, price risks or disruptive market movements. This reduces the number of bad purchases. – When raw material prices fluctuate sharply, stockpiling could stabilise costs.
Performance control based on operationalized SCV metrics	Total Cost Optimization (TCO)	– Control of the supply chain using integrated KPIs, that make costs, risk and sustainability comparable. – Furthermore, operationalised KPIs enable better communication of SCV results to stakeholders. – Examples might be total-cost-to-serve analyses, CO2 transparency, or external ratings such as EcoVadis.
Trade-off visibility and systematic analysis tools	Total Cost Optimization (TCO)	– Making trade-offs between efficiency, resilience and sustainability transparent and assessable. – Using systematic analysis tools such as tracking models, weighing logic or simulations. – Adapting decisions, as in risk management, to new data, disruptions or contexts.
True-cost transparency and environmental cost internalization	Total Cost Optimization (TCO)	– Environmental impacts are fully disclosed and priced in. – False efficiencies are eliminated. – Environmentally harmful options are recognised as being more expensive in the long term. – Alternative materials, modes of transport or production methods become more economically attractive. – Examples might be internalisation for CO_2, resource consumption or waste.

Governance-, Collaboration- and Capability-building Synergy Drivers

These drivers result from leadership logic, organisational structure, stakeholder integration and collaborative structures. They determine the supply chain's ability to implement measures consistently across functions and companies. Governance and collaboration drivers indicate when organisational prerequisites must be established for synergies to be realised.

Synergy Driver	Related IVM	Short Description
Cross-functional stakeholder integration in decision-making	Collaboration and Ecosystem Building	– Stakeholders can be involved in decision-making processes. – This can be done across functions and departments. – Formats such as S&OP or decision-making models with suppliers and customers can improve the quality of forecasts and decisions. – GRI-based transparency and non-financial reporting strengthen trust and legitimacy among stakeholders.
Interorganisational collaboration	Collaboration and Ecosystem Building	– Resources, knowledge and infrastructure can be shared among stakeholders and between organisations that operate independently of one another. – Several companies can join forces to create a shared infrastructure. – Joint investments can stabilise transport routes and reduce emissions. – Collaborations improve the quality of decision-making. – Shared stock pools can strengthen security of supply. – Such collaborations are difficult to achieve in isolation but result in advantages.
Internal SCV competence development	Goal Prioritization	– Internal SCV knowledge must be built up in order to identify synergies. Implement gradually and carry out small pilot projects to avoid overwhelming your staff. Honesty is important here, especially when it comes to risk analyses and sustainability initiatives. – Workshops, qualified SCM personnel and peers of different ages are recommended for building up expertise. Top management must also be involved to ensure that SCV solutions become part of day-to-day business. – Technical, social and communication skills as well as courage are necessary for the implementation of SCV. Internal ‘marketing’ for SCV is also relevant, which requires a high degree of explanatory skills.

Synergy Driver	Related IVM	Short Description
Redefining the business model through the perspective of SCV	Goal Prioritization	– One of the most frequently mentioned and, at the same time, most unclear points. In the best-case scenario, resilience and sustainability aspects are developed into a key competitive advantage. However, what this looks like in practice remains somewhat unclear. The fact is that there is great potential for synergies. – Among other things, higher reputation through good ESG performance, stronger customer confidence and even new revenue potential were mentioned. – Especially in the long term, ESG-motivated decisions can have a positive impact on all dimensions. The great opportunity lies in the fact that business models and the core benefits of the company can and must be completely rethought, with SCV principles being considered from the outset.
Replacing profit-oriented bonus logic with responsibility-oriented leadership	Goal Prioritization	– An interesting driver is when top management aligns the profit-based bonus culture with SCV-related KPIs. – The aim is to focus on responsibility, alternative approaches, sustainability and long-term stability. Fair remuneration, further training and being treated well motivate employees to stay with the company and commit themselves. – Even if traditional incentive systems are not very effective for companies, focusing on long-term responsibility can strengthen the decision-making culture in favour of SCV.
Reinvestment of efficiency gains into SCV capabilities	Goal Prioritization	– There is an approach to reinvest freed-up capital in sustainability practices rather than succumbing to the logic of profit maximisation. – Savings in resource-wasting areas can free up funds. – It is about finding creative ways to free up funds and reinvest them (intelligently, innovatively) in SCV initiatives.
Strategically integrated sustainability governance	Goal Prioritization	– SCV must be institutionally anchored and supported by top management. – Top management needs to set clear guidelines and standardised evaluation systems to avoid wrong decisions and make the right operational trade-offs. – This driver, therefore, requires a top-down overall concept in favour of SCV within the company. – This driver also requires new management skills.
Ongoing implementation and training of a crisis task force	Goal Prioritization	– Setting up a crisis task force can lead to a competent learning and control structure. – This requires regular training, monitoring routines and good partner networks. – In this way, implicit knowledge from past crises is preserved and further developed. This leads to faster, better decisions, even outside times of crisis.

Synergy Driver	Related IVM	Short Description
Long-term contracts, close partnerships and supplier capability building	Supplier Relationship Management	– Reliable supplier relationships increase quality, resilience and sustainability. This includes diversified sources of supply, clear supplier codes of conduct, audits, ISO standards and supplier development. – Customer-specific solutions are also conceivable (e.g. service level agreements or logistics partnerships). – Direct procurement from suppliers instead of through distributors enables significant synergies and better price transparency. This requires a concept that does not make the company dependent on wholesalers.
Socially oriented supplier investments in the Global South	Supplier Relationship Management	– Social investment in supplier locations in developing countries has a high social impact. – Training programmes, fair working conditions and local initiatives have far-reaching effects (e.g. development of skilled workers). This can lead to massive improvements in wages in developing countries. – Improved working conditions create also more reliable supply relationships.

Product- and Lifecycle-related Synergy Fields

These areas of synergy are highly effective, as changes to product design usually also require positive adjustments to the supply chain structure and processes. The synergy fields mainly relate to the circular economy and cradle-to-cradle approaches and aim to simplify the product structure (reduction in variants, modular product architectures).

Synergy Field	Short Description
Circular reuse and service-based models	– Approaches to reuse and repair, as well as the provision of services, are an important area for synergies between all three dimensions. – In many cases, the focus is on cost reduction, which can have a positive impact on robustness and sustainability.
Design-for-sustainability and cradle-to-cradle	– Developing products with sustainability in mind rather than short-lived products enables interesting synergies. – The focus is on durable, low-pollutant materials and closed cycles to reduce dependence on volatile raw materials. – The cradle-to-cradle approach focuses on recyclability, reparability and reuse, which can reduce material costs.
Material substitution and commodity-based design	– Switching to standardised or sustainable materials allows suppliers to be changed quickly. – At the same time, materials that are less complex or more sustainable can reduce environmental impact and lower costs. – In short, simplifying materials leads to a simplification of the supply chain and thus to lower costs, greater resilience and environmental benefits.
Modular product architectures	– Modular product architecture standardises products to make them easily scalable. This approach often reduces development costs and resource consumption.
Variant reduction and standardisation	– Reducing variants reduces complexity, inventory and susceptibility to errors. – Simpler, faster, more cost-effective operation thanks to reduced process effort. – Reduced maintenance effort and simplified spare parts procurement. – Lower complexity enables better energy and resource efficiency.

Network- and Structure-related Synergy Fields

This synergy field focuses on structural changes in the supply chain. The synergies that emerge from this field are highly context-dependent. Whether a specific configuration represents a synergy or a trade-off varies from company to company. This is why there are many similarities with Report 2, in which we presented the trade-offs. Typical areas of synergy arise in the selection of locations and in the architecture of inventory levels, regionalisation and network diversification.

Synergy Field	Short Description
Customer-proximity production and micro-factories	– Relocating production capacities closer to the sales market can generate synergies. – This can reduce transport dependencies, emissions and volatile logistics costs. – Micro or regional factories located close to customers can also reduce inventories and throughput times while enabling a calculable cost structure.
Distributed inventory and safety-stock architectures	– Conscious distribution of stocks across multiple locations/partners offers synergies. – Warehouses located close to customers (see previous driver) enable shorter response times and alternative means of transport. – External warehouses at the supplier's premises can reduce capital commitment and relieve inventory pressure.
Network diversification (multi-sourcing and regions)	– This area of synergy describes the targeted establishment of multiple sources of supply. – Dual or triple sourcing can reduce dependencies without increasing system complexity too much. – Complementary regional or local suppliers can reduce transport-related emissions and enable rapid switching in the event of disruptions, while global core suppliers continue to secure cost advantages.
Regionalisation and nearshoring configurations	– Closer regions for procurement and production can have a positive effect. – Shorter transport routes can reduce inventories and cut emissions. – Regional networking enables faster throughput times and less coordination effort. – Nearshoring facilitates quality and ESG control. – In combination with automation, more robust production capacities can be created.
Vertical integration and insourcing	– Insourcing production or service processes creates many synergies, as dependencies are reduced and interfaces simplified. – Managing the entire supply chain also becomes easier. – Insourcing also has cost advantages and can improve the level of service.

Process- and Operations-related Synergy Fields

This synergy field typically stems from product and network architecture, which is why it is represented at the bottom of Figure 1. The strongest synergy field by far arises when processes can be designed to be more resource- and energy-efficient. This almost always has a positive impact on all three SCV dimensions. Other typical areas of synergy arise from integrated business planning, packaging, transport routes and modes, as well as from a general reduction in process complexity.

Synergy Field	Short Description
Criticality-based inventory and process policies	– Inventory and process strategies based on the criticality of items can create synergies. – Classifications such as ABC/XYZ can reduce inventory and control costs because only essential products are stocked. – Reduced storage and material usage for C/Z items can conserve resources.
Energy-efficient and resource-efficient operations	– Reducing energy and resource consumption lowers costs and environmental pollution. – Greater efficiency means less dependence on volatile energy prices. – Savings can be used for modernisation. – Examples include waste heat recovery, energy-optimised automation modes, life cycle-based warehouse architectures and renewable energy systems.
Integrated business planning and synchronised operations	– The synergy field combines sales, production, procurement and logistics planning to make processes more effective. – Coordination and capacity fluctuations are reduced, delivery windows become more predictable and order cycles longer, and processes run more smoothly. – High utilisation rates can reduce transport and emissions without compromising the availability of goods. – Use strategic planning cycles to address conflicting goals.
Optimised packing density and consolidated shipments	– Measures to maximise transport and packaging utilisation reduce costs, emissions and susceptibility to disruption. – Higher packing density can enable the use of lower-emission modes of transport. – Consolidated orders or bundling of purchase volumes generate economies of scale. – Reducing partial loads, empty runs, and unnecessary transport movements increases operational efficiency and environmental impact.

Synergy Field	Short Description
Reduction of process and organisational complexity	– This area of synergy simplifies workflows and interfaces to make processes more effective. – Some examples: Automated testing devices can reduce error rates and strengthen material cycles. Surplus materials can be donated instead of disposed of. Standardised onboarding processes shorten administrative throughput times and enable the rapid integration of sustainable materials or risk measures.
Supplier-driven inventory and replenishment management	– Transferring responsibility for inventory and planning to efficient, well-integrated suppliers creates synergies. – Models such as vendor-managed inventory (VMI) can reduce internal costs and strengthen cooperation structures, which minimises conflicts of interest and supports ecological and economic improvements.
Transport route and mode optimisation	– This area of synergy describes the targeted selection and control of transport routes, times and modes. – Optimised route planning can reduce transport costs, stabilise delivery performance and reduce emissions. – Switching to rail or combined intermodal solutions can offer environmental benefits and mitigate capacity and disruption risks. – Air freight used in specific situations can ensure security of supply. – In addition, sustainability measures can reduce fuel consumption and technical susceptibility to disruption.

Use Cases of Successfully Implemented Synergies

To better illustrate the “dry” subject of synergies in practical terms, we have identified real-life examples. These companies have achieved synergies between efficiency, resilience and sustainability in creative and innovative ways. Some of the companies have been anonymised and given fictitious names, as most of the scientific studies were conducted anonymously.

NORDCONSTRUCT: Terminal-driven last-mile delivery[9]

NORDCONSTRUCT (fictitious name) operates in a logistics-intensive environment, where the coordination of materials and equipment is essential due to the limited space on construction sites. Timely and efficient deliveries are crucial. To optimise last-mile logistics, they use decentralised storage facilities (terminals), which are operated by an external logistics service provider. Deliveries are bundled, stored, and forwarded to the construction site.

- ✓ Efficiency gains: JIT, reduction of truck movements and workload.
- ✓ Resilience gains: Higher flexibility, buffer function of critical materials.
- ✓ Sustainability gains: Lower transport emissions through bundling, less material waste through weather-protected storage.

CIRCORA: From waste disposal company to raw material supplier[9]

CIRCORA (fictitious name) is one of the leading companies in recycling and environmental management. While they originally focused on waste disposal, they now offer detox processes and create value from waste streams. CIRCORA evolved from a waste disposal provider into a supplier of recycled raw materials. The company has also developed new technologies and initiated political debates to enable a circular economy on an industrial scale.

- ✓ Resilience gains: Reduced geopolitical dependency for critical raw materials, new local sources, double function as buyer and supplier.
- ✓ Sustainability gains: Reduction of the extraction of primary raw materials, reducing emissions and water consumption as well as biodiversity loss.

CELSA: From primary steelmaking to Europe's largest circular steel chain

The CELSA Group, a major European steel manufacturer, was confronted with three challenges: high CO_2 emissions, dependence on raw materials and the imperative to make steel production sustainable. Traditional blast furnace processes were causing resource consumption, costs, and pollution. The company therefore reorganised its supply and production chain around electric arc furnaces and secondary raw materials, rather than primary ones. Now, over 97% of its products are based on recycled scrap, and co-products such as plastics and metals are systematically recovered and reused. The decentralised collection, storage and reuse of recycled materials is complemented by the gradual decarbonisation of the energy mix.

- ✓ Efficiency gains: Reduced energy consumption, lower operating costs.
- ✓ Resilience gains: Own material sources (through recycling) instead of dependence on the global market, higher buffer capacity.
- ✓ Sustainability gains: 10 million tons of CO2 savings in 2022, 97% recycling rate, 95% reuse rate of production waste.

Kalundborg Industrial Park: From isolated factories to a symbiotic industrial ecosystem

For decades, Kalundborg, an industrial region in Denmark, was known for its separate processes that consumed large amounts of resources and generated waste. Rather than reusing wastewater, waste heat and industrial by-products, these were simply disposed of. Companies invested separately in fossil fuels, water, and new raw materials. Over time, this gave rise to a unique industrial symbiosis system. More than 30 material flows are exchanged between energy, chemical, building materials and utility companies, as well as the municipality. Waste heat from the power plant is used for district heating and industrial processes; fly ash and gypsum from flue gas desulfurisation are used as raw materials in the building materials industry; treated wastewater is recycled; and organic residues are converted into biogas.

- ✓ Efficiency gains: Savings on up to $15 million per year on coal, water, and chemicals, with initial investments of $78 million.
- ✓ Resilience gains: Less external supply required.
- ✓ Sustainability gains: Use of industrial by-products.

Managerial Implications

Companies can exploit trade-offs to establish new synergies between efficiency, resilience and sustainability. A systematic analysis of these conflicting goals can lay the groundwork for differentiated SCV strategies, opening up new opportunities for business model innovation. This provides an opportunity for differentiation, particularly for companies willing to challenge the status quo.

Implications on a strategic level

Trade-offs should be viewed as a strategic starting point rather than a problem. A viability check can supplement major investment, location or network decisions by providing an SCV perspective and expanding the CAPEX/OPEX logic. It is crucial that all three dimensions are systematically incorporated into strategic work and business model reviews. Identifying synergies can give companies a unique competitive advantage in a given context.

On a structural level

The Synergy Framework and Trade-off Map offer clear direction on structural decisions. Network, location and product decisions can be evaluated against defined SCV baselines (e.g. minimum resilience or sustainability). Key considerations include reducing product complexity, achieving consistent standardisation, and adopting modular product architectures. These decisions typically generate synergy effects automatically in the areas of procurement, transport and production.

On a process- and operations level

Trade-offs and synergies should be reflected regularly in planning cycles, such as S&OP. An S&OP SCV check can ensure that major operational decisions, such as changes to suppliers or large orders, are systematically evaluated. Cross-functional decision-making bodies increase transparency and control and facilitate the identification of new synergies in day-to-day business.

SCV Competence Building

SCV can only be established if employees understand and can apply the underlying logic. Therefore, developing SCV skills (technical, organisational

and communicative) is of central importance. Managers need a paradoxical mindset in order to withstand and constructively deal with unavoidable conflicts of interest. Social skills, active stakeholder management and clear communication are also essential for establishing the concept internally and achieving acceptance.

Integrated Viability Measures (IVMs) as control logic

IVMs offer clear, cross-dimensional control logic and should therefore be prioritised. They facilitate the integration of efficiency, resilience and sustainability goals, and systematically identify synergies. Total Cost Optimisation (TCO) plays a special role here, as it considers costs, risks and environmental effects, addressing a key concern for many managers.

Key Insights and Conclusion

How to successfully transition from trade-offs to synergies

Not all trade-offs are permanent. Many synergies can be created if companies actively seek them out. The key lies in clearly identifying areas of synergy and formulating concrete hypotheses. These can then be tested quickly and with low risk using pilot projects, A/B tests, or local implementations. The time dimension is crucial here. Some measures may seem like a trade-off in the short term but generate stable synergies in the medium term (e.g. investments in renewable energies).

SCV requires clearly defined responsibilities. All three dimensions must be managed by roles, committees and processes together. Decisions should be made across functions, ensuring equal representation from finance, SCM, sustainability, or sales, for example.

Many companies pursue an “efficiency first” strategy, thereby worsening resilience and sustainability risks. SCV, on the other hand, requires an integrated system of objectives. Similarly, sustainability is often perceived as a “cost driver with no ROI”, even though many measures generate long-term efficiency and resilience gains (e.g. energy efficiency, material reduction, standardisation and the circular economy). Another misconception is viewing trade-offs as operational details when the central conflicts of interest almost always lie at the structural and strategic level. SCV therefore does not mean maximising all goals simultaneously, but rather achieving an active, dynamic balance with a long-term perspective.

Why do synergies create competitive advantages?

Synergies allow for improvements in several areas to be made simultaneously, giving an advantage over competitors who work on individual areas in isolation. They stabilise cost structures, reduce crisis costs, and mitigate risk and reputational exposure. Furthermore, synergies can be translated into clear market benefits, such as stable delivery capabilities, low emissions and competitive costs. As they necessitate changes to structure, processes and culture, synergies are challenging to replicate and cannot be achieved through isolated measures alone. They are therefore also highly dependent on the company and context.

Main contribution of the synergy framework

This report introduces three concepts: synergy drivers (the reasons why synergies arise), IVMs (methods for identifying synergies) and synergy fields (the areas in which synergies typically occur). Trade-offs and synergies are closely related: trade-offs indicate where potential synergies may be found. In practice, trade-offs are almost always evaluated in terms of efficiency, whereas synergies are often primarily perceived as issues of resilience or sustainability. This can lead to blind spots.

However, efficiency is not only a target variable, but also an enabler that makes resilience and sustainability measures financeable, scalable and stable. Scientific literature confirms that the R-S nexus is often unclear and can have positive, neutral or negative effects depending on the context. Therefore, a context-sensitive assessment is essential.

Since synergies depend heavily on the corporate context, we have deliberately not created a universal synergy map. Instead, the framework provides a structured approach in which companies first identify their own trade-offs and areas of synergy, then use IVMs to develop practical, context-specific solutions.

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