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# D4.3 Output of the modelling process

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## Deliverable No. 4.3 Output of the modelling process

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**DISSEMINATION LEVEL**

X	P	PUBLIC
	C	CONFIDENTIAL

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### Version History

Revision	Date	Authors	Organisaton	Description
V0.1	19/12/2025	Madalina Suta	Cambridge Econometrics	

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# 1 Introduction

This deliverable aims to present the outcomes of the modelling process. Specifically, using the E3ME modelling framework, forecasts for employment by sector and by occupation at the EU-27 Member State level were produced. The results were subsequently bundled and made available via a Power BI tool, which sets out the estimated employment impacts of Connected, Co-operative and Automated Mobility (CCAM) deployment. Developed within the CCAM-ERAS Horizon Europe project and drawing on the results of Work Package 4, the Power BI illustrates three deployment scenarios (warehousing, passenger, and freight), each analysed under different adoption pathways to reflect differing CCAM uptake dynamics. It provides an overview of prospective CCAM deployment trajectories and their implications for the EU labour market, including anticipated shifts in skills requirements and employment structures.

Link to the Power BI:

<https://eur02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fapp.powerbi.com%2Fview%3Fr%3DeyJrJoiZGMyMzY5MjctNDgyMS00NzRmLWl1MmQtZjM1YWVhM2FhZDdiliwidCI6IjE1YWQxMGU2LWJINWYtNDY3ZS05MDZjLWQ4MmRlMzQ1ZDM3ZiIsImMiOjh9&data=05%7C02%7Cmfb%40camecon.com%7C5954a0aca9a34eb3be9308de2e8b2c03%7C15ad10e6be5f467e906cd82de345d37f%7C0%7C0%7C638999372463435228%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIlAiOiJXaW4zMilslkFOIjoiTWFpbGZsb3d8UjoiyfQ%3D%3D%7C0%7C%7C%7C&sdata=alG3eKZjg3EjUERfv5H9wx%2FiRyeFLdbj5rBcyCVn9Tk%3D&reserved=0>

The Power BI tool is composed of 5 sheets: one overview sheet, three use-case specific sheets (warehousing, freight, passenger) and one information sheet. The next sections describe the individual pages of the Power BI tool.

## 1.1 Overview page

The overview sheet of the Power BI tool provides an overview of the results of the E3ME forecast. At the top of the sheet, an informative text provides a brief introduction to the tool. Further down on this sheet, two overview visuals of the results data can be found. The first, visible at the bottom left of Figure 1, depicts the overall GDP and employment trends in the EU-27. The second, visible at the bottom right of Figure 1, is an interactive map providing a country-level overview of the employment effects of CCAM deployment by use case and uptake rate for the years 2025 to 2050 by increments of 5 years. The user can change the data visualised on the map by selecting a combination of these three criteria (year, scenario, CCAM uptake) from the three drop-down filters located in the centre of Figure 1.

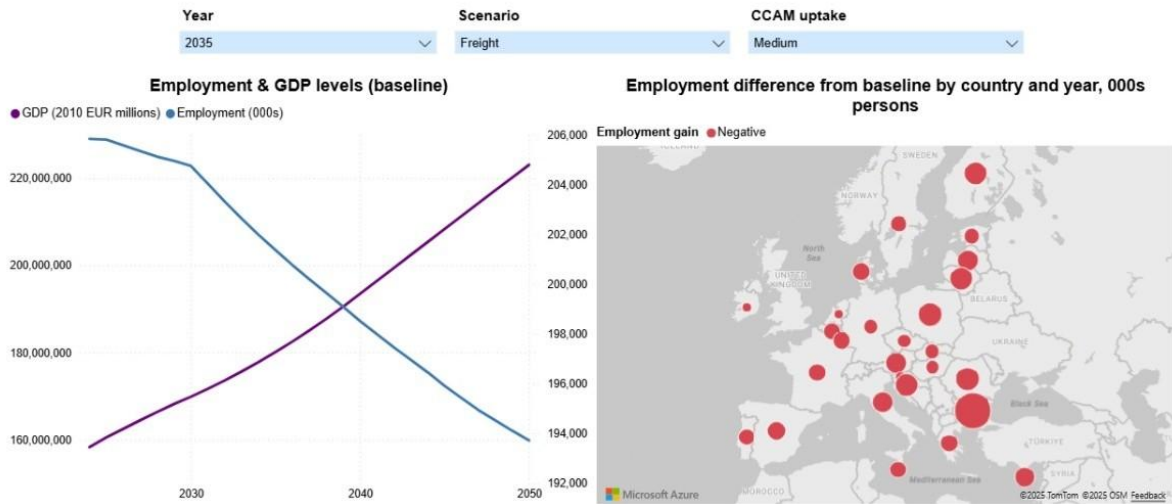
Figure 1: Overview sheet



**Dashboard overview**

This dashboard is produced as part of CCAM Employment Realisation through the Acquisition of Skills (CCAM-ERAS) Horizon Europe project. The transition to **Connected, Co-Operative and Automated Mobility (CCAM)** will require new skills, new jobs, and move the market away from some existing jobs.

This dashboard aims to provide an overview of the different pathways of CCAM deployment over the coming years. Three scenarios' results are shown about the CCAM adoption and its impact on the EU labour market.



Finally, the sheet also contains a navigation button to all other sheets in the tool. These are visible at the top left of Figure 1. This is a feature common to all sheets of the Power BI tool.

## 1.2 Warehousing page

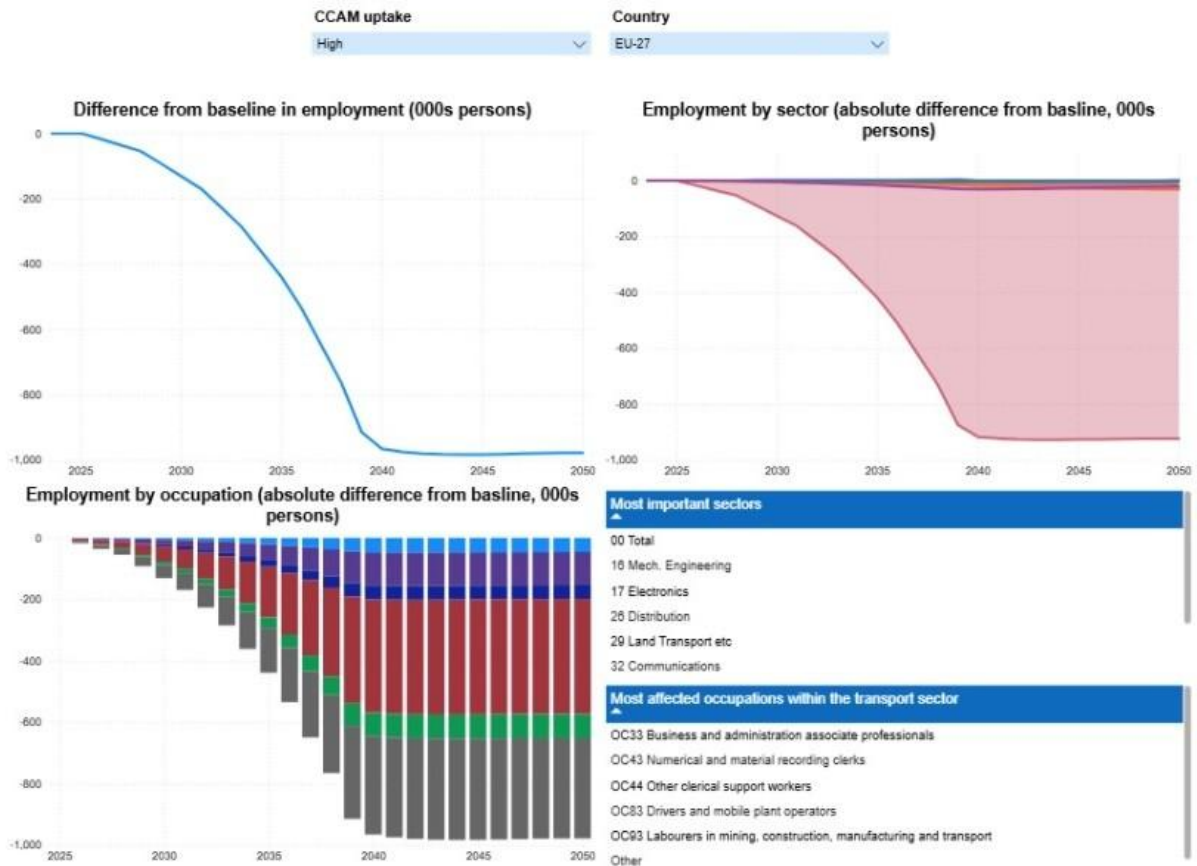
The use case sheets are similarly structured. As shown in the overview page, navigation buttons are located at the top left of the sheet, as illustrated in Figure 2. The sheet then contains a block of descriptive text detailing the scenario results for the use case. Two drop-down menus allow the user to select a combination of CCAM uptake rates and countries to visualise in the figures. Most of the sheet is dedicated to three visuals, arranged in a square layout along with the visual slicers. At the top left, the first visual depicts the overall employment impact of CCAM deployment, expressed in levels from the baseline in thousands of people. The second visual at the top right depicts the sectoral employment impact in terms of absolute difference from the baseline in thousands of persons. The third visual depicts the occupational employment impact in absolute terms, expressed in difference from baseline in thousands of people. These last two visuals have separate linked selection tables, allowing the user to quickly highlight a particular sector or occupation of interest. The tables are located at the bottom right of the sheet, as can be seen in Figure 2.

Figure 2: Warehousing



**Warehousing**

This page shows the impact of automation in the "Warehousing and support activities for transportation" sector (NACE: 52). The **baseline scenario** assumes that the adoption rate of CCAM in this sector starts from 25% in 2024 and reaches 75% in 2050. The warehousing sector has the potential to experience the most significant uptake of automation out of the three use cases, reaching 100% CCAM adoption in 2039 in the **high uptake scenario**. This is largely because warehousing automation occurs on private land, avoiding the complex legislative hurdles associated with public space technologies. Labour unions are influential in this sector, so in the **low uptake scenario** the anticipated pushback could slow the uptake of CCAM in this sector to around 60% in 2050.



1.3 Road freight page

The road freight sheet follows the same structure as the warehousing sheet, with country and CCAM uptake drop-down menus, and the total employment, sectoral employment and occupational employment visuals, along with the two tables that are automatically updated based on the choice in the drop-down. Figure 3 provides the overview.

Figure 3: Freight

Home

Information

Warehousing

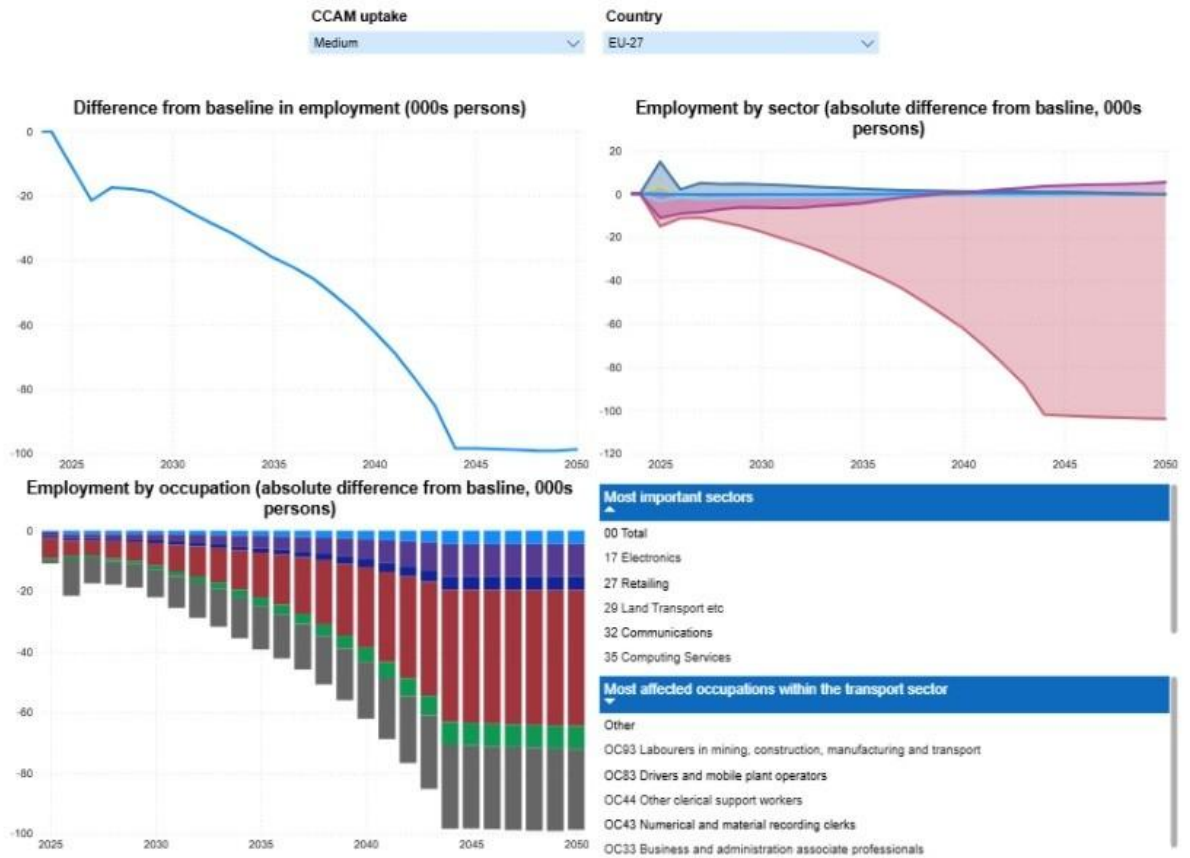
Passenger





**Freight**

This page shows the impact of automation in the "Road freight transportation" sector (part of NACE: 49). The **baseline scenario** assumes that the adoption rate of CCAM in this sector starts from 0.25% for L4/L5 automation level and 50% for L1/L2 in 2024 and reaches 3.3% for L4/L5 and ~97% for L1/L2 in 2050. In the **high uptake scenario**, the L4/L5 and L1/L2 split is closer to ~25% : 75% in 2050. In the **low uptake scenario**, the L4/L5 and L1/L2 split is closer to ~10% : 90% in 2050. No information was identified about the L3 automation level; therefore it was excluded from the analysis.



### 1.4 Passenger transportation page

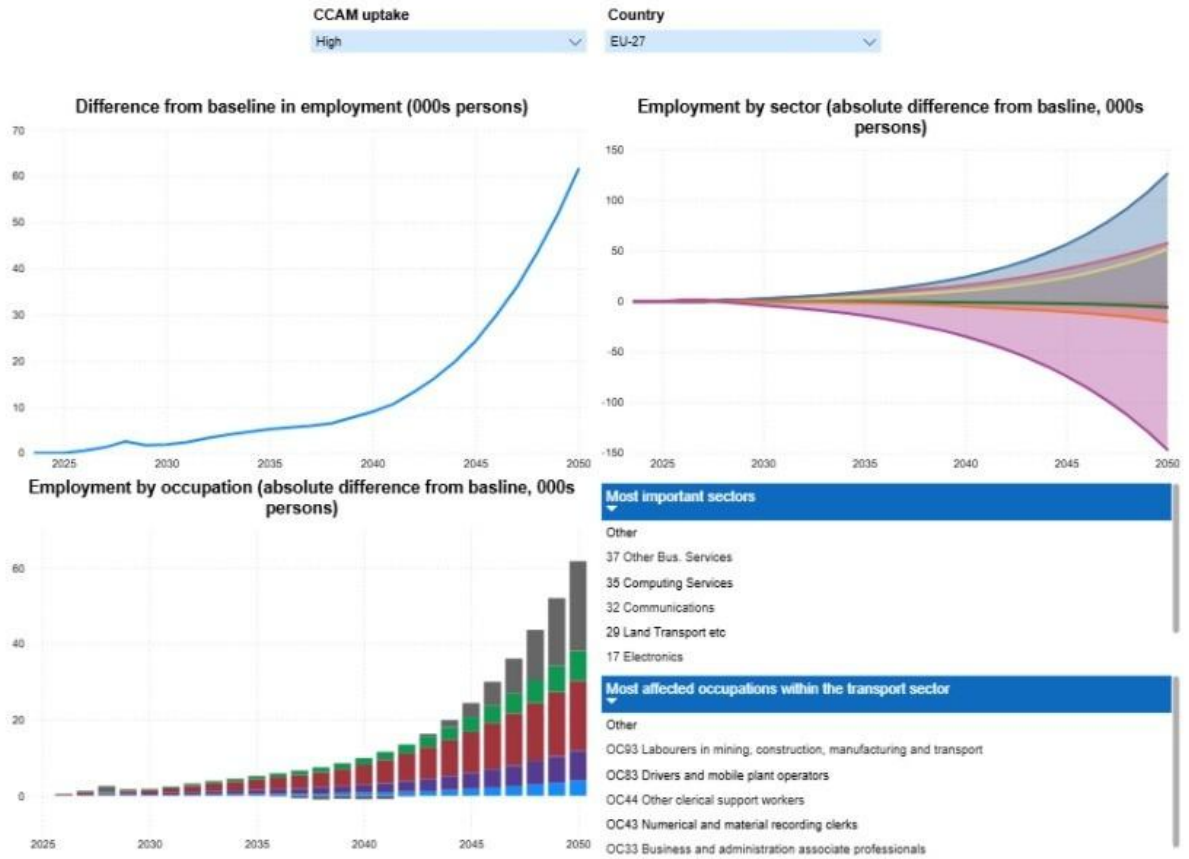
The passenger transportation page follows the same structure as the pages. At the top, the user will find country and CCAM uptake drop-down menus. Below them, there are the total employment, sectoral employment and occupational employment visuals, along with the two tables that are automatically updated based on the choice in the drop-down. Figure 4 provides the print screen.

Figure 4: Passenger transportation



**Passenger transportation**

This page shows the impact of automation in the "Public transportation and Private (shared) transportation" sector (part of NACE: 49). The **baseline scenario** assumes that the uptake of CCAM in this sector starts from 2027 with a low uptake of 1% for public transport and 0.5% for private transport. In 2050, the uptake remains low to ~7% and 5% for public and private transport, respectively. In the **high uptake scenario**, in 2050 the public CCAM transport will reach about 20% while the private will remain at around 5%. In the **medium uptake scenario**, in 2050 the public CCAM transport will reach about 12% while the private around will remain at around 5%.



1.5 Information page

The information sheet provides a concise overview of the E3ME model and explains the purpose of the tool.