

In our ever-changing world, implementing new green practices and solutions is more important than ever before. As the industry grapples with the effects of climate change and environmental degradation, logistics companies have become one of those who can influence the situation in reducing carbon emissions and implementing environmentally friendly solutions. *DSV* extensively applies green technologies throughout their services that transform every aspect of their business operations. From advanced delivery strategies to environmentally friendly warehousing practices, *DSV* is unwavering in its commitment to reducing its impact and ensuring a green environment while maximizing productivity and customer satisfaction. This article examines some of the key green technologies employed by *DSV* that not only exceed industry norms, but also set new standards for sustainable excellence in logistics services [2].

Logistics companies use green technologies to reduce their carbon footprints and encourage green practices in response to growing environmental concerns. *DSV* is one of the companies actively involved in the revolution of its activities in the direction of environmental excellence.

Transportation is one of the key areas in which the *DSV* excels. The conventional reliance on fossil fuel vehicles is a major source of air pollution and greenhouse gas emissions. However, *DSV* use hybrid trucks and electric vehicles (EVs) as alternative energy sources. *DSV* is aware that collaborating with suppliers who utilize effective, low-emission machinery is necessary to reduce emissions. Collaboration was formed to research and test alternative fuels for use in road, sea, and aviation transportation [1, 3].

Furthermore, the company itself states that the first steps towards decarbonizing air travel are the efficient use of aviation fuel (SAF) and the streamlining of air cargo transportation.

In contrast, the marine sector already uses less fuel owing to ongoing advancements in ship design and the use of alternative fuels. Trucks powered by electricity, hydropower, renewable gas, and alternative biofuels are the focus of road freight research. The company is currently engaged in pilot projects and agreements with equipment makers, which could alter its procedures in the future. Incorporating these eco-friendly solutions into their transportation infrastructure not only reduces pollutant emissions but also serves as a model for the industry, encouraging clean mobility [1, 4].

Citing their annual report, *DSV* has set aggressive aims to reduce emissions by 50% (scopes 1 and 2) and 30% (scope 3) by 2030 relative to a 2019 baseline by decarbonizing transport and the entire supply chain overall program to price carbon to obtain money for emission reduction initiatives (see Figure 1) [1].

In addition, *DSV* uses advanced systems to optimize its processes. These cutting-edge algorithms determine the most cost-effective routes for goods by considering several variables including delivery timetables and traffic patterns. *DSV*'s Green Logistics program is a prime example that provides eco-friendly solutions such as carbon offsets, supply chain optimization, sustainable fuel options, and CO₂ monitoring. In addition, *DSV* uses advanced systems to optimize its processes. These cutting-edge algorithms determine the most cost-effective routes for goods by considering several variables including delivery timetables and traffic patterns. It is also worth noting that more than 100 optimization projects were completed in 2022 to help customers reduce emissions in their supply chains, according to the 2022 report [1, 3, 4].

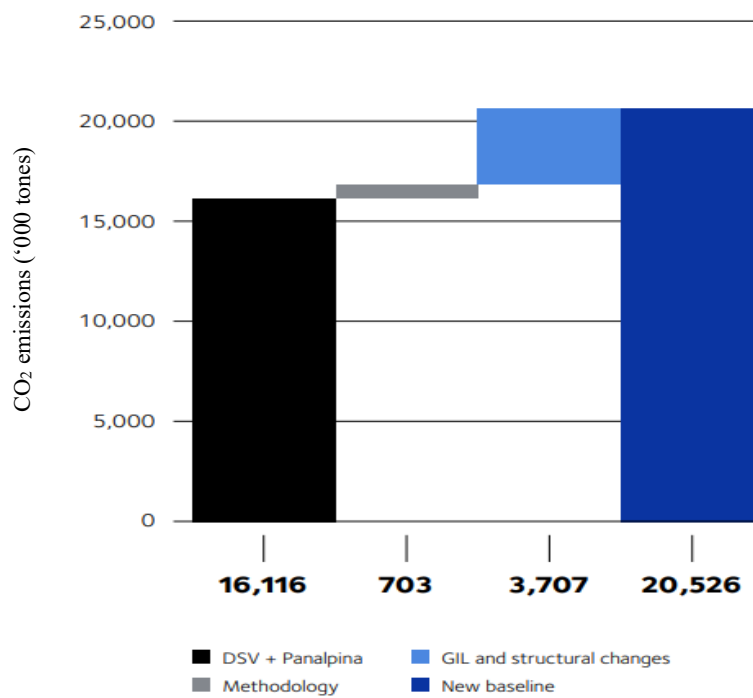


Fig.1. Recalculation of 2019 baseline [1]

Another solution used by the company is "green" packaging, which plays an important role in optimizing the waste generated during their logistics activities; thus, they actively promote environmentally friendly alternatives, such as packaging made from recycled materials or considering the possibility of recycling. At this stage, the DSV aims to reduce waste through recycling programs and increase waste sorting, although the results of 2022. Along with this, they want to make waste management a global company policy that includes recycling, circular economy, innovation, and plastic reduction [1].

The warehouse solutions used by DSV companies are also an important part of the sustainable development of logistics. These solutions include state-of-the-art warehouse management systems equipped with intelligent sensors that monitor lighting and occupancy in every space of the facility to ensure optimal energy use without wastage or overconsumption. DSV are currently building new projects that meet leading environmental building standards such as BREEAM, LEED, and DGNB. However, their goal is to build buildings that are environmentally friendly, focusing on circularity principles that maximize space and reduce waste. In addition, rooftop areas of the facilities are planned to be used for renewable energy production, such as solar panels and possibly wind power, in conjunction with the "DSV Energy" initiative. DSV's new logistics center has opened in Horsens, Denmark, showcasing energy-efficient and sustainable features, including geothermal technology. In addition, innovations, such as an automated warehouse search system, reduce land use and preserve the natural environments around warehouses [1].

In addition, the company uses another way to improve sustainable development - "reverse logistics" - a process that aims to optimize the return of products, allowing enterprises to recover valuable resources, minimizing waste generated during the return process. Such comprehensive DSV schemes ensure efficient return and reintegration of products into the supply chain, with minimal environmental impact [1].

All things considered, the company's ecological orientation toward contemporary society is its strongest suit. This will help them to become more competitive with other logistics firms and attract more clients who share their commitment to sustainable development.

Simultaneously, however, there are several additional environmentally friendly technologies that might be applied to enhance not only environmental consciousness and enhancement, but also rebranding and advertising the business as the finest in the soy sector.

One sustainability solution that a company can consider in the future is waste-to-energy. As was previously noted, secondary recycling of packaging—that is, waste—occurs here as well. However, the organic waste created during the company's operations will be converted into biogas using technologies. To enhance sustainability, biogas can be used as an alternative fuel source in a company's cars and logistics facilities. However, it also has some challenges, such as high capital and operating costs, environmental and health impacts, and potential competition with recycling and composting (Fig.2) [5, 6].

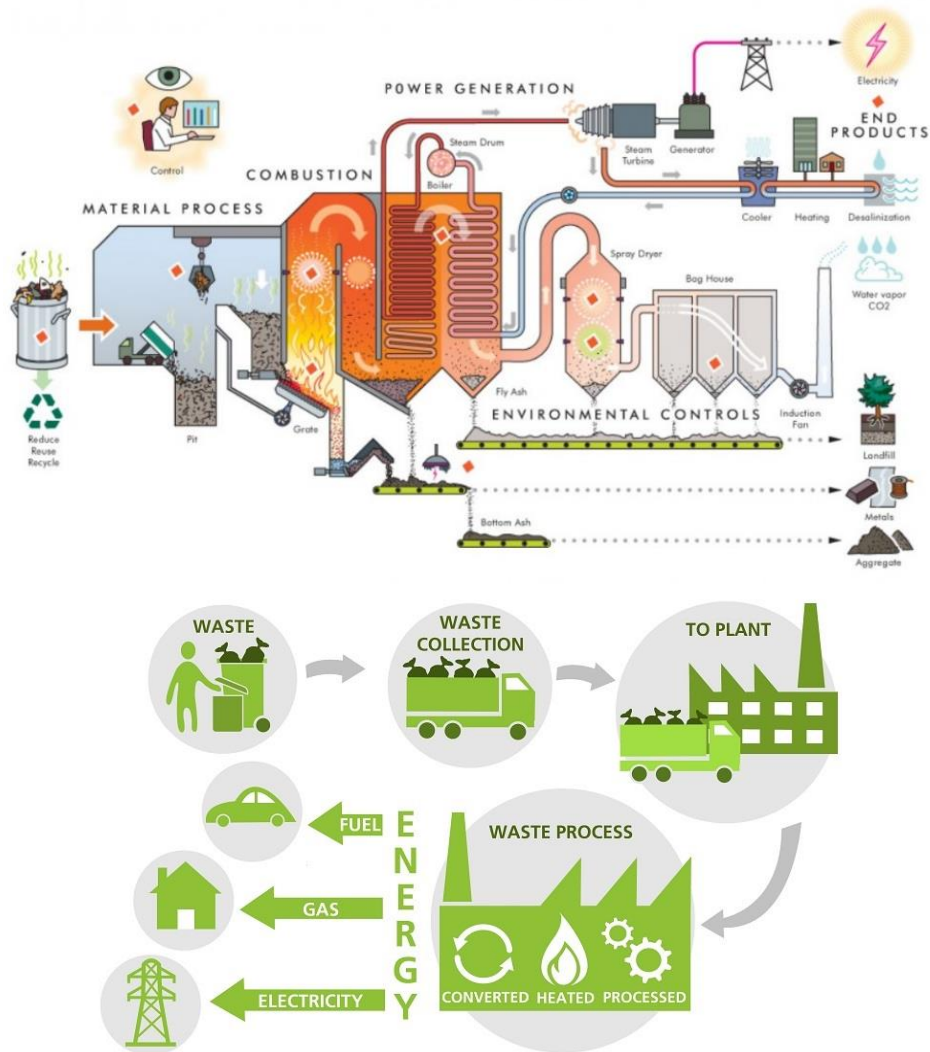


Fig.2. Schematic representation of the waste to energy system's operational cycle and result [12, 13]

The next interesting solution for creating an efficient, secure, and sustainable supply chain for delivery will be the use of smart containers, which are much like regular containers, but they are equipped with internet-connected devices and interconnected sensors that collect, compare and transmit container data, with the ability to view it in real time anywhere in the world. They can be used to monitor and regulate humidity, temperature, shock detection, geolocation and other factors that are important for sensitive consumer goods. In other words, containers can use energy sources to maintain optimal conditions and preserve the quality of the cargo, reducing the percentage of energy consumption and spoilage (Figure 3) [7, 8].

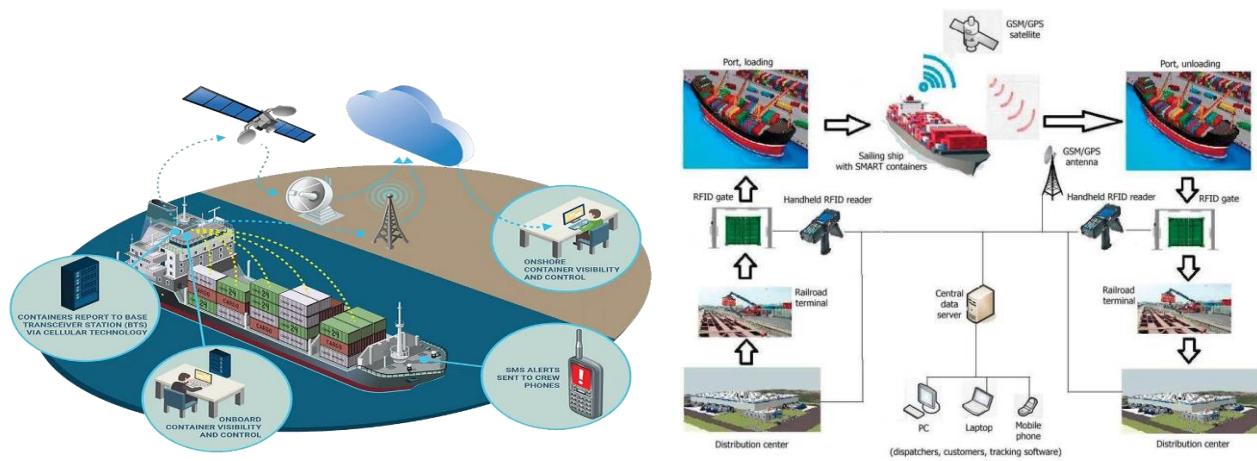


Fig.3. Examples of smart containers in supply chains [14, 15]

Examining the potential installation of undersea cargo tubes for effective intercontinental transportation will be fascinating. When building a bridge or operating a ferry is not feasible, tunnels—which can be entirely or partially submerged under water or a river—are frequently utilized to supplement or ease the load on already-existing bridges and ferry crossings.

However, in the modern era, this kind of solution is not only practical but also highly inventive and futuristic. One such concept is the Hyperloop, which proposes using underwater tunnels instead of cargo ships. This could bring about a radical change in the global transportation of commodities by providing a quicker and more effective method of transportation. It is also important to consider the drawbacks of such a solution, including the difficulties in building and maintaining such a sizable infrastructure due to the complex geology, high building costs, and possible environmental effects. However, if we get into more detail about the outcome, the tunnels can be fueled by renewable energy sources and greatly lower the emissions connected to long-distance transportation, which can be very advantageous for the business. However, Norway is currently considering this concept and the plans to construct underwater floating tunnels as a 40-billion-dollar infrastructure project. Thus, the author believes that there is a lot of room for innovation and advancement in the field of international freight transportation (Fig.4) [9, 10, 11].

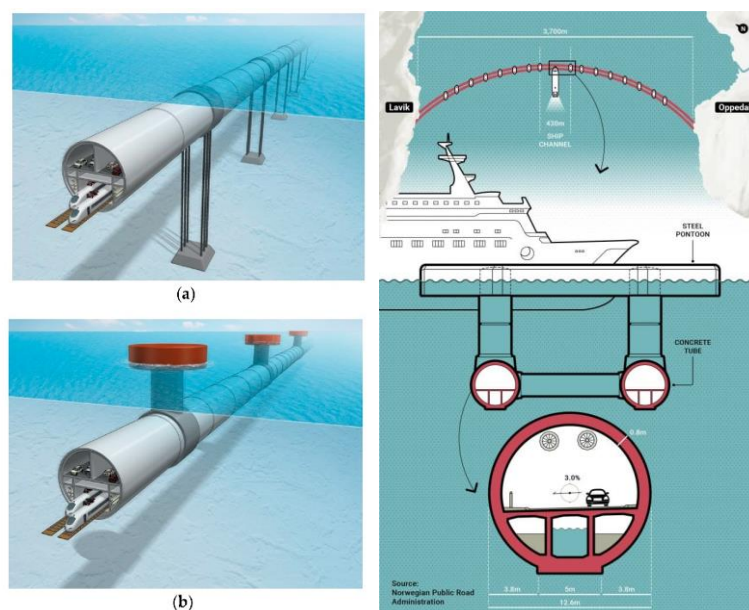


Fig.4. Types and variations of the use of underwater floating tunnels [16, 17]

Applying a few of these distinctive and cutting-edge strategies could significantly lessen DSV's environmental effect while establishing the company as a leader in sustainable logistics. These tactics support the more general objectives of sustainable development and environmental preservation in the logistics sector.

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