User Guide

Hydrogen carbon accounting tool

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Acknowledgements

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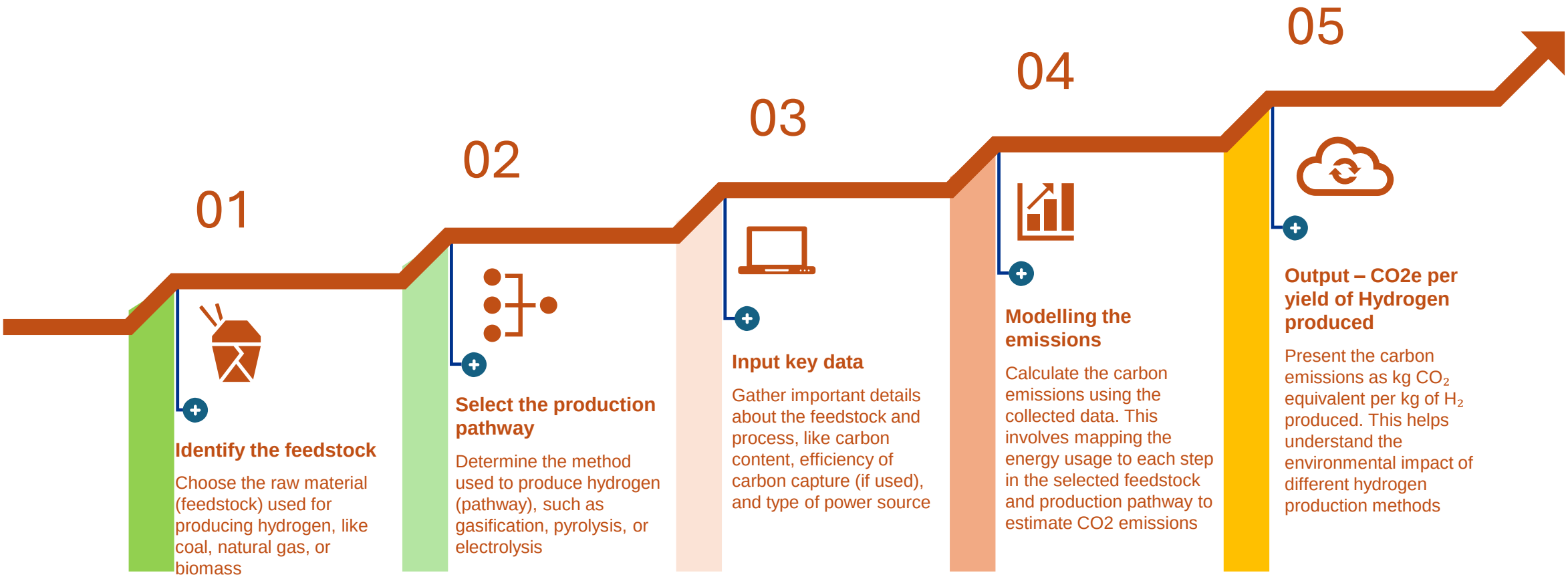
Disclaimer

This tool is currently in draft/beta testing and we appreciate your feedback. This tool is intended to provide indicative output based on information submitted by you, which should be used solely for reference purpose only. The results of this tool are not intended for any commercial usage or reproduction and does not carry any right of publication or disclosure to any other party. Users need to provide assumptions that align with envisaged countries/ projects. A few assumptions have been pre-fixed to facilitate ease of use only. The resulting output and its content do not constitute investment advice, financial advice or any form of recommendation or management decision making. The output provided do not imply any endorsement, assurance, audit or validation by us of any existing or proposed green hydrogen project of any kind or the cost involved therein. These outputs and related content are not binding and should not be relied upon for making any business, investment, or financial decisions of any manner whatsoever. You must exercise your own due diligence and verify the information before making any decisions based on the output. No liability is accepted for its use or for any inaccuracies it may contain. This tool and the resultant output is not a replacement for detailed techno-commercial feasibility and project modelling.

Brief description

Developing hydrogen production pathways involves a 5-step process integrating user selection, data inputs and GHG emission modeling



Note: Entire lifecycle emissions have not been considered in this tool, The proposed tool will estimate only the process emissions (Scope 1). Emissions from Scope 2 and 3 sources are highly specific to the particular country and industry in question and will entail a detailed and specific study in that regard

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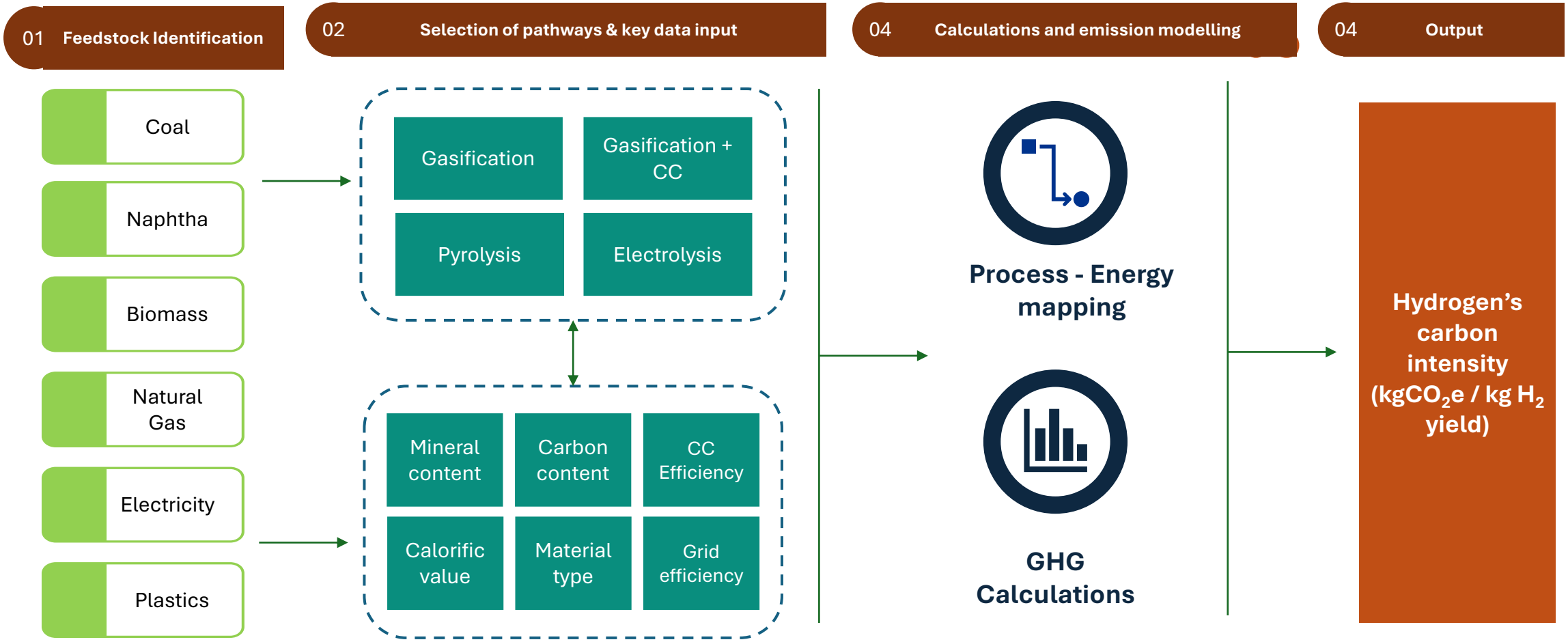

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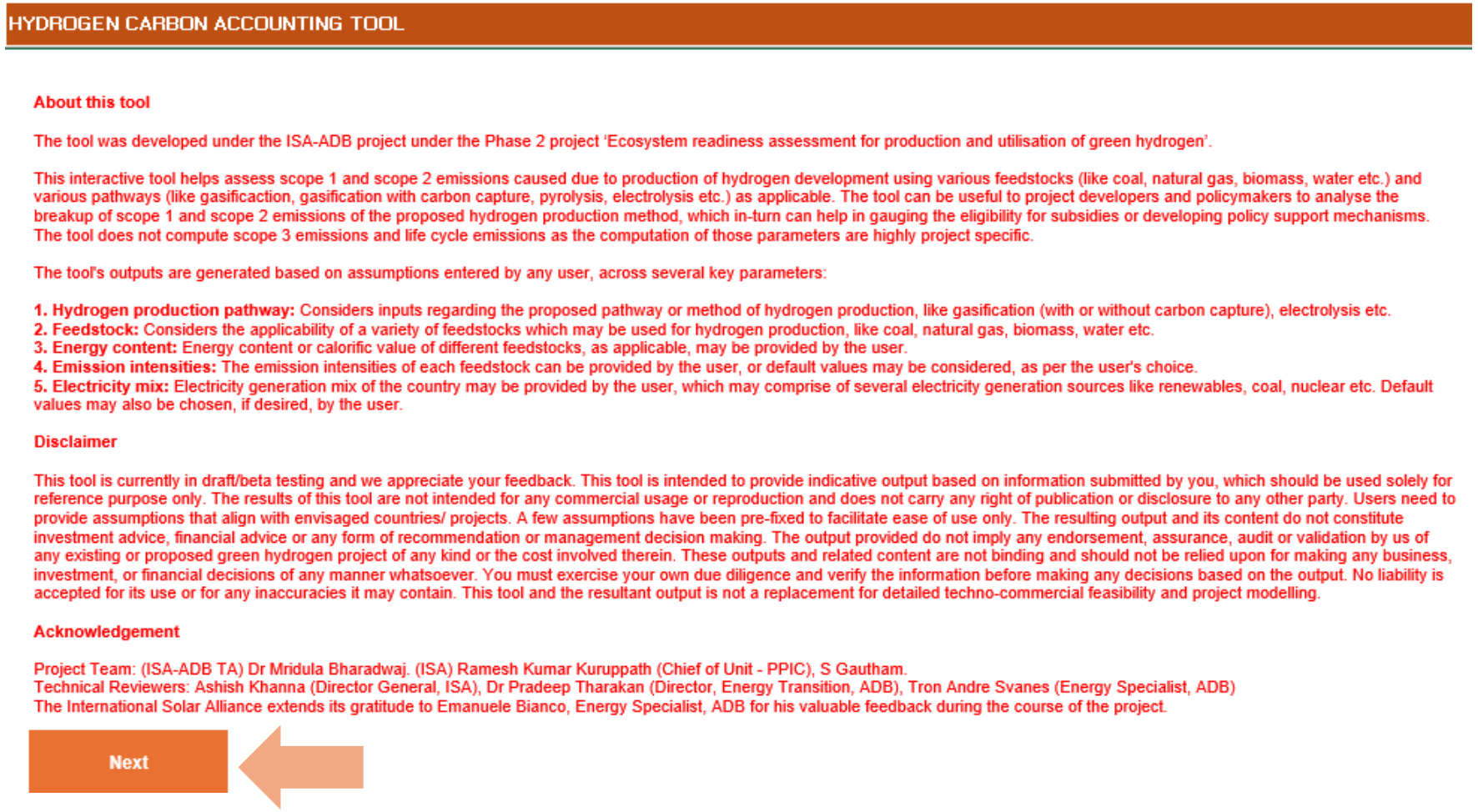
User instructions

Four-step process to estimate the scope 1 and 2 emissions of GH production

Key steps for working with the GH carbon accounting tool	
1. Pathway Selection	Select your hydrogen production method (e.g., Gasification, Electrolysis).
2. Enter Feedstock and Target Production	Input type of feedstock and target hydrogen amount.
3. Energy and Carbon Calculations	Calculates energy requirements per step and applies carbon intensities for energy sources.
4. Result	Provides total Scope 1 and 2 emissions and hydrogen carbon intensity.

Key steps to navigate through the project risk tool (1/4)

Step 1:
Read the introduction to the tool and click on the “Next” button



Key steps to navigate through the project risk tool (2/4)

Step 2:

Read some of the definitions, principles and colour codes and click the “Next” button to proceed further

HYDROGEN CARBON ACCOUNTING TOOL	
Scope 2 Emissions	Indirect emissions from consumption of purchased electricity, steam, heating, and cooling. Affected by energy source.
Hydrogen Carbon Intensity	Carbon emissions (kg CO2e) per kg of hydrogen produced. Lower values indicate cleaner production.
Methods of Hydrogen Production	
1. Gasification	Converts coal/biomass into H2 and CO with controlled oxygen and steam. High Scope 1 emissions.
2. Gasification with Carbon Capture	Similar to gasification but includes CO2 capture and storage. Lower Scope 1 emissions.
3. Electrolysis	Uses electricity to split water into H2 and O2. Emissions depend on electricity source impacting Scope 2.
4. Pyrolysis	Decomposes organic materials at high temperatures to produce H2 and solid carbon. Potentially lower Scope 1 emissions.
Using the Hydrogen Production Tool	
What this Tool does?	Calculates carbon emissions (Scope 1 & 2) and carbon intensity for hydrogen production pathways.
How it helps?	Informs about the sustainability and environmental impact of hydrogen production, aiding in decision making.
Working of the Tool	
1. Pathway Selection	Select your hydrogen production method (e.g., Gasification, Electrolysis).
2. Enter Feedstock and Target Production	Input type of feedstock and target hydrogen amount.
3. Energy and Carbon Calculations	Calculates energy requirements per step and applies carbon intensities for energy sources.
4. Result	Provides total Scope 1 and 2 emissions and hydrogen carbon intensity.
Limitations of the Tool	
1. Assumptions Accuracy	Depends on data inputs and assumptions. Changes in efficiency, feedstock quality, and practices can affect accuracy.
2. Energy Source Variability	Carbon intensity of electricity varies by source (renewable vs fossil fuels).
3. Technological Changes	Advances in technology or changes in CO2 capture rates can make assumptions outdated.
4. Scope Limitations	Focuses on emissions, not considering other impacts like water use or land degradation.
5. Global Benchmarks and Conversion Factors	Uses global benchmarks and conversion factors; results provide a high-level indication.

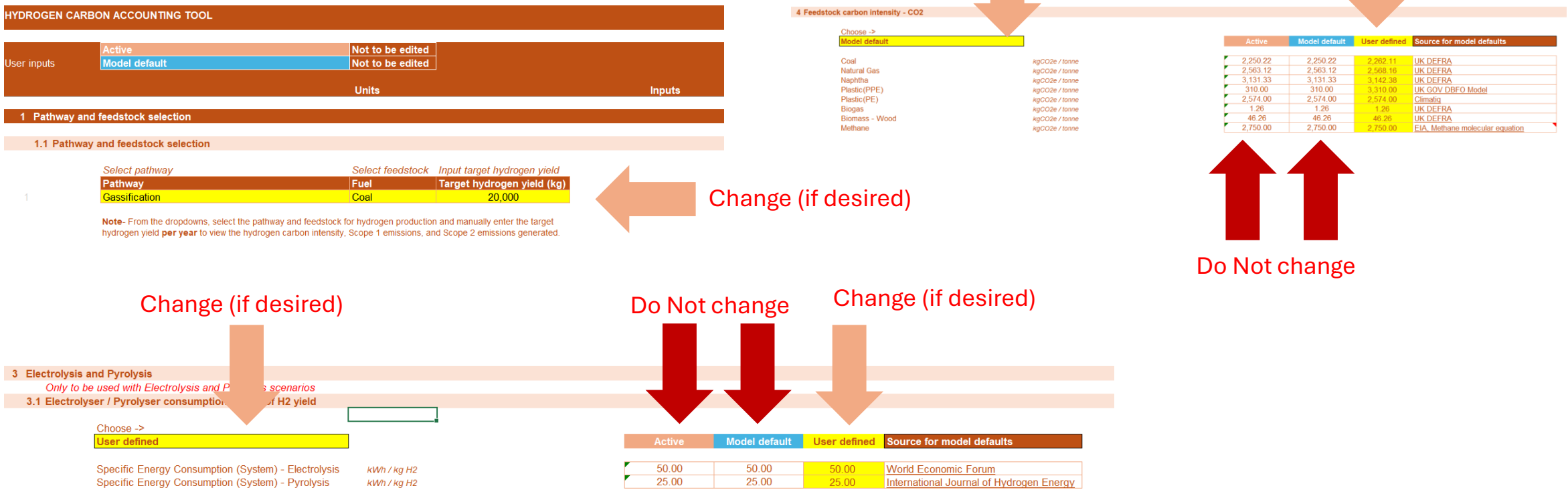
Cell legends	Action
	User input or assumption or drop down- to be added by the user
	Derived, not to be changed
	Research based input, not to be changed
	Not to be edited / changed

Next

Key steps to navigate through the project risk tool (3/4)

Step 3:

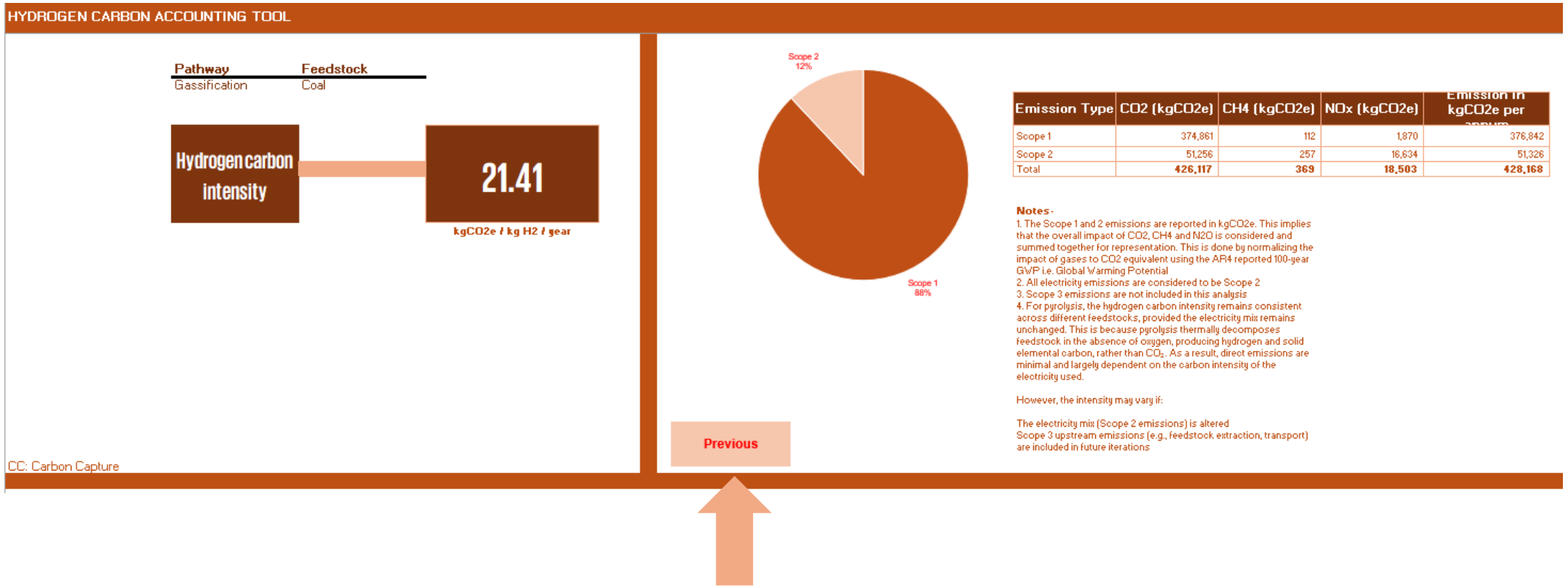
Enter the desired inputs from either the drop-down lists or the marked cells.
DO NOT change the cells which are marked default or active.
Click on the “Submit” button once the desired values are entered.



Key steps to navigate through the project risk tool (4/4)

Step 4:

View the output containing the emissions (scope 1 and 2) associated with the selected pathway and the provided inputs. Click on “Previous” button if any change is desired in the entered values.



THANK YOU

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