



**Strategic Network Planning reduces  
CO<sub>2</sub> Footprint and Costs**



## Quick-Wins

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- 1 Quick transparency about the network and the associated CO<sub>2</sub> emissions
- 2 Flexible approach and implementation of customer-specific requirements
- 3 Quick identification of optimization potential
- 4 Reliable statements on future cost developments of CO<sub>2</sub> prices
- 5 Sound and sustainable location decision thanks to Integration of the CO<sub>2</sub> component



**Climate protection is one of the most urgent topics of our time. This belief is fueled by scientists' and experts' ever-more-dramatic predictions about our future and a growing political, but also non-political movement within society. And this has tangible effects on strategic network planning. That's why companies are preparing themselves as well as they can.**

**At the Paris Climate Conference, ground-breaking decisions for the climate were made in 2015. The core goal of this agreement is to limit the Earth's warming in comparison to the pre-industrial age to significantly less than two degrees Celsius.**



## CO<sub>2</sub> pricing as climate-protection measure

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The Federal Republic of Germany is a pioneer when it comes to formulating and implementing climate-political measures. One of the first climate protection laws in the world was passed in Germany in 2019. For the first time, it specifies concrete emissions goals for individual sectors and also enables regular checks and adjustments of the measures. The core goal of the law and German climate politics is a reduction of CO<sub>2</sub> emissions by 55% by 2030, as compared to 1990. By 2050, German aspires to be climate-neutral.







In addition to the climate protection law, other parts of the German climate-protection plan are the energy revolution and a hydrogen strategy, as well as the expansion of CO<sub>2</sub> pricing. Starting in 2021, this will also apply to the transit and heating sectors and amount to EUR 25 per ton CO<sub>2</sub> in the first year. In subsequent years, it will increase constantly to EUR 55 per ton of CO<sub>2</sub>. This means that for each ton of CO<sub>2</sub> produced, a fee of EUR 25 or EUR 55 will be required. This fee will initially be paid by the producing companies, for example, fossil fuel companies, but will inevitably be passed along to customers. This process also affects the logistics industry, and especially transport logistics. for today, about 70% of all goods sold in Germany travel by road.





## Project example: Strategic network planning

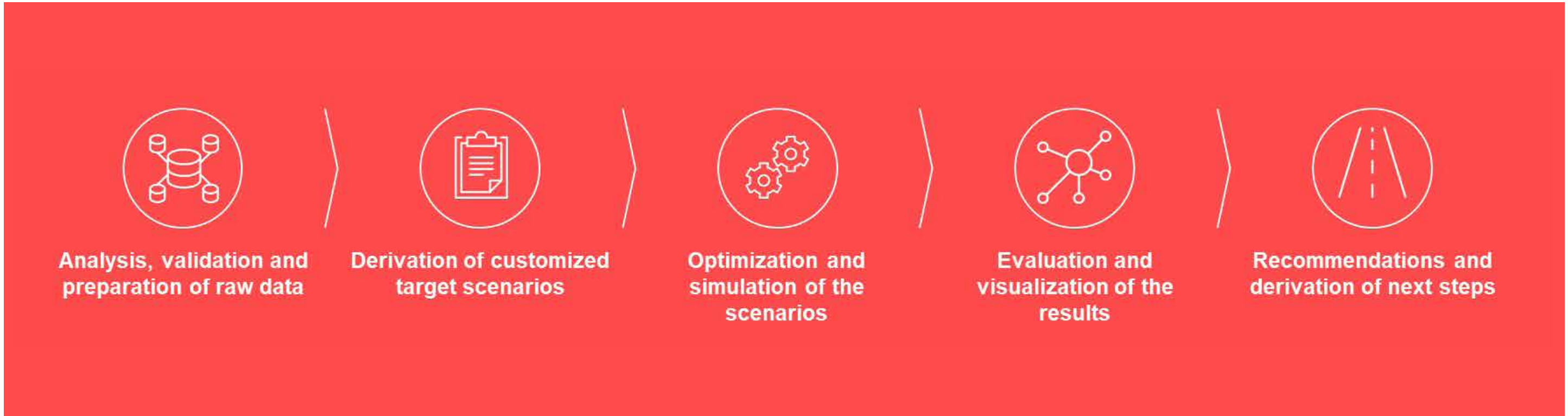
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It is to be expected that sustainability will play an increasingly important role on the strategic level. And this due not just to climate goals, but also to the financial consequences of non-sustainable behaviors and processes. In this area, valantic can already demonstrate some experience with real projects.

As part of one project, valantic performed strategic network planning for a client, taking into account the ecological consequences. Here, the concern was to answer the question where, with an eye to strategic considerations, should a new warehouse be built in Central Europe. According to classic methodology, the transport costs and service quality for customer delivery were defined as target variables in a scenario.

In a second scenario, valantic took over the structures and methods, but selected greenhouse gas emissions as the target variable. Therefore, the two scenarios could be compared directly. As initial basis for the simulation and subsequent mathematical optimization of both scenarios, the company's existing logistics structure and demands for an entire calendar year were used.

# Procedure within network planning projects



The methodical procedure was oriented according to valantic’s best-practice approach, which has been proven to provide quick, meaningful results. Thus, after an initial data review, valantic and the customer were able to define possible scenarios based on various target figures. Then a mathematical model developed in-house was used to optimize the scenarios with regard to transport costs and service level. Last but not least, valantic analyzed the results, evaluated and visualized them, and worked with the customer to formulate the next steps.





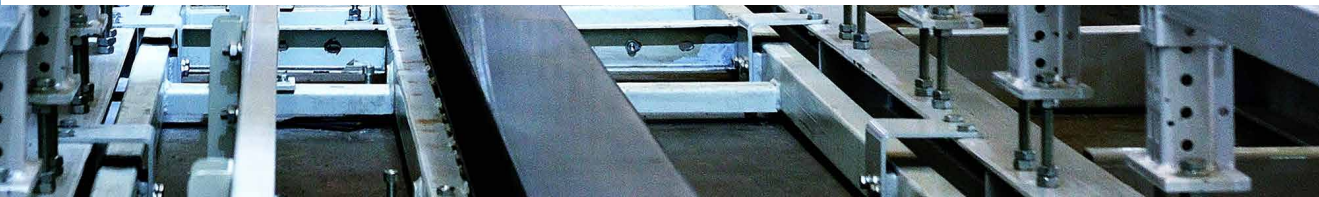
## Comparison of the various target variables and benefits

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What makes this project something special was the expansion of the target variables to include the CO<sub>2</sub> value within the network. For this, emissions values were determined for the means of transport used; these values take into account pure CO<sub>2</sub> and also CO<sub>2</sub> equivalents such as nitrogen oxide and methane. The goal was to determine a logistically optimized warehouse location, which would also have the smallest CO<sub>2</sub> footprint in the network.

Based on this optimization, it can now be estimated quite precisely what the trade-off between transport costs and greenhouse gases would be. In the case examined, there was a difference of 60 km (costs v. CO<sub>2</sub>) or 55 km (service level v. CO<sub>2</sub>) for the optimal warehouse locations.

There was an additional component to the planning of a new warehouse that will be relevant to the business case in the future due to the influence of the CO<sub>2</sub> taxation. And valantic was able to demonstrate this too with the help of the calculation. Here it becomes clear that measures that cause a conservatively estimated improvement of greenhouse gas emissions can mean significant savings: here, between EUR 160,000 and 340,000. Calculated for the entire European or global transport network, this produced enormous savings potential.









No increase or decrease in CO<sub>2</sub> emissions expected

Year	CO <sub>2</sub> Price (€/t)	CO <sub>2</sub> Emission (t)	Total Costs
2021	25,00 €	25.874	646.850,00 €
2022	32,50 €	25.874	840.905,00 €
2023	40,00 €	25.874	1.034.960,00 €
2024	47,50 €	25.874	1.229.015,00 €
2025	55,00 €	25.874	1.423.070,00 €



Increase\* in CO<sub>2</sub> emissions expected

Year	CO <sub>2</sub> Price (€/t)	CO <sub>2</sub> Emission (t)	Total Costs
2021	25,00 €	25.874	646.850,00 €
2022	32,50 €	26.650	866.132,15 €
2023	40,00 €	27.450	1.097.989,06 €
2024	47,50 €	28.273	1.342.977,87 €
2025	55,00 €	29.121	1.601.677,82 €



Decrease\* in CO<sub>2</sub> emissions expected

Year	CO <sub>2</sub> Price (€/t)	CO <sub>2</sub> Emission (t)	Total Costs
2021	25,00 €	25.874	646.850,00 €
2022	32,50 €	25.098	815.677,85 €
2023	40,00 €	24.345	973.793,86 €
2024	47,50 €	23.615	1.121.688,81 €
2025	55,00 €	22.906	1.259.833,64 €

\* In the calculation example, an increase or decrease in CO<sub>2</sub> emissions of 3% per year was assumed.



## Generate Advantages

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Thanks to the expansion of the calculation framework, valantic was able to achieve noteworthy benefits for the customer.



Based on the determined values, further simulations can be built up and thus low-risk adjustments to the supply chain can be carried out.



By quantifying CO<sub>2</sub> emissions and illustrating the associated financial burden on the company, future costs can be estimated.



The determined CO<sub>2</sub> value and the connection with the transport costs within the network serve as resilient arguments in the strategic location decision.







valantic's modular process model, which includes CO<sub>2</sub> as an additional target value in strategic network planning, will serve as the basis for further analyses. This way, in addition to emissions caused by transport, other sources of emissions such as internal greenhouse gas emissions, CO<sub>2</sub> reports from suppliers and sub-suppliers, and emissions during the usage phase can be combined. Consideration of these expanded components, however, goes well beyond pure strategic network planning. valantic offers companies a holistic approach for the measurement, analysis, and operationalization of CO<sub>2</sub> costs in combination with classic logistics data.

We would be pleased to work with you on this exciting and important future topic.



## About valantic

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valantic is the N°1 for digital transformation. We combine technological expertise with industry knowledge - from strategy to implementation. The range of services includes Financial Services, Customer Engagement & Commerce, Business and Predictive Analytics, SAP/ERP/HR Consulting, Enterprise Software as well as Logistics and Supply Chain Mangement.

The valantic Supply Chain Excellence division is the proven partner of companies in the end-to-end digitalization of business processes, optimization of value chains and enhancement of logistics performance. From integrated process and IT consulting to the implementation of IT systems, valantic supports customers in the areas of SCM, production, logistics and supplier management. As part of the SAP Digital Supply Chain, valantic is a SAP partner for SAP Integrated Business Planning.

## You want to learn more?

You can find more information on our website:



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