



## How do environmental factors influence site selection and TCO?

Environmental laws and regulations can vary considerably depending on the location. This results in - sometimes significantly - different efforts, costs and risks when it comes to operating a site. At the same time, the availability of resources is increasingly becoming a more important factor. This involves, on the one hand, ensuring access to renewable energy sources, which can have a significant effect on the overall ecological footprint of the site, and, on the other hand, access to the raw materials required for production. An efficient transport infrastructure matters, too: if the site is in an unfavorable location, additional transport costs can adversely affect the CO<sub>2</sub> balance.

In addition, the impact of site operations on the environment may also become relevant - for example, if a site is located near settlements, wetlands, watersheds, or protected ecosystems. In such cases, additional costs may be incurred, in order to avoid negative impacts on people and the natural environment.

## Do local networks and shorter supply chains promote sustainability?

Generally speaking, shortening and localizing supply chains is not an answer to most environmental and social challenges. Instead, it's necessary to take an overview of the factors which are included in the calculation of the sustainability balance, and in site planning.

If sites are located close to well-developed, efficient transport infrastructures, for example, such locations can partially offset possible disadvantages resulting from the geographical expansion of the network. The deciding factors are the local structures and environment: efficient, regenerative supply networks, effective recycling systems and opportunities to use secondary raw materials, as well as functioning social and legal institutions (with regards to occupational safety and environmental protection).

These factors must be given greater consideration alongside classic criteria when evaluating network topography, in order to holistically assess the profitability, competitiveness, resilience and sustainability of the network, as well as the attractiveness of individual locations.

# Shortening and localizing supply chains is not an answer to most environmental and social challenges

## What is the importance of transparency for sustainable networks?

It's imperative that sustainable networks feature high transparency. This also applies to the evaluation of the ecological, social and institutional sustainability of sites. A central task here is the recording of all relevant factors and the development of an operationalizable key figure system.

The challenge lies both in the consideration of different national, international and industry-specific standards, and in the scope of the analysis. The recording of Scope 3 emissions, for instance, which requires comprehensive knowledge of the value chain over the entire product life cycle, can be particularly demanding. This also applies to the monitoring of social and ethical conditions of value creation.

Transparency about the sustainable footprint of purchasing, logistics and production networks doesn't just serve to meet compliance regulations and corporate ethical codes. It's also a prerequisite for holistic risk management, identification of market opportunities, robust planning processes and stable customer and investor trust, which is increasingly based on the complete traceability of products.

## What role will energy maps play in footprint decisions?

The transition from fossil fuels to emission-free, or low-emission energy sources will have a significant impact on the CO2 footprint of the manufacturing industry. However, especially in energy-intensive industries, renewable energies cannot cover the entire energy demand in the medium term, or guarantee an uninterrupted supply at reasonable costs. So, when considering the energy supply capability of sites, it is a matter of weighing up economic efficiency, security of supply and the lowest possible ecological impact.

There are significant regional differences in the design of a secure and cost-efficient energy mix, especially with regards to the availability of environmentally friendly energy sources. This is especially true when it comes to topographical and climatic conditions, the quality and stability of infrastructures, or access to technologies.

In addition, legal frameworks and political roadmaps also play an important role. Regional and national support programs, incentives and sanctions, institutional stability, and the degree of support for 'green' industrial settlements, can all have a significant impact on the attractiveness of a location. That's why energy roadmaps that map out these different facets will become an increasingly important tool in the development of network strategies in the future.