CO_2 Removal & Gases: Green Hydrogen Import

In nature, hydrogen does not exist in free form. It must be liberated from molecules such as water or methane. It is therefore not an energy source and must be made using energy. The term “green hydrogen” signifies any hydrogen that is produced from 100 percent renewable energy sources.

Globally, hydrogen is produced mostly from steam reformation of natural gas or coal gasification, both with carbon dioxide emissions. Future demand will be mainly for zero-carbon hydrogen.

Plans for increased hydrogen production are based on electrolysis, using electricity from intermittent renewable sources.

Presently, world annual hydrogen production of hydrogen is around 75 million tonnes of pure hydrogen, plus 45 Mt mixed with other gases and used in industries such as steel and methanol production, both growing steadily.

Level 1

Assumes the continuation of existing scenario in which no import of zero-carbon hydrogen is envisaged in Nigeria.

Level 2

Nigeria’s import of zero-carbon hydrogen rises to 120 TWh/year.

Level 3

The country’s import of zero-carbon hydrogen further increases to 234 TWh/year.

Level 4

Import of green hydrogen in Nigeria reaches a height of around 450 TWh/year.

Key Interaction

Import is done only when there is demand for hydrogen triggered by insufficient local production and the level of import will be up to the maximum limit allowed in the levers.

Overall demand for hydrogen will be dependent on the level of conversion of the gas distribution grid to hydrogen and the level of demand for gaseous fuels in major consuming sectors.

Hydrogen import is considered as the 3rd option in the priority order for producing hydrogen. Electrolysis powered by low-carbon electricity may be deployed to produce more zero-carbon hydrogen to meet further rise in demand.

Default Timing - Start Year: 2035 End Year: 2060

Hydrogen Import

Sub-lever	Units	2015	Level 1	Level 2	Level 3	Level 4
Hydrogen Imports	TWh/year	0	0	120	234	450