



Using the Climate Action Decision Support (CADS) Tool

Climate Budget Training Course Module 5
Turku, Finland | 1 September 2026
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Outline for Today's Presentation

Addressing the technical questions prospective users have as they consider taking the CADS Tool into use.

- **Three ways to get started using the software:** `cads.kausal.tech`, self-hosting, or procuring SaaS.
- **The CADS Tool's two components:** the model editor and the public interface.
- **The public interface's major elements:** outcome pages, the scenario editor, the actions list, cost-efficiency and cost-benefit visualizations.
- **Technical terms and concepts,** and how these appear in the public interface: nodes and edges, datasets, and dimensions.
- **Tomorrow:** hands-on exercises with the CADS Tool.

Getting Started: Three Options

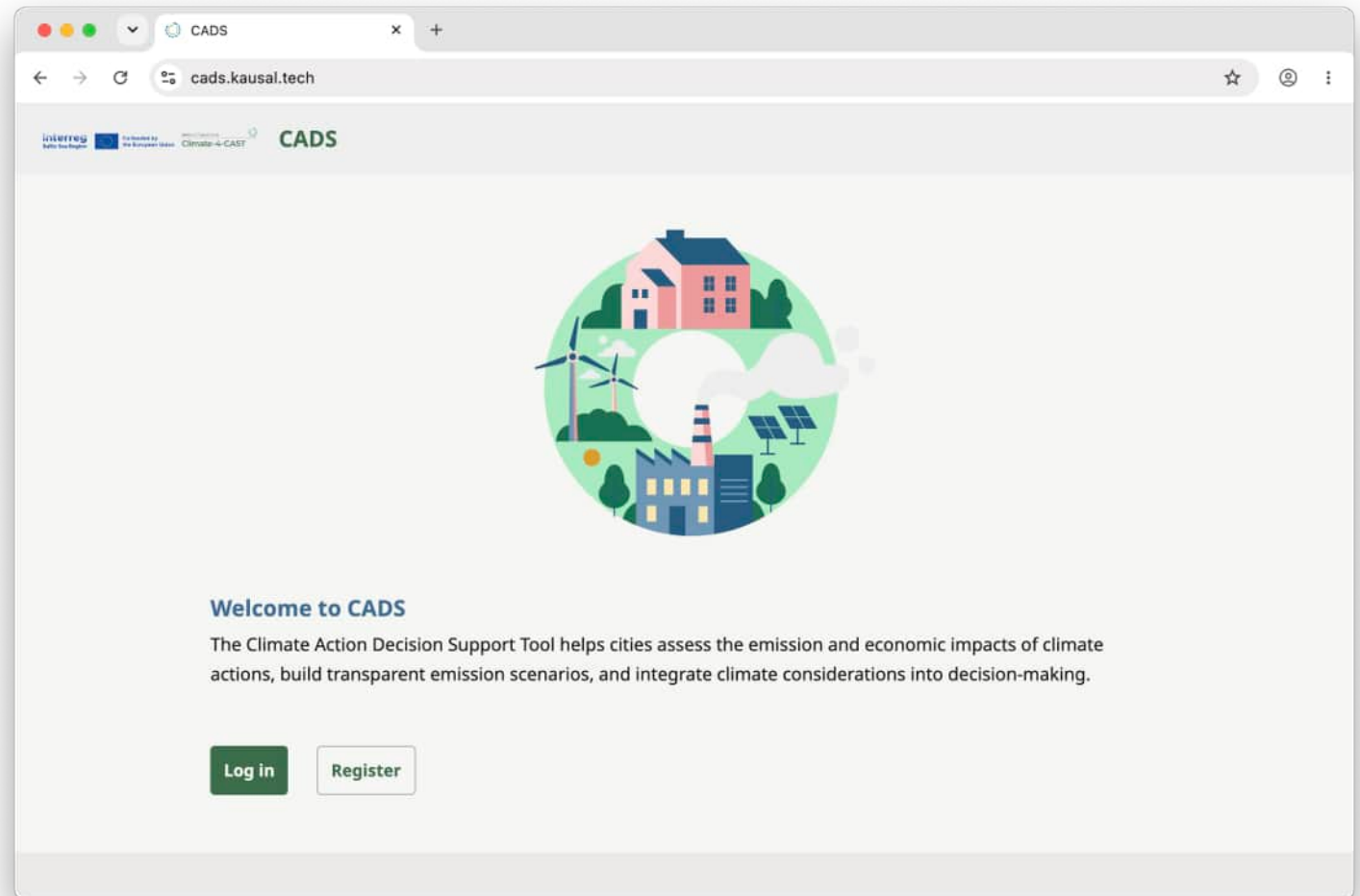
CADS is an open-source, browser-based tool.

- **Hosted platform (cads.kausal.tech):** register directly at cads.kausal.tech and create an instance online.
- **Self-hosting:** deploy the open-source code on your own infrastructure.
- **Procuring a hosted instance:** engage a Software as a Service (SaaS) provider to operate a dedicated deployment on your behalf.
- Once your instance of the CADS Tool is up and running — whether at cads.kausal.tech, on your own infrastructure, or through a provider — the tool works the same way.

Getting Started: Three Options

CADS is an open-source, browser-based tool.

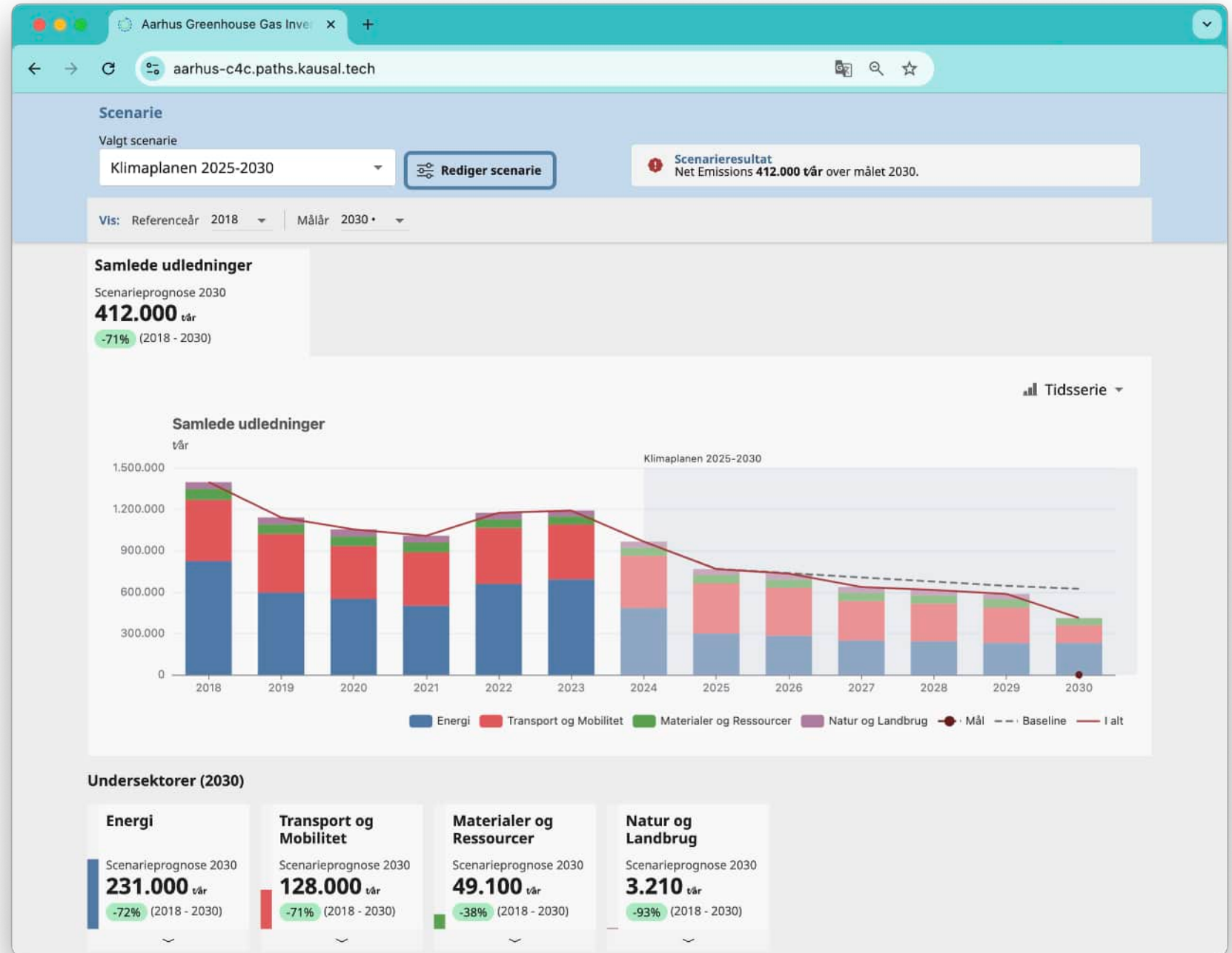
- New instances of the CADS tool at cads.kausal.tech begin with the *Climaville* template.
- We'll use cads.kausal.tech in tomorrow's exercises: registering, creating an instance, inviting colleagues, adding a new emissions sector, etc.



CADS Tool

Public Interface

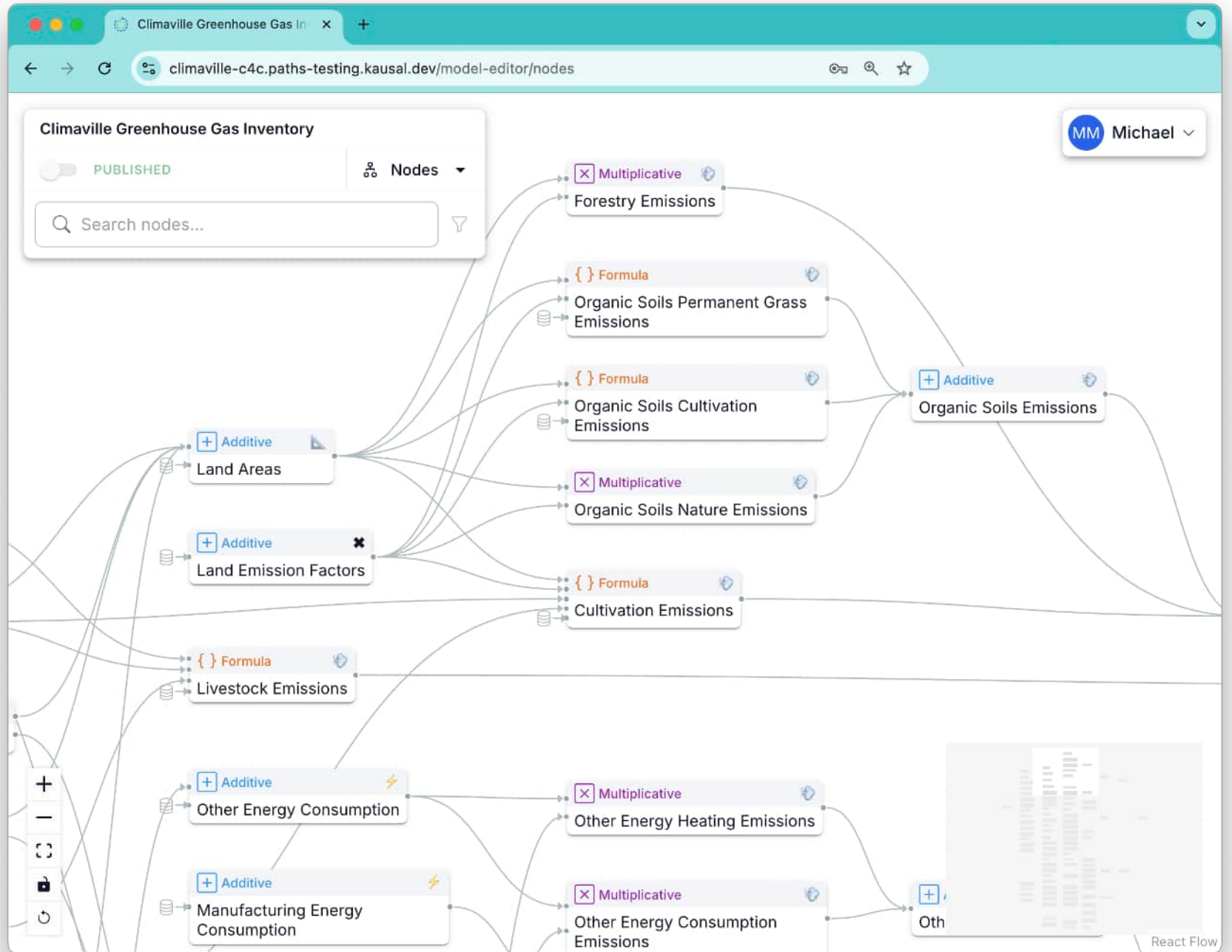
The public interface allows users to explore a city's emissions inventory and forecast visually, and reports key summary statistics.



CADS Tool

Model Editor

Behind the scenes, the model editor is the workspace where model administrators build and maintain a city's climate action model.

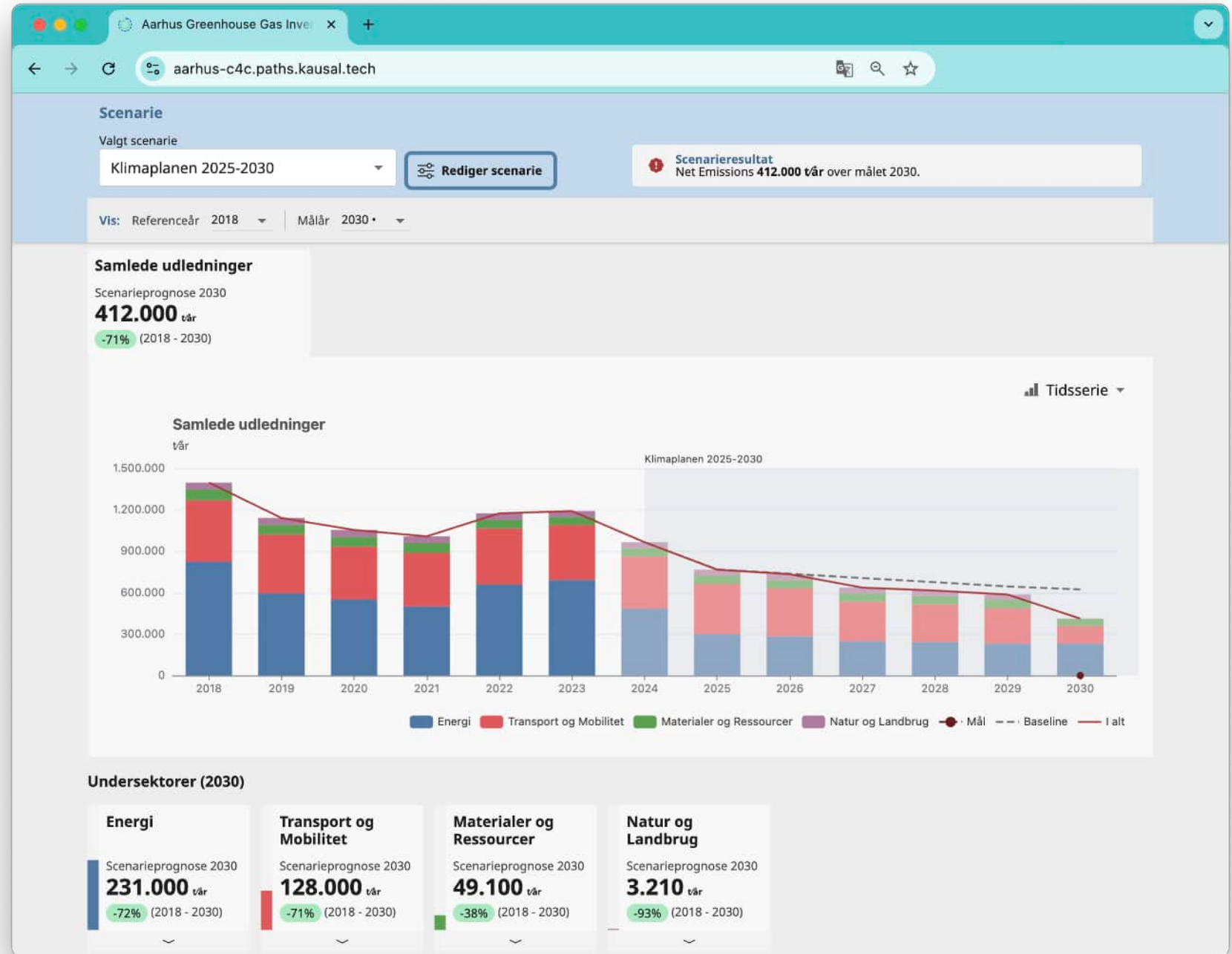


CADS Tool

Outcome Page

Outcome pages show trends in key outcomes over time.

Cards below the graph allow users to “drill down” into sectors and subsectors, revealing greater detail.

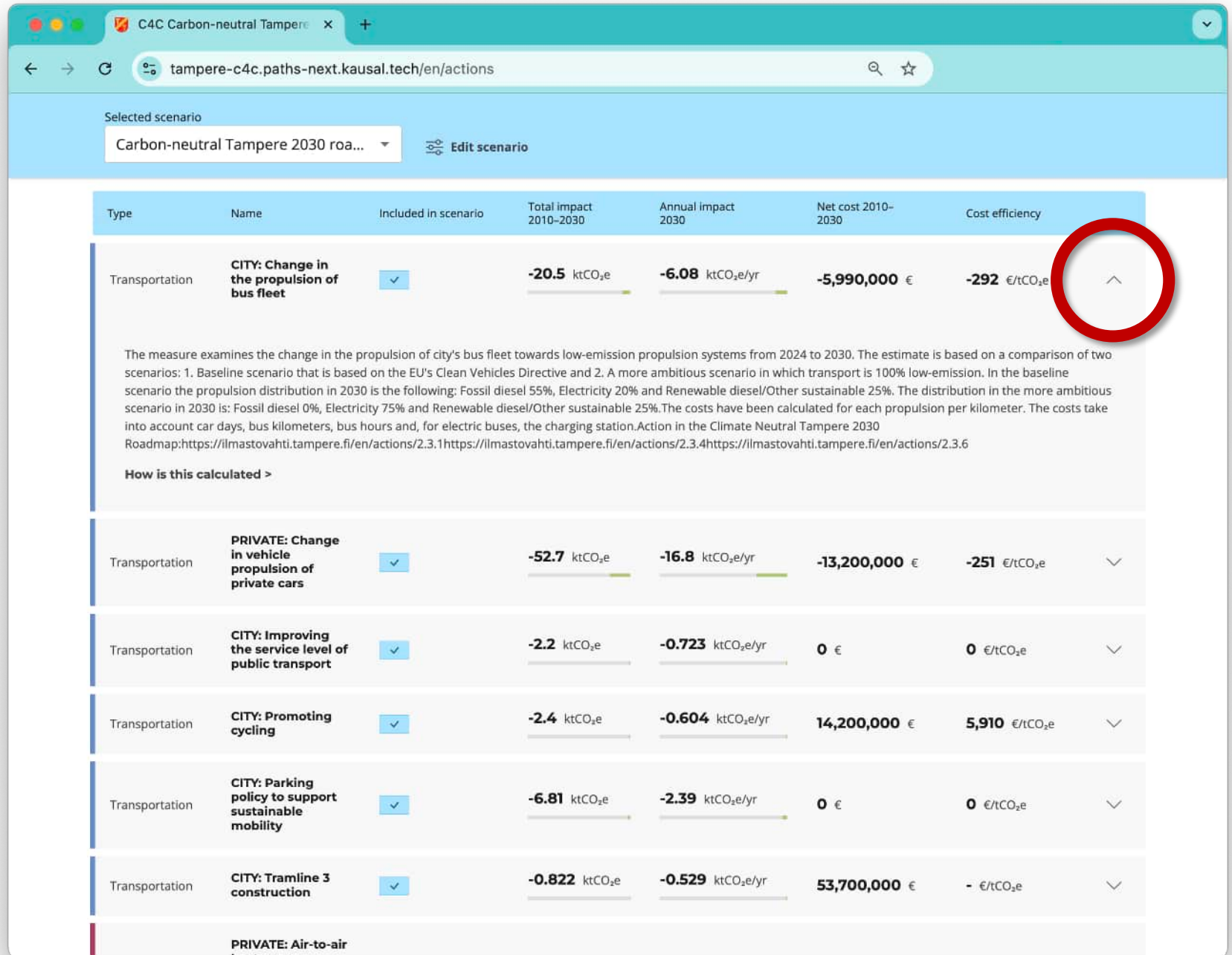


CADS Tool

Action List Page

Four impact KPIs shown for actions affecting emissions and financial costs/benefits.

Action cards may be opened for additional details.



The screenshot shows the CADS Tool interface for the 'Carbon-neutral Tampere 2030 roadmap' scenario. It displays a table of transportation actions with columns for Type, Name, Inclusion status, Total impact (2010-2030), Annual impact (2030), Net cost (2010-2030), and Cost efficiency. A red circle highlights an upward-pointing arrow icon in the first row, indicating that the action card can be expanded for more details.

Type	Name	Included in scenario	Total impact 2010-2030	Annual impact 2030	Net cost 2010-2030	Cost efficiency	
Transportation	CITY: Change in the propulsion of bus fleet	☒	-20.5 ktCO ₂ e	-6.08 ktCO ₂ e/yr	-5,990,000 €	-292 €/tCO ₂ e	^
The measure examines the change in the propulsion of city's bus fleet towards low-emission propulsion systems from 2024 to 2030. The estimate is based on a comparison of two scenarios: 1. Baseline scenario that is based on the EU's Clean Vehicles Directive and 2. A more ambitious scenario in which transport is 100% low-emission. In the baseline scenario the propulsion distribution in 2030 is the following: Fossil diesel 55%, Electricity 20% and Renewable diesel/Other sustainable 25%. The distribution in the more ambitious scenario in 2030 is: Fossil diesel 0%, Electricity 75% and Renewable diesel/Other sustainable 25%. The costs have been calculated for each propulsion per kilometer. The costs take into account car days, bus kilometers, bus hours and, for electric buses, the charging station. Action in the Climate Neutral Tampere 2030 Roadmap: https://ilmastovahti.tampere.fi/en/actions/2.3.1 https://ilmastovahti.tampere.fi/en/actions/2.3.4 https://ilmastovahti.tampere.fi/en/actions/2.3.6 How is this calculated >							
Transportation	PRIVATE: Change in vehicle propulsion of private cars	☒	-52.7 ktCO ₂ e	-16.8 ktCO ₂ e/yr	-13,200,000 €	-251 €/tCO ₂ e	v
Transportation	CITY: Improving the service level of public transport	☒	-2.2 ktCO ₂ e	-0.723 ktCO ₂ e/yr	0 €	0 €/tCO ₂ e	v
Transportation	CITY: Promoting cycling	☒	-2.4 ktCO ₂ e	-0.604 ktCO ₂ e/yr	14,200,000 €	5,910 €/tCO ₂ e	v
Transportation	CITY: Parking policy to support sustainable mobility	☒	-6.81 ktCO ₂ e	-2.39 ktCO ₂ e/yr	0 €	0 €/tCO ₂ e	v
Transportation	CITY: Tramline 3 construction	☒	-0.822 ktCO ₂ e	-0.529 ktCO ₂ e/yr	53,700,000 €	- €/tCO ₂ e	v
	PRIVATE: Air-to-air heat pump						

CADS Tool

Action Details Page

Action outcomes are shown across the bottom of each action's details page.

The screenshot shows a web browser window with the URL `tampere-c4c.paths-next.kausal.tech/en/actions/geothermal_and_awhps_in_municipal_building_st...`. The page is titled "Scenario" and shows the "Selected scenario" as "Carbon-neutral Tampere 2030 roa...". There is an "Edit scenario" button. Below this, the "Display" section shows "Reference year" as 2010 and "Target year" as 2030. The main heading is "Actions / Building heating / PRIVATE: Replacing oil heating across the municipal building stock". The description states: "The action assesses the phase-out of oil heating in residential and service buildings across the entire city area. Oil heating in these buildings will be replaced with geothermal heating and air to water heat pumps." There is a toggle switch labeled "Included in scenario" which is currently turned on. Below the description, it says "Action in the Climate Neutral Tampere 2030 Roadmap:" followed by two links: <https://ilmastovahti.tampere.fi/en/actions/4.4.1> and <https://ilmastovahti.tampere.fi/en/actions/4.4.2>. A "Read more" link with a right arrow is also present. The "Outcomes" section at the bottom has five tabs: "Net emissions", "Net cost", "Impact (Electricity)", "Impact (Fuel Oil)", and "Impact (Costs)". The "Net emissions" tab is selected and highlighted in dark blue. A curved arrow points from the "Net emissions" tab to a "Show calculation" button, which has a plus icon and a right arrow. A red arrow points to the "Show calculation" button from the right.

Scenario

Selected scenario

Carbon-neutral Tampere 2030 roa... Edit scenario

Display: Reference year 2010 Target year 2030

Actions / Building heating /

PRIVATE: Replacing oil heating across the municipal building stock

The action assesses the phase-out of oil heating in residential and service buildings across the entire city area. Oil heating in these buildings will be replaced with geothermal heating and air to water heat pumps.

Action in the Climate Neutral Tampere 2030 Roadmap:

- <https://ilmastovahti.tampere.fi/en/actions/4.4.1>
- <https://ilmastovahti.tampere.fi/en/actions/4.4.2>

Read more →

Included in scenario

Outcomes

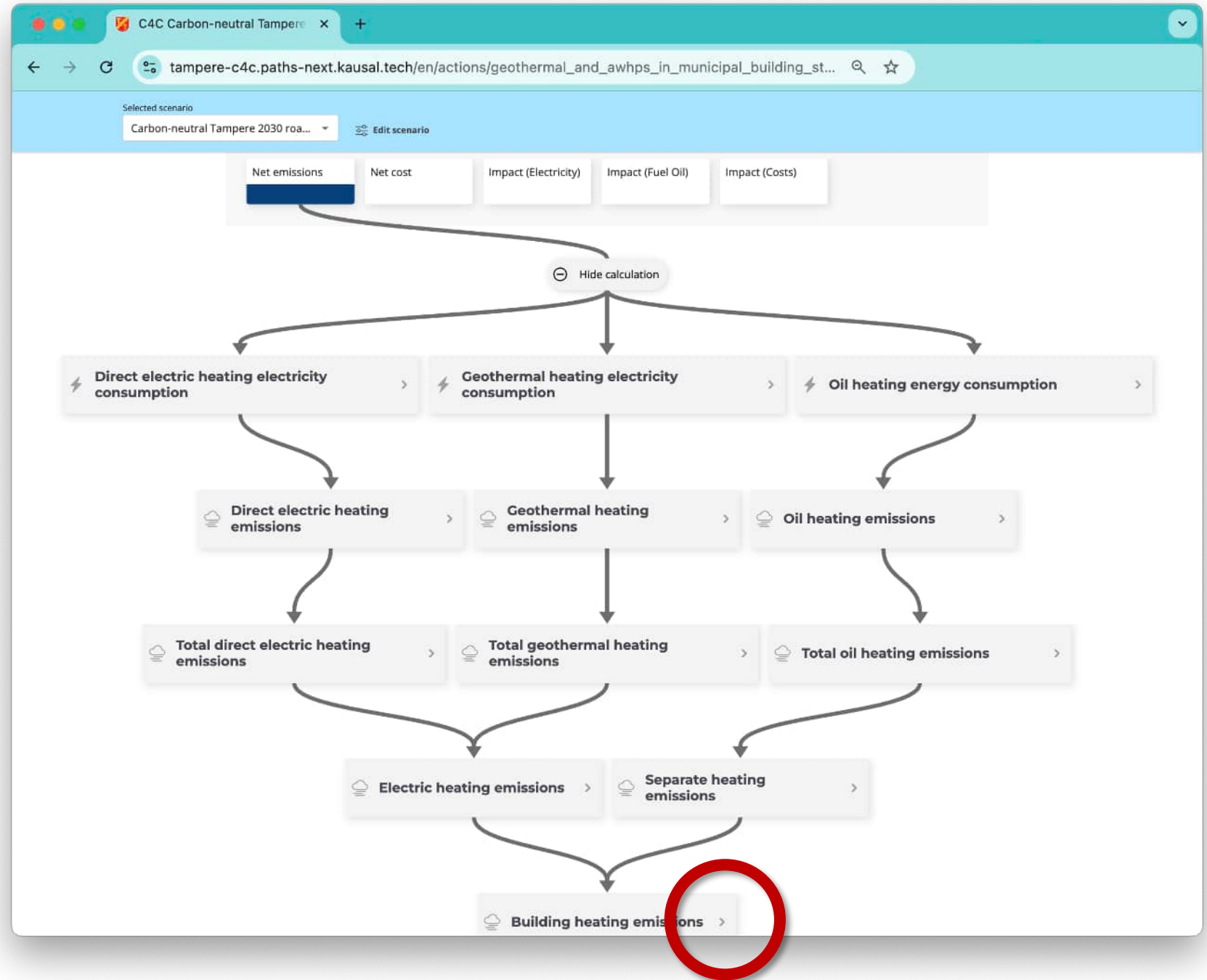
Net emissions Net cost Impact (Electricity) Impact (Fuel Oil) Impact (Costs)

⊕ Show calculation

CADS Tool

Action Details Page

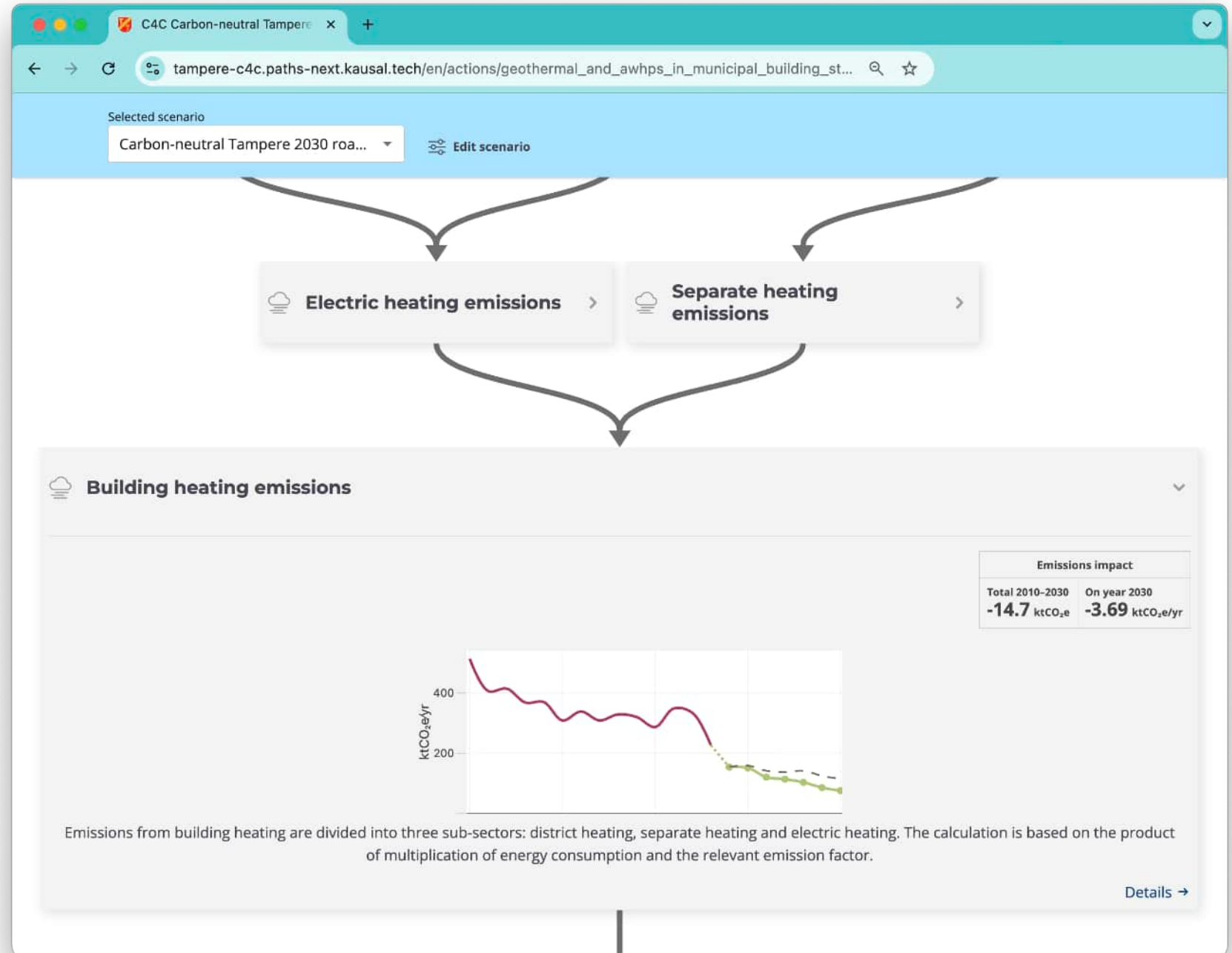
The “show calculation” button reveals the causal chain or network from intervention to outcome.



CADS Tool

Action Details Page

Nodes in the graph may be opened to examine the action's impact at each step along the way.

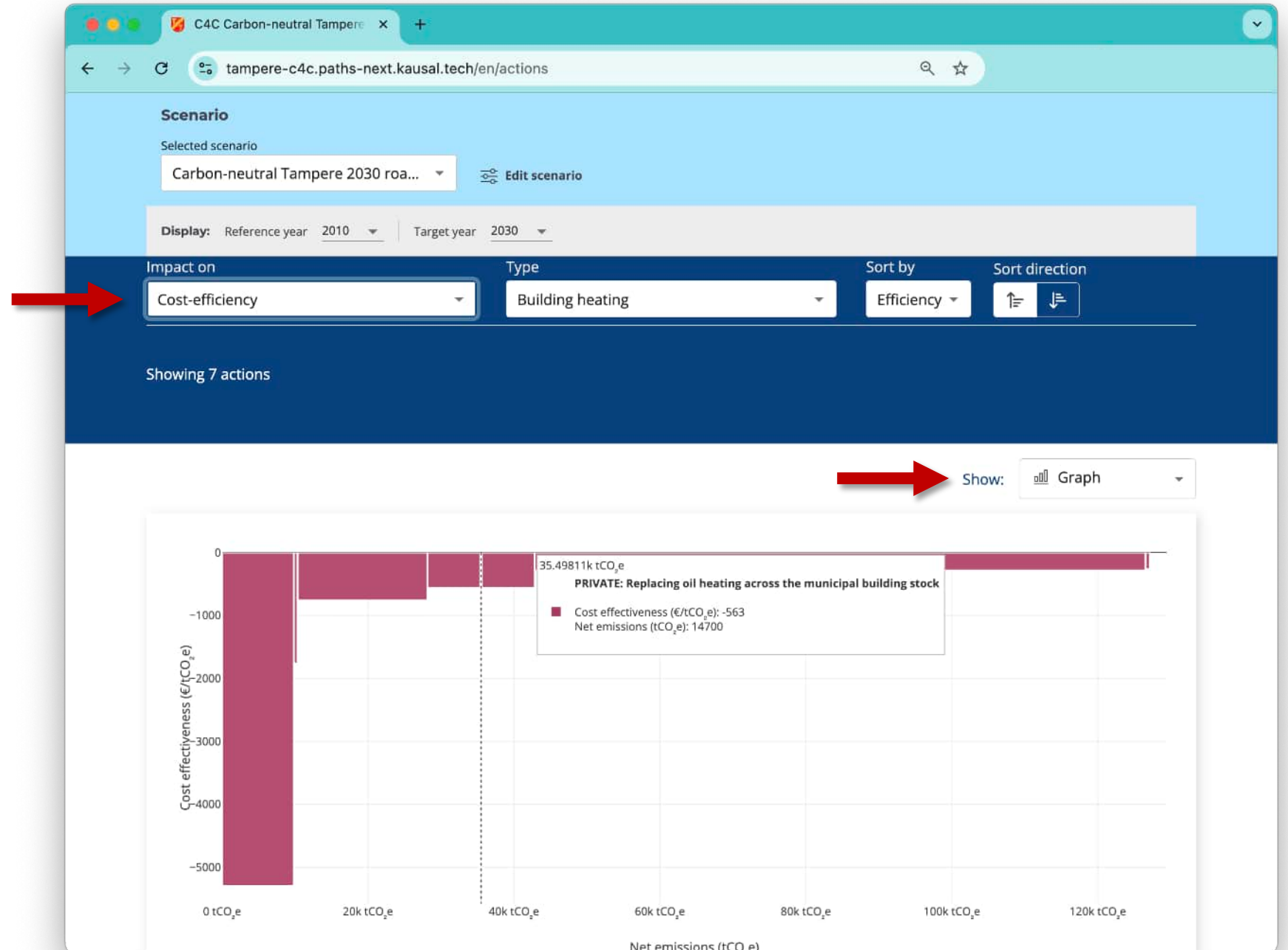


CADS Tool

Cost Efficiency

The cost efficiency graph, or MAC curve, visualizes actions by efficiency and total emissions impact.

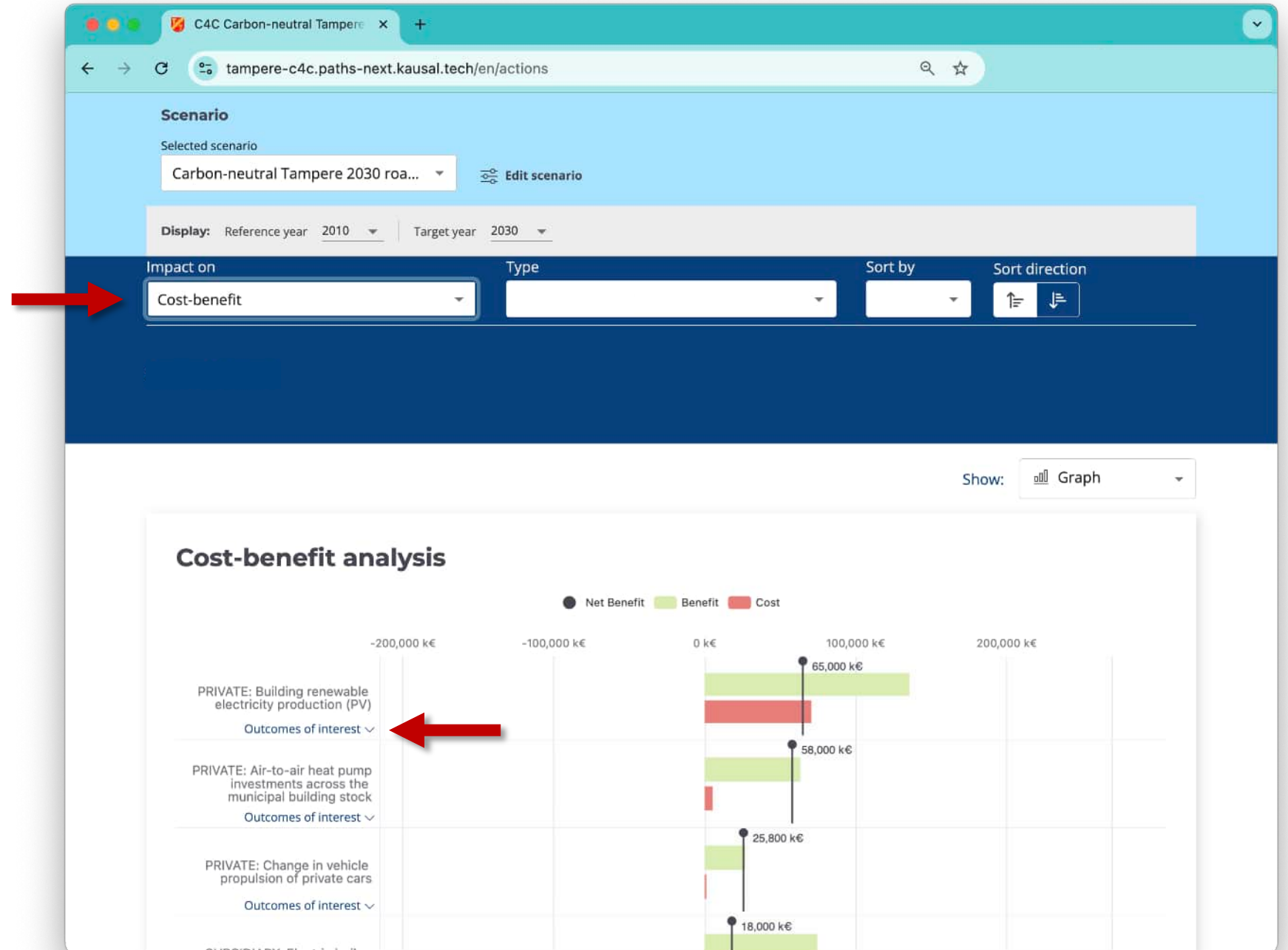
The more negative the bar, the more efficient the action; the wider the bar, the more impactful.



CADS Tool

Cost-Benefit

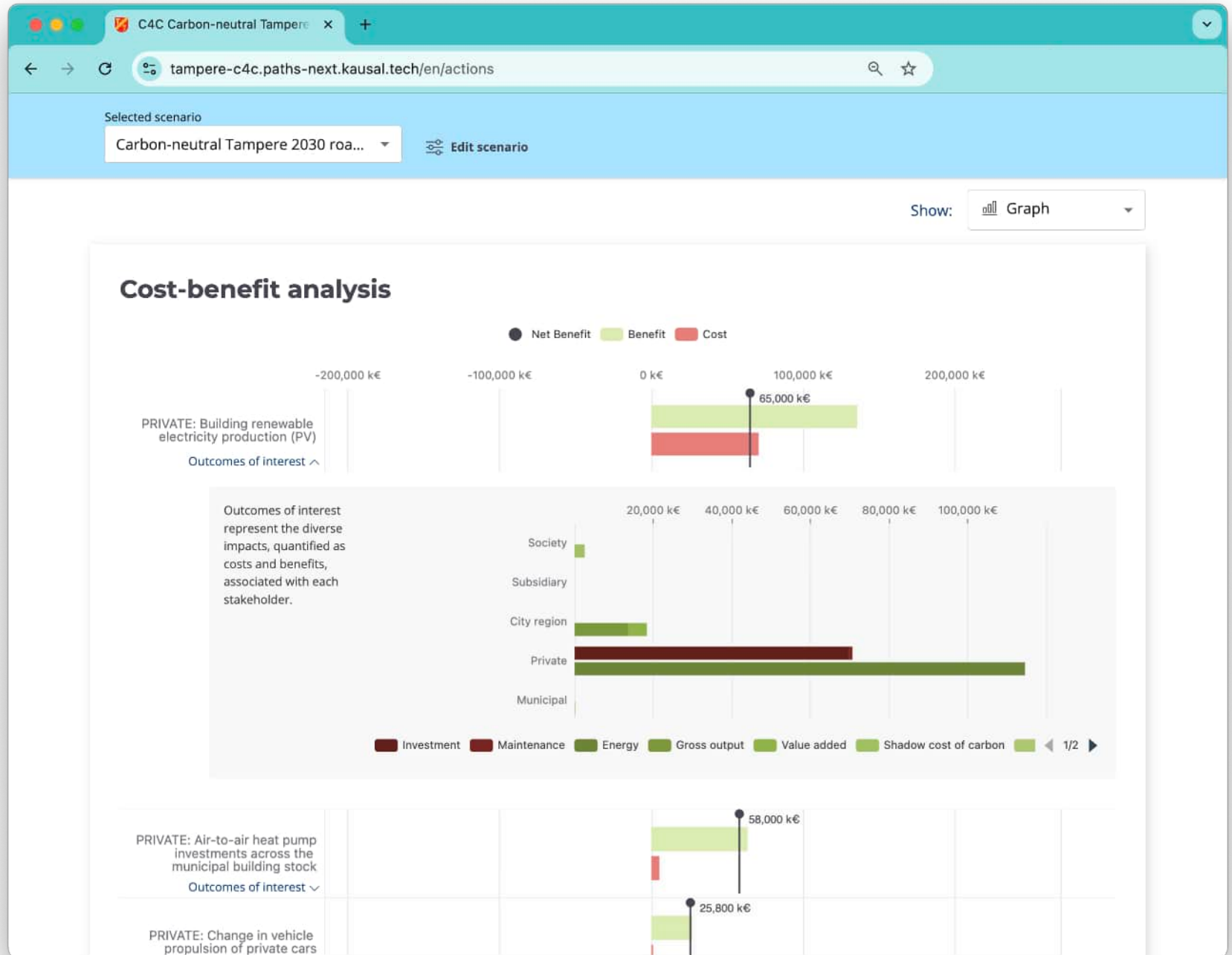
In the cost-benefit analysis graph, actions' total costs and benefits are shown side by side.



CADS Tool

Cost-Benefit

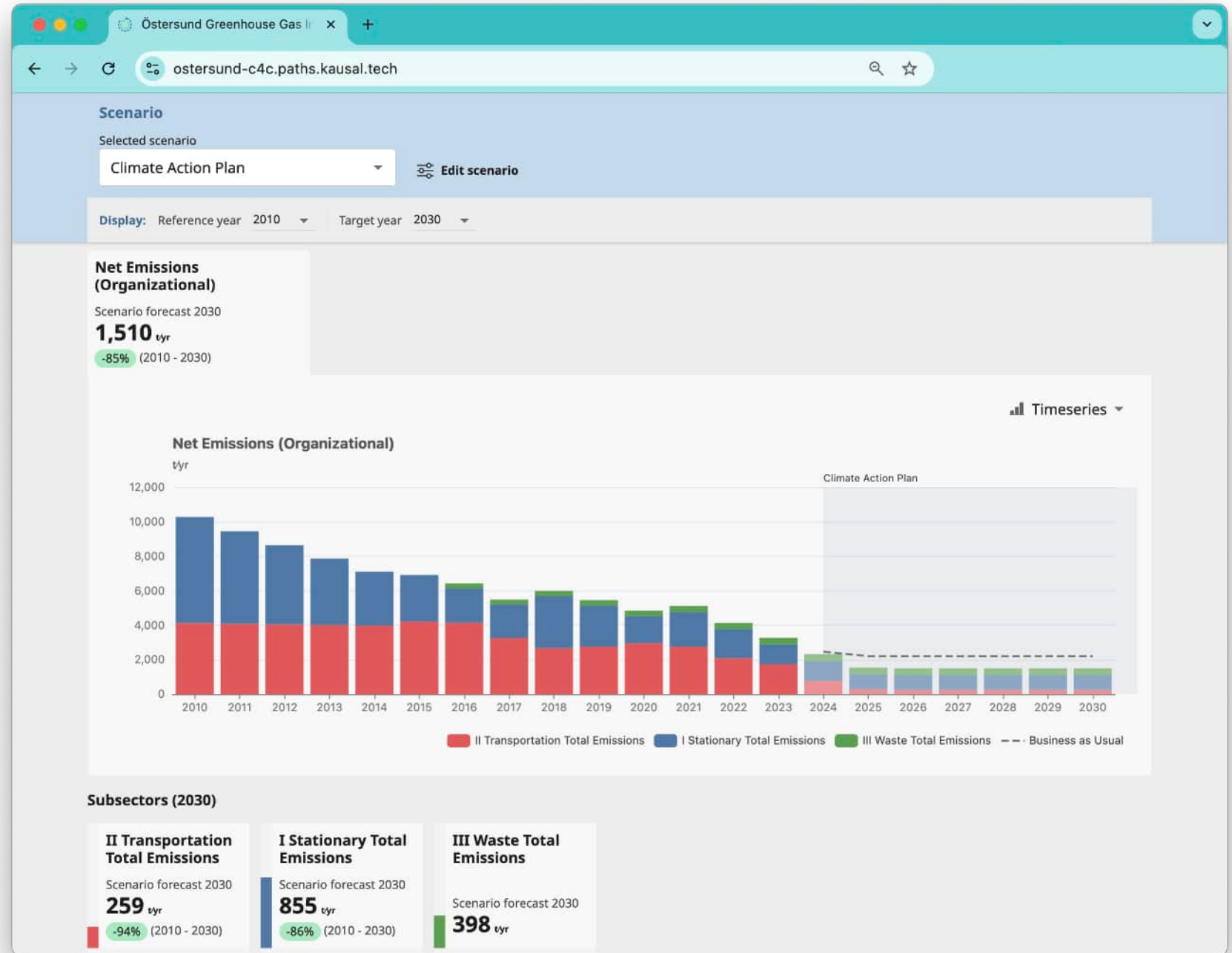
If tracked within the tool, the costs and benefits may be visualized by stakeholder and cost type.



CADS Tool

Scenario Toolbar

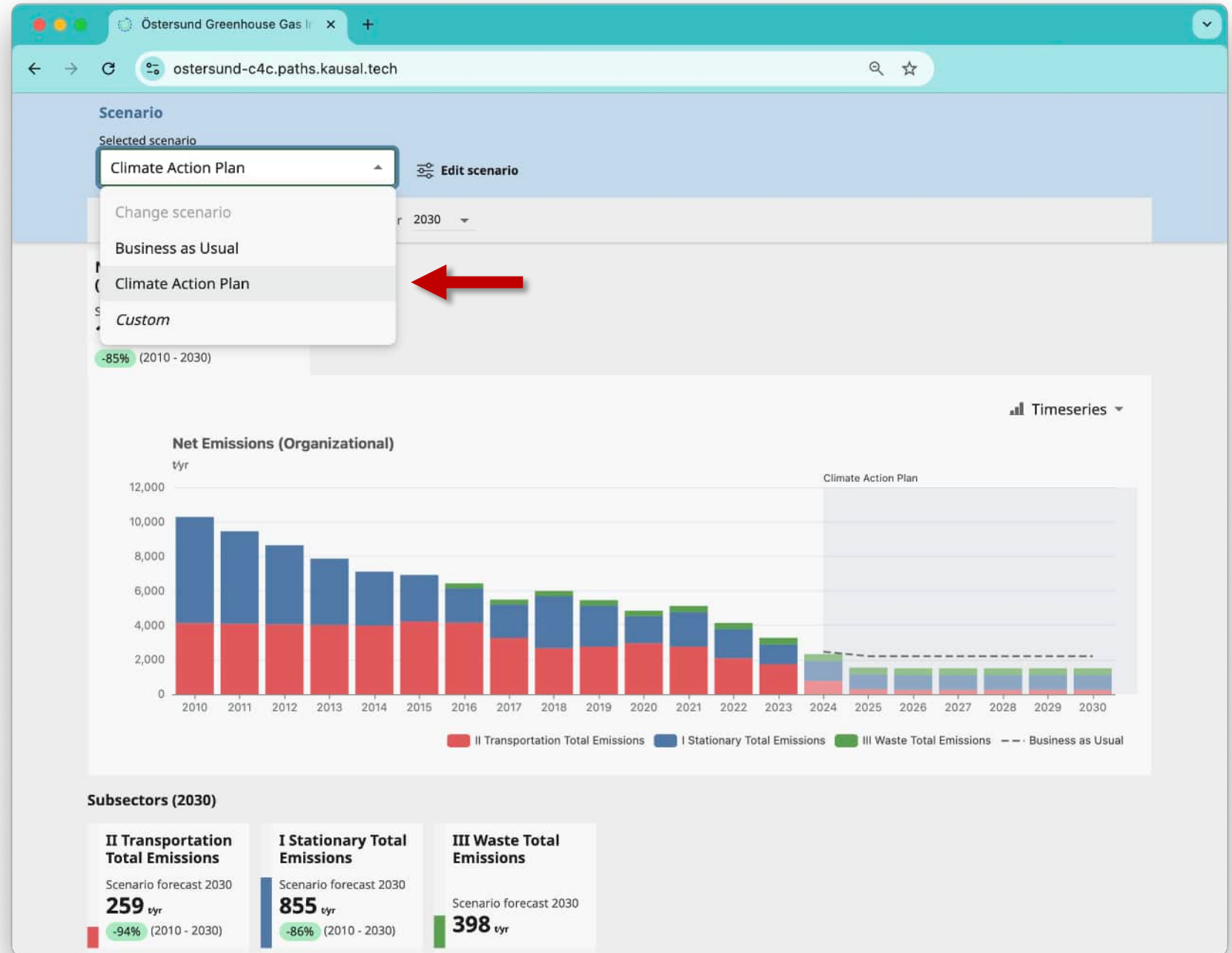
The scenario toolbar is available on most tool pages, and controls all graphs and KPIs.



CADS Tool

Scenario Toolbar

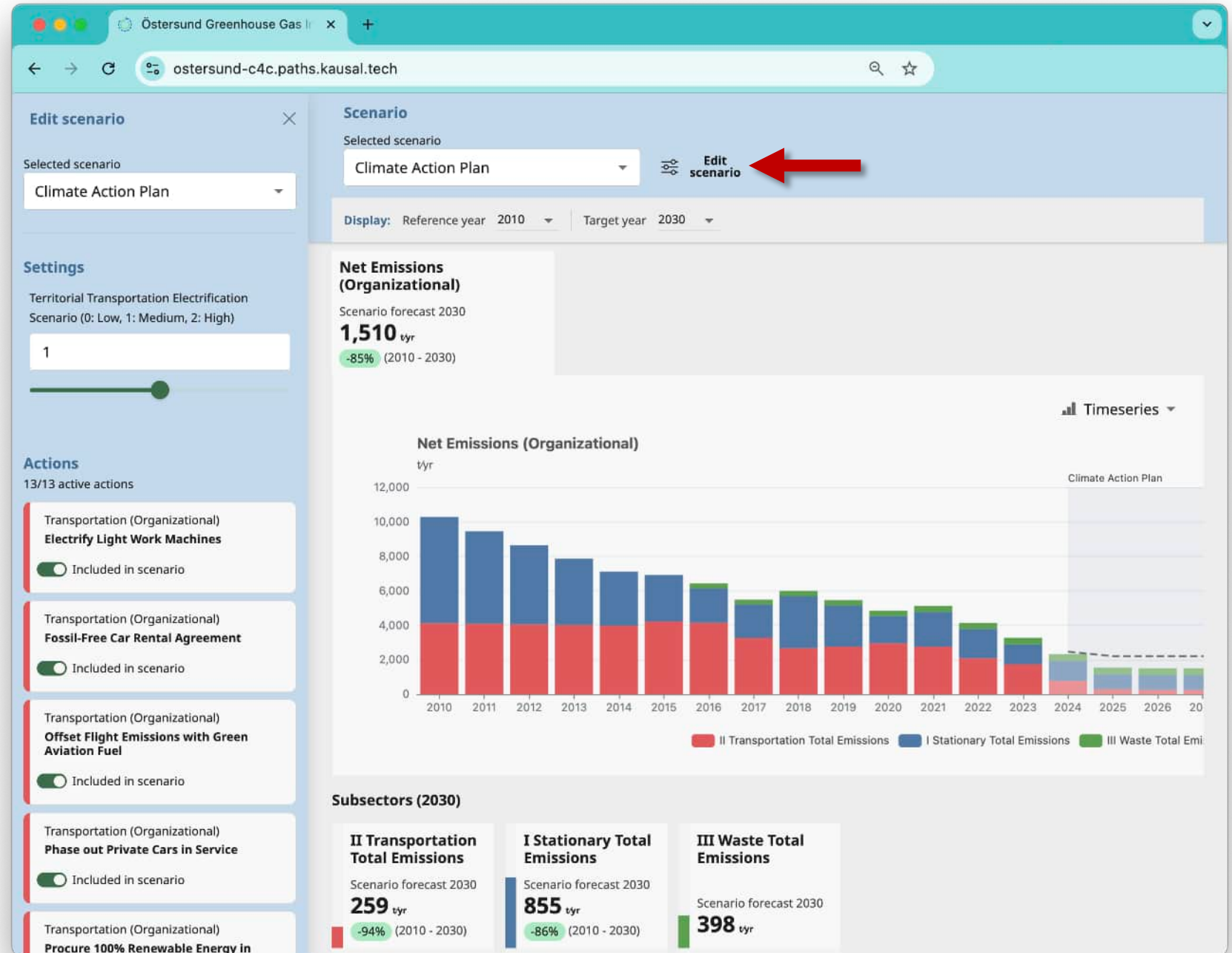
The scenario selector is used to switch between pre-defined scenarios.



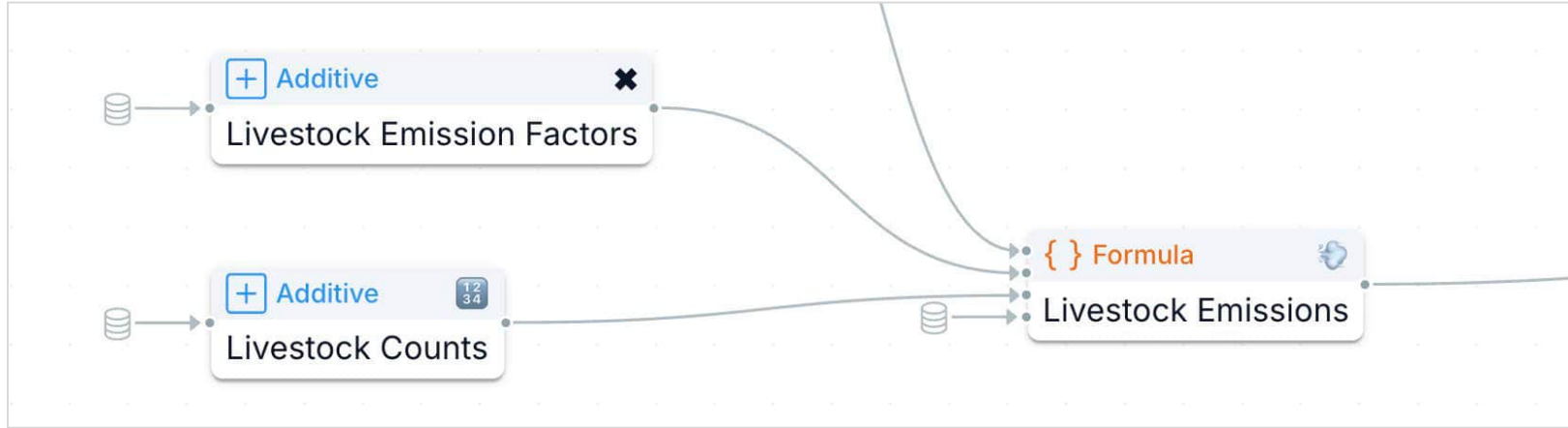
CADS Tool

Scenario Editor

The scenario editor is used to build custom scenarios: actions may be turned on or off, and parameters adjusted individually.



Nodes & Edges



- A CADS model is a network of connected calculations.
- Each step in the network is represented as a **node**: a discrete calculation unit that takes one or more inputs and produces an output.
- Nodes are connected by **edges**: arrows that carry the output of one node into the input of another.
- Together, nodes and edges form a **node graph**.

Datasets

Rail Transportation

rail_transportation

[Data point details](#)
[Dataset details](#)

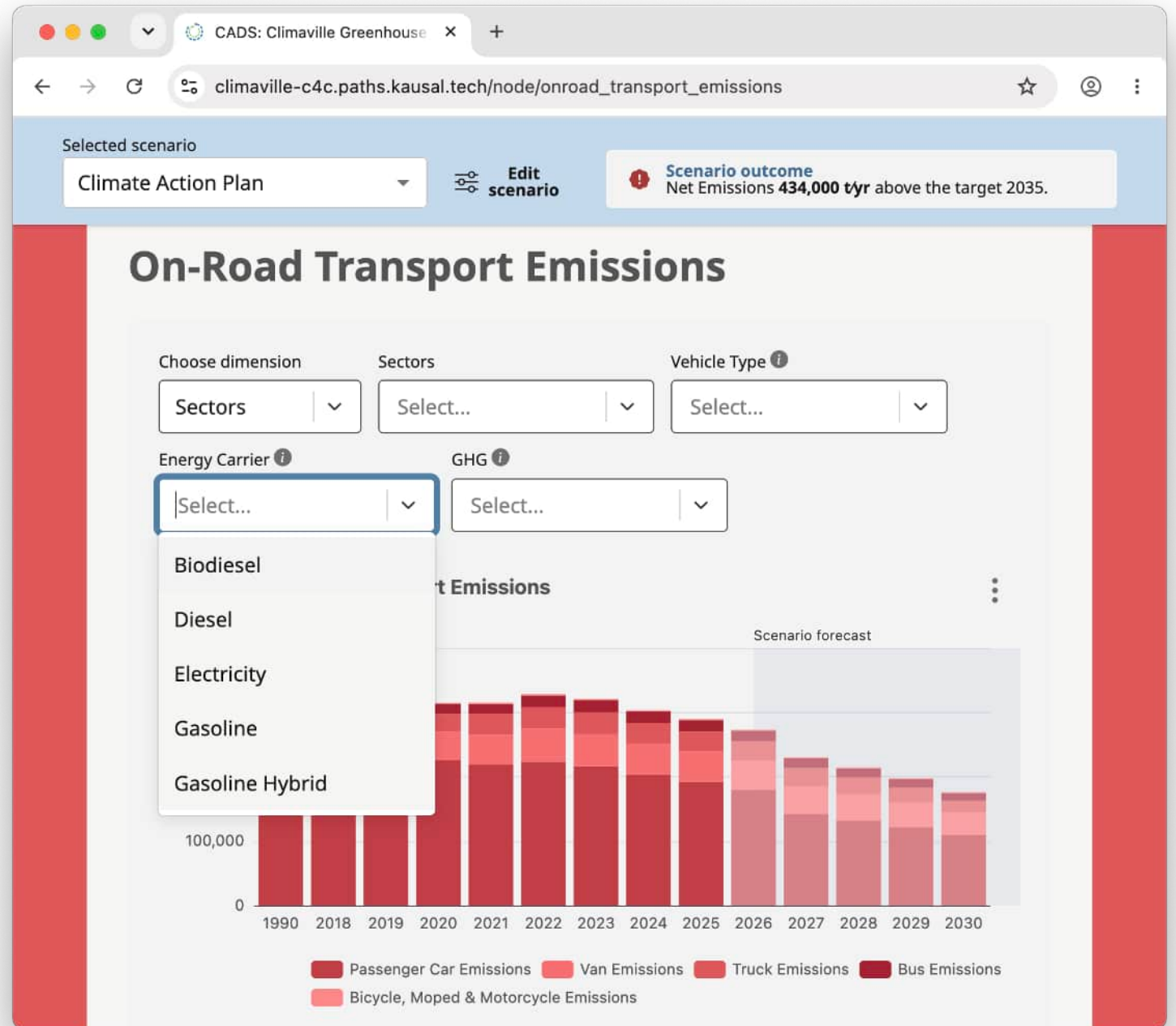
[+ Add years](#)
[+ Add rows](#)

	GHG	Emission Sector	Vehicle Type	Energy Carrier	Metric ↓	2018	2019	2020	2021	2022	2023
1	—	II.2 Rail Transport	InterCity Trains	Diesel	Mileage (km/a)	485,343.12	488,847.68	450,787.48	423,187.32	371,874.18	444,500.00
2	—	II.2 Rail Transport	InterCity Trains	Electricity	Mileage (km/a)	0.48	12.85	0	0	0	1
3	—	II.2 Rail Transport	Light Rail	Electricity	Mileage (km/a)	603,876.18	1,144,574.68	1,767,288.5	1,788,170.11	309,082.84	1,812,560.00
4	—	II.2 Rail Transport	Local Trains	Diesel	Mileage (km/a)	545,982.13	545,488.28	514,688.18	538,984.58	483,448.42	548,000.00
5	—	II.2 Rail Transport	Regional Trains	Diesel	Mileage (km/a)	178,982.78	190,533.71	173,408.74	141,528.01	132,788.41	130,960.00
6	—	II.2 Rail Transport	Regional Trains	Electricity	Mileage (km/a)	0	0	0	0	5.93	
7	—	II.2 Rail Transport	InterCity Trains	Diesel	Energy Factor (kWh/km)	27.22	27.22	27.78	28.94	28.20	27.00
8	—	II.2 Rail Transport	InterCity Trains	Electricity	Energy Factor (kWh/km)	12.5	12.78	11.87	10.88	11.11	10.00

- A **dataset** is a structured table of time-series values: one row per data category, and one column per year.

Dimensions

- Many quantities in a CADS model are not simple totals - they're broken down by type.
- A **dimension** defines a set of named categories that can be used to structure datasets and node calculations.



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