STANDOUT PROJECT

Carbon Impact and Sustainable Mobility Model

Deliverable No.	Deliverable 3.3
Authors	Jean Esselström and Project Partners
Organisation	County Administration Board of Västernorrland (WP3 Leader)
Due Date	26.06.2026
Abstract	This report assesses the carbon impact of mobility activities undertaken within the STANDOUT project and presents a sustainable mobility model for future exchanges. Based on travel data from project activities in Denmark, Germany, Italy, Portugal and Sweden, the analysis identifies the main sources of emissions and evaluates opportunities for reduction through low-carbon transport options. The report concludes with practical guidelines for sustainable travel planning, supporting environmentally responsible project implementation and contributing to the objectives of the European Green Deal.

Co-funded by the European Union

With the support of the Erasmus+Sport Programme of the European Union.

Table of Contents

1. Executive Summary

This report presents the methodology and results of the carbon impact assessment undertaken for the STANDOUT project exchanges. It analyses greenhouse gas emissions generated through project mobility activities, accommodation, and local transport, and evaluates measures implemented by project partners to reduce and mitigate these impacts.

The report further explores sustainable mobility alternatives and provides recommendations for future transnational cooperation projects seeking to minimise travel-related emissions while maintaining the benefits of international exchange and knowledge sharing.

Prepared within Work Package 3, this deliverable contributes to the STANDOUT project's commitment to sustainability, climate responsibility, and alignment with the European Green Deal.

.

2. Summarization of the carbon impact from the Standout project exchanges

Climate considerations have been an integral part of the STANDOUT project. One of the project's objectives is to increase partners' and associated partners' understanding of the environmental impacts associated with mobility and transnational cooperation. This approach is aligned with the European Network of Outdoor Sports (ENOS) Policy Position Paper on the European Green Deal and supports the project's commitment to promoting sustainable practices.

The climate impact of project mobility activities has been measured in kilograms of carbon dioxide equivalent (kg CO_2e), a standard metric used to quantify greenhouse gas emissions. In addition, the emissions have been monetised by applying a financial value to the estimated carbon footprint. This approach helps to illustrate the environmental cost of project activities and raises awareness of the importance of reducing and mitigating emissions.

The assessment focuses on the STANDOUT project exchanges held in Denmark, Italy, Portugal, Sweden and Germany. The calculations provide an estimate of the greenhouse gas emissions generated through project-related travel and accommodation activities. The results can be used by project partners and other organisations to better understand the environmental impact of transnational cooperation and to estimate the potential cost of carbon offsetting measures.

To monetise the emissions, a reference carbon price has been applied based on the European Union Emissions Trading System (EU ETS). As of June 2026, the market price of EU emission allowances was approximately €80 per tonne of CO_2e. This value has been used as an indicative benchmark for estimating the financial value of the project's emissions. As carbon prices fluctuate over time in response to market conditions, this figure should be regarded as a guideline rather than a fixed cost.

3.1. Climate impact

The five STANDOUT project exchanges generated an estimated total of approximately **19,200 kg CO_2e**. When shared equally among the ten project partners, this corresponds to an average carbon footprint of approximately **1,920 kg CO_2e per partner**.

While the emissions were generated through collective project activities and mobility exchanges, this allocation provides a useful reference point for understanding the environmental impact associated with each partner's participation. The results also highlight the importance of adopting sustainable mobility practices and considering lower-emission alternatives for future transnational cooperation activities.

~

Table 1. Calculated and estimated climate impact on the Standout project exchanges

Activity	[Kg CO2e]	Percentage	Distance [km]	Ratio [kg CO2/km]	Gram [CO2/km]
Air travel	15 918	88%	119 688	0,133	133
Car	863	5%	19 315	0,045	45
Electric car	56	0%	3 720	0,015	15
Train	712	4%	38 741	0,018	18
Boat	295	2%	730	0,404	404
Local transport	153	1%	3 765	0,041	41
Shared accom-modation	944	-	-	-	-
Hotel accom-modation	0	-	-	-	-
10% OB	253	-	-	-	-
Totals	**19 194**	**100%**	**187 677**	-	-

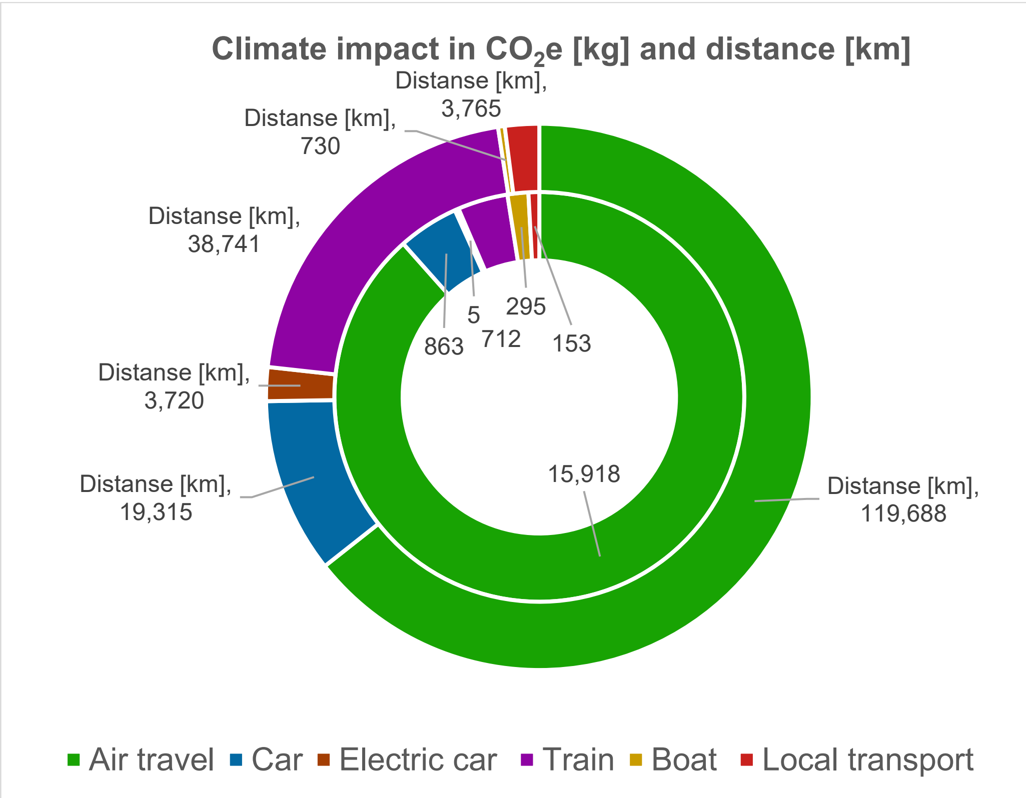

Figure 1 Climate impact, inner circle CO_2e [kg] and travel distance, outer circle [km]

3. Analysis of the Climate Impact of the STANDOUT Project Exchanges

The STANDOUT project generated an estimated **19,194 kg CO_2e** through partner mobility and exchange activities, covering a total travel distance of **187,677 km**. This assessment provides an overview of the environmental impact associated with project implementation and highlights opportunities for reducing emissions in future transnational cooperation initiatives.

As illustrated in Table 1, the emissions profile is heavily concentrated in a single transport mode: air travel. Although several forms of lower-emission transport were used throughout the project, flights remained the dominant contributor to the overall carbon footprint.

3.1. Key Findings

3.1.1. Dominance of air travel

Air travel accounted for approximately **15,918 kg CO_2e**, representing **88% of total project emissions**. With an emission intensity of **133 g CO_2e per kilometre**, flying was significantly more carbon-intensive than the land-based alternatives used within the project.

This finding demonstrates that a relatively small number of long-distance journeys can have a disproportionate impact on a project's overall carbon footprint. Consequently, decisions regarding international travel represent the most significant opportunity for reducing emissions in future mobility-based projects.

3.1.2. Efficiency of land-based transport

The analysis highlights substantial differences in carbon efficiency between transport modes.

Electric vehicles recorded the lowest emission intensity at **15 g CO_2e/km**, compared with **45 g CO_2e/km** for conventional cars. This represents a reduction of approximately **66%** in emissions per kilometre.

Rail transport also performed exceptionally well, with an emission intensity of **18 g CO_2e/km**. Compared with air travel, train travel generated approximately seven times fewer emissions per kilometre, demonstrating its value as a sustainable alternative for medium-distance European travel.

Local transport, including public and shared transport options, produced **41 g CO_2e/km**, broadly comparable to private car travel but with a relatively limited contribution to total project emissions due to the shorter distances travelled.

3.1.3. High-intensity transport modes

Although boat travel represented only **730 km** of the total travel distance, it recorded the highest emission intensity within the dataset at **404 g CO_2e/km**.

This result illustrates that the environmental impact of travel is determined not only by distance but also by the selected transport mode. Even relatively short journeys can contribute disproportionately to overall emissions when high-intensity transport options are used.

Co-funded by the European Union

With the support of the Erasmus+ Sport Programme of the European Union.

Table 2. Comparative emission intensity by transport mode.

Mode of Transport	Intensity [g CO2e/km]	Relative Impact
Electric Car	15	Lowest
Train	18	Very Low
Local Transport	41	Moderate
Car	45	Moderate
Air Travel	133	High
Boat	404	Very High

3.2. Contextualising the Project's Carbon Footprint

To better understand the scale of the emissions generated through project mobility activities, it is useful to compare them with familiar everyday activities. The total project footprint of **19,194 kg CO_2e** is broadly equivalent to driving an average petrol-powered passenger vehicle approximately **160,000 kilometres**, a distance roughly equal to travelling around the Earth's equator four times.

To offset the total emissions generated by the project, it would be necessary to implement carbon sequestration measures such as tree planting. However, carbon offsetting should be regarded as a complementary measure rather than a substitute for emissions reduction. Newly planted trees require many years to absorb carbon dioxide at meaningful levels, meaning that the climate benefits are realised only over the long term.

For this reason, reducing emissions at source remains the most effective climate action. The STANDOUT partnership recognised this principle during project implementation and travelled **38,741 km by rail**, reducing the project's estimated carbon footprint by approximately **4.5 tonnes of CO_2e** compared with higher-emission transport alternatives.

By proactively selecting lower-emission mobility options, the project has demonstrated that careful planning can significantly reduce the environmental impacts typically associated with transnational cooperation and exchange activities.

3.3. Hypothetical Scenario: Transitioning to Best Practice

To assess the potential for further emissions reductions, a hypothetical best-practice scenario was modelled in which higher-emission transport modes were replaced by lower-emission alternatives.

The following assumptions were applied:

1. Air travel (119,688 km) is replaced by rail travel with an emission intensity of 18 g CO_2e/km.
2. Conventional car travel (19,315 km) is replaced by electric vehicles with an emission intensity of 15 g CO_2e/km.
3. All other transport modes remain unchanged.

Table 3. Hypothetical best practice travels

Mode	**Distance [km]**	**Intensity [g CO2 /km]**	**New Total [CO2e kg]**
Rail (replaced air)	119 688	18	2 154
Electric Car (replaced car)	19 315	15	290
Electric Car (existing)	372	15	56
Train (existing)	38 741	18	697
Local Transport	3 765	41	154
Boat	730	404	295
Total	**187 677**	**-**	**3 646**

3.4. Analysis of Results

Under this scenario, total emissions would decrease from **19,194 kg CO_2e** to approximately **3,646 kg CO_2e**, representing a reduction of approximately **81%**.

The largest reduction results from replacing air travel with rail transport. Emissions associated with this travel segment would decrease from **15,918 kg CO_2e** to approximately **2,154 kg CO_2e**, saving more than **13.7 tonnes of CO_2e**.

While this scenario demonstrates the significant potential of sustainable mobility planning, it also represents an idealised situation. In practice, rail infrastructure may not be available for all routes, particularly for long-distance international travel. Continued development of sustainable transport solutions, including sustainable aviation fuels and future low-carbon aviation technologies, will therefore remain important.

To provide a broader perspective, Table 4 compares three possible travel scenarios.

Co-funded by the European Union | With the support of the Erasmus+ Sport Programme of the European Union.

Table 4. Comparison of best-practice, current and worst-case travel scenarios.

Scenario	Strategy Description	Total Estimated Emissions [CO2e]
Best Practice	Primarily high-speed rail and electric vehicles.	~3,646 kg
Normative	Current situation (high reliance on air travel).	19,194 kg
Worst-Case	Reliance on solo driving, older short-haul aircraft, and ferries.	~42,000+ kg

The comparison illustrates how transport choices can dramatically influence the overall climate impact of project mobility activities. Based on the total travel distance of **187,677 km**, the difference between the best-practice and worst-case scenarios exceeds **38 tonnes of CO_2e**, highlighting the importance of sustainable mobility planning.

3.5. Insights and Recommendations

The analysis demonstrates that substantial reductions in travel-related emissions can already be achieved using existing technologies and transport systems. Prioritising rail travel where practical and selecting low-emission vehicles for local mobility can dramatically reduce a project's carbon footprint.

The findings suggest that future transnational projects should:

- Prioritise rail travel for medium-distance journeys whenever feasible.
- Encourage the use of electric or shared vehicles for local transport.
- Combine physical meetings with digital collaboration tools where appropriate.
- Consider carbon impacts during the planning stage of mobility activities.

The experience of the STANDOUT project shows that sustainability objectives can be successfully integrated into international cooperation activities without compromising the quality of knowledge exchange and partnership development.

Co-funded by the European Union

With the support of the Erasmus+ Sport Programme of the European Union.

4. Guidelines for sustainable travel

The STANDOUT project recognises that mobility is often essential for international cooperation, knowledge exchange and capacity building. However, careful planning and informed travel choices can significantly reduce the environmental impact of project activities. The following guidelines are intended to support more sustainable travel practices in future project exchanges and events.

4.1. Plan and Prepare

- Select travel dates and times that allow participants to use rail and public transport whenever feasible.
- Use railway stations or public transport hubs as meeting points when organising group travel.
- Schedule visits to popular natural areas during off-peak periods where possible. This helps reduce pressure on local ecosystems and minimises overcrowding.
- Choose accommodation providers with recognised sustainability certifications, such as Green Key, the EU Ecolabel or certification recognised by the Global Sustainable Tourism Council (GSTC).
- Support local businesses and service providers whenever possible to contribute positively to local economies and communities.
- Travel light and bring only essential luggage, as reducing baggage weight lowers transport-related energy consumption.
- Reduce single-use waste by carrying reusable items such as water bottles, cups, food containers and cutlery.

4.2. Choose Low-Carbon Mobility Options

- Prioritise active travel options, such as walking and cycling, whenever practical.
- For medium- and long-distance travel, rail should be considered the preferred option, followed by public bus and coach services.
- Where road transport is necessary, use low-emission vehicles, preferably electric vehicles.
- Encourage car-sharing and coordinated travel arrangements to minimise the number of vehicles used.
- Air travel should only be considered when no practical lower-carbon alternative is available.

4.3. Make Travel Part of the Experience

Sustainable travel should be viewed as an integral part of the project experience rather than simply a means of reaching a destination. Travel time can be used productively for networking, planning, reflection and knowledge exchange among participants.

By adopting sustainable travel practices and sharing positive experiences with others, project partners can act as ambassadors for responsible mobility and contribute to wider awareness of climate-friendly travel choices.

The experience of the STANDOUT project demonstrates that international cooperation can be successfully combined with environmental responsibility through careful planning, informed decision-making and a commitment to sustainable mobility.