

# Reduction of CO2 emissions related to the transportation of refrigerated finished products



In order to reduce the carbon footprint of the transportation of its refrigerated finished products, bioMérieux is setting up a daily low-emissions shuttle between its Marcy L'Etoile and Craponne sites. The shuttle will be made up of a low-emissions tractor, and a refrigerated trailer powered by an all-electric motor.

<b>Starting date of the project</b>	Launch of study in 2019. Commissioning of shuttle scheduled for November 2021.															
<b>Project Localisation</b> Places of implementation of the project at this stage and targeted geography if replicable	Implementation of a shuttle between the bioMérieux sites of Marcy-l'Etoile (69) and Craponne (69). If reproducible, there is possible interest in deploying this project to other regular shuttles over longer distances: for example between the sites of Marcy-l'Etoile (69) and Saint-Vulbas (01).															
<b>Project objectives</b> Type of climate innovation of the project with a description of the problem/issue addressed	<b>Reduce the CO2 emissions of a daily shuttle transporting refrigerated finished products between two sites (40 km/day, half urban / half suburban).</b>															
<b>Detailed project description</b>	<p>bioMérieux wishes to minimize its carbon footprint over a short, but daily route, using little-tested technologies, and thus help the development of such innovations by giving them an opportunity (pioneering role). The innovative nature of this project is based on a combined action aimed at reducing the CO2 emissions of a tractor with refrigerated trailer.</p> <p>In addition, through this project, bioMérieux wishes to support the efforts of its service provider (TFMO) in reducing the carbon footprint of its vehicle fleet, in particular by accepting risk management at its own level (uninterrupted transportation and temperature hold of finished products).</p> <p>To reduce its carbon footprint on such a daily route, the following is planned:</p> <ul style="list-style-type: none"> <li>• Replace a diesel-powered tractor with a low emissions tractor (technologies considered: hybrid and all-electric);</li> <li>• Set up a refrigerated trailer with a refrigeration unit powered by an all-electric motor.</li> </ul> <p>The tractor and trailer will be operated by TFMO, but the vehicle is intended for shuttle routes dedicated exclusively to bioMérieux activities.</p> <p>As part of this project, the company must face several technical challenges:</p> <ul style="list-style-type: none"> <li>• The battery life of the tractor battery pack (hybrid version): 10 km (to be determined for the all-electric version);</li> <li>• The charging time of the various batteries; limited to the time that the vehicle is at the docks (loading/unloading time);</li> <li>• The power consumption and energy efficiency of the refrigerated trailer, whose doors are opened frequently during loading or unloading.</li> </ul>															
<b>Main project's drivers for reducing the greenhouse gas emissions</b>	<table border="1"> <thead> <tr> <th>Reduction factors</th> <th>Details of the associated project aspects</th> </tr> </thead> <tbody> <tr> <td> <input type="checkbox"/> Energy and resource efficiency (including behaviour)                             </td> <td></td> </tr> <tr> <td> <input checked="" type="checkbox"/> Energy Decarbonisation                             </td> <td>                                 Replacing diesel-powered means of transportation with electrically powered vehicles                             </td> </tr> <tr> <td> <input type="checkbox"/> Energy efficiency improvements                             </td> <td></td> </tr> <tr> <td> <input type="checkbox"/> Improving efficiency in non-energy resources                             </td> <td></td> </tr> <tr> <td> <input type="checkbox"/> Emissions absorption: creation of carbon sinks, negative emissions (BECCS, CCU/S, ...)                             </td> <td></td> </tr> <tr> <td> <input type="checkbox"/> Financing low-carbon producers or disinvestment from carbon assets                             </td> <td></td> </tr> </tbody> </table>	Reduction factors	Details of the associated project aspects	<input type="checkbox"/> Energy and resource efficiency (including behaviour)		<input checked="" type="checkbox"/> Energy Decarbonisation	Replacing diesel-powered means of transportation with electrically powered vehicles	<input type="checkbox"/> Energy efficiency improvements		<input type="checkbox"/> Improving efficiency in non-energy resources		<input type="checkbox"/> Emissions absorption: creation of carbon sinks, negative emissions (BECCS, CCU/S, ...)		<input type="checkbox"/> Financing low-carbon producers or disinvestment from carbon assets		
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<b>Emission scope(s) on which the project has a significant impact and quantification of GHG emission reductions per emission scope</b>		<table border="1"> <tr> <th>Aspects of the project contributing to the reduction of emissions, by emission category</th> <th>Quantification of associated GHG emissions by emission category</th> </tr> <tr> <td></td> <td>Please follow the quantification methodology used in <a href="#">the Afep guidelines</a>.</td> </tr> </table>	Aspects of the project contributing to the reduction of emissions, by emission category	Quantification of associated GHG emissions by emission category		Please follow the quantification methodology used in <a href="#">the Afep guidelines</a> .
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	<b>Reduction of the company's dependence on carbon</b>					
	<b>Scope 1</b> <i>Direct emissions resulting from the company's business activities.</i>					
	<b>Scope 2</b> <i>Indirect emissions associated with the company's electricity and heat consumption.</i>					
	<b>Scope 3</b> <i>Emissions induced (upstream or downstream) by the company's activities, products and/or services on its value chain.</i>	Replacing diesel-powered means of transportation with electrically powered vehicles				
		Savings from tractor (hybrid solution): - <b>8.2 tCO<sub>2</sub>eq/yr</b> Savings from trailer: - <b>3.4 tCO<sub>2</sub>eq/yr</b>				
<b>Increase in carbon sinks</b>						
<b>Absorption of emissions</b> <i>Carbon sinks creation, (BECCS, CCU/S, ...)</i>						
<b>GHG emissions avoided by the company on other sites</b>						
<b>Avoided emissions</b> <i>Emissions avoided by the activities, products and/or services of the company in charge of the project, or by the financing of emissions reduction projects.</i>						
	<p><b>Clarification on the calculation or other remarks:</b>  Route characteristics: 40 km/day, 50% urban, 50% suburban.  An all-diesel tractor emits 106 tCO<sub>2</sub>/year on this route. The use of a hybrid solution makes it possible to reduce diesel consumption (about 11 l/day) and save nearly 8.2 tCO<sub>2</sub>eq/year.  Cold production using an electric motor also allows a reduction in diesel consumption (about 5 l/day) amounting to nearly 3.4 tCO<sub>2</sub>eq/year.  The emissions factor of the diesel used is taken to be equal to 3.25 kgCO<sub>2</sub>eq/l.</p>					
<b>Modality of verification of the quantification</b>	<b>Calculation standard used (ADEME base, GHG protocol, etc.):</b> Ademe carbon base					
	<b>Verification of the calculation (internal or external):</b> Internal evaluation					
<b>Other environmental and social benefits of the project</b>	The project contributes to the following SDGs: <ul style="list-style-type: none"> <li>• SDG 11 - Sustainable cities and communities: The project shuttle travels at least 20 km in urban areas in all-electric mode, which reduces noise and emissions of fine particles (NOx, SOx);</li> <li>• SDG 13 - Measures relating to the fight against climate change: by decarbonizing the energy used to transport products.</li> </ul>					
<b>Project maturity level</b>	<input type="checkbox"/> Prototype laboratory test (TRL 7) <input type="checkbox"/> Real-life test (TRL 7-8) <input type="checkbox"/> Pre-market prototype (TRL 9) <input checked="" type="checkbox"/> Small-scale implementation ( <b>for shuttle with hybrid tractor + electric refrigerated trailer</b> ) <input type="checkbox"/> Medium or large scale implementation					
	<b>Remarks:</b> <a href="#">Click or tap here to enter the maturity level of the project</a>					
<b>Capacity and conditions of the project reproducibility, with associated climate impact mitigation potential</b>	<b>Replication potential of the project:</b> <ul style="list-style-type: none"> <li>• On other regular routes in France or abroad, with other providers who could benefit from this experience</li> <li>• With other customers of transportation providers as well</li> </ul>					
	<b>Reproducibility conditions of the project:</b>					

	<ul style="list-style-type: none"> <li>Increased battery life, to cover greater distances or to handle various situations of higher importance.</li> <li>Attractiveness of the solution, to lower its cost and promote its popularization</li> </ul> <p><b>Conditions for the success of the project:</b></p> <ul style="list-style-type: none"> <li>Risk-taking assumed by bioMérieux to mitigate the reluctance of the transportation provider</li> <li>A viable solution must have the following characteristics: <ul style="list-style-type: none"> <li>Expected efficiency</li> <li>Guaranteed availability and high reliability, because the daily shuttle is critical to the company's business activities (uninterrupted transportation + temperature hold of finished products)</li> </ul> </li> </ul>
<b>Amount of investment made (in €)</b>	The investment amounts to less than 500 k€.
<b>Economic profitability of the project (ROI)</b>	<input type="checkbox"/> Short-term (0-3 years) <input type="checkbox"/> Medium-term (4-10 years) <input checked="" type="checkbox"/> Long-term (> 10 years) <p><b>Notes:</b> This project is of economic interest to:</p> <ul style="list-style-type: none"> <li><b>The project carrier (bioMérieux):</b> ensures that its transportation provider uses a resilience approach in its business activities, by anticipating its near-future development needs, in order to ensure the sustainability of its services.</li> <li><b>The user (TFMO):</b> starts using a resilience approach in its business activities, by anticipating its near-future development needs, in order to ensure the sustainability of its activities.</li> </ul>
<b>Engaged partnerships</b>	<p>A partnership with TFMO, the carrier in charge of the shuttle, was established.</p> <p>At a lower level, SCANIA and CARRIER will provide advice on sizing for the tractor and cold production solutions, respectively.</p>
<b>Open comments from the project owner</b>	<p>The main issue pertains to our ability to reassure/influence carriers (excluding large groups), who are most concerned, but who may fear the risk (cost/reliability of solution + likelihood that more effective solutions reach the market in the future) associated with new technologies in the world of road transportation.</p> <p>Beyond the immediate CO2 savings, the usefulness of the project also includes the potential impact of the large-scale adoption of such a solution by transportation companies. This project is in tune with the pioneering spirit of the bioMérieux company.</p> <p>On the other hand, such success would give bioMérieux significant credibility in its efforts to influence its suppliers, a major lever for action for its SCOPE 3 reductions.</p>
<b>More about the project</b>	
<b>Contact the company carrying the project</b>	<a href="mailto:alexis.monier@biomerieux.com">alexis.monier@biomerieux.com</a> (Logistics Advisor) <a href="mailto:julien.dulieu@biomerieux.com">julien.dulieu@biomerieux.com</a> (Environmental Advisor)
<b>Project URL links</b>	/
<b>Illustrations of the project</b>	