

# CTM - Carbon Transition Model

An open and user driven model to explore and increase understanding of potential routes to increase carbon circularity and reduce emissions.



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## Incentive

Society is in the middle of transitions that will disrupt and reorganize current value chains. The energy transition is happening on the one hand and the transition from a linear to a circular economy on the other. This has major impact on our fossil intensive industry, in particular the petrochemical and process industries.

## Objective

In making it to the other side of those transitions, grip is needed on our use of carbon:

- How can carbon input, conversion and output be aligned with usage, emissions and recycling options?
- Which decisions will drive the transition to a net-zero emission, circular economy?

To be able to answer these kind of questions and provide new insights for industry, policy and opinion makers, the initiative was taken to build an integral Carbon Transition Model (CTM). CTM is anticipated to be part of a broader set of decision support tools.

## Approach

The development of CTM is a joint effort with input from universities, knowledge institutes, consultants, civil society organizations and industry. Together they define the pathways that

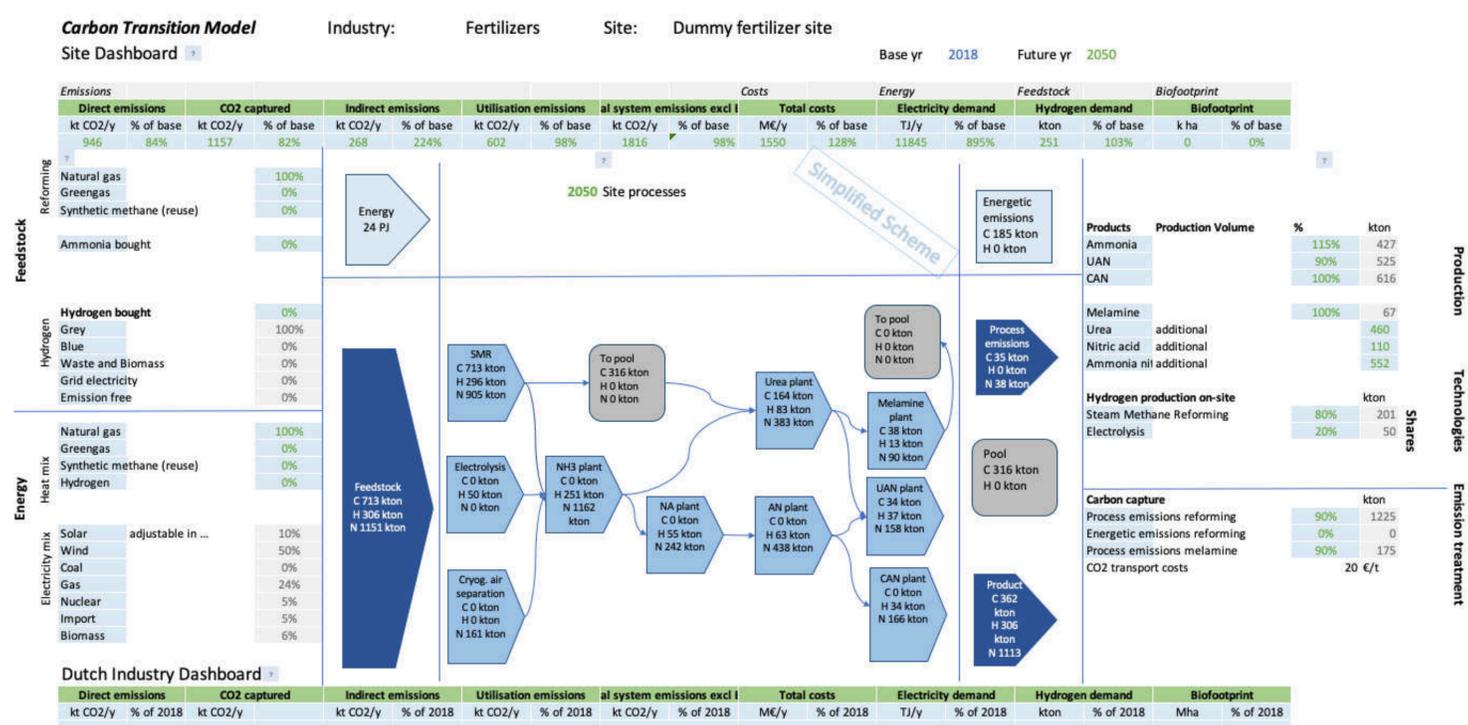
need to be taken into account. And validate the data used with regards to historic emissions and energy, feedstock and product flows. These data will be integrated in a model that will allow the user to change the historic base year into a future year with existing and new transition pathways. For every change the user makes, the model will provide instant feedback on key parameters like emissions, volumes and costs.

## Results

The main deliverables of the project is a first version of the Carbon Transition Model. The model will address 'carbon' flows of gas, coal, oil and biomass and their derivatives (implicitly) and distinguish five levels of industry conversions (1) the Dutch industry as a whole, 2) a sector within the industry (i.e. metal), 3) a subsector within that sector (i.e. steel) and 4) an industrial site within that subsector (i.e. IJmuiden) and 5) industrial processes within and between sites (i.e. Blast furnace, Hisarna, Steel2Chemicals etc.).

## Next steps

Upon acceptance of version one of the CTM further development is foreseen. Involving additional industrial partners and further expansion in scope and depth. The current plan is to make the Carbon Transition Model available as an online open source platform.



Impression of user interface of Carbon Transition Model (dummy fertilizer site with dummy data)



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