



WP 7 – Task 7.4

Life Cycle Assessment

25 April 2023

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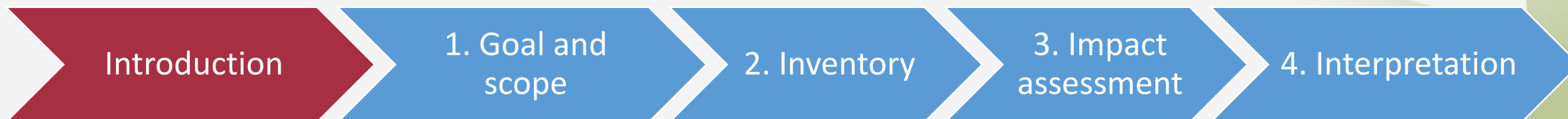
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NATIONAL RENEWABLE
ENERGY CENTRE

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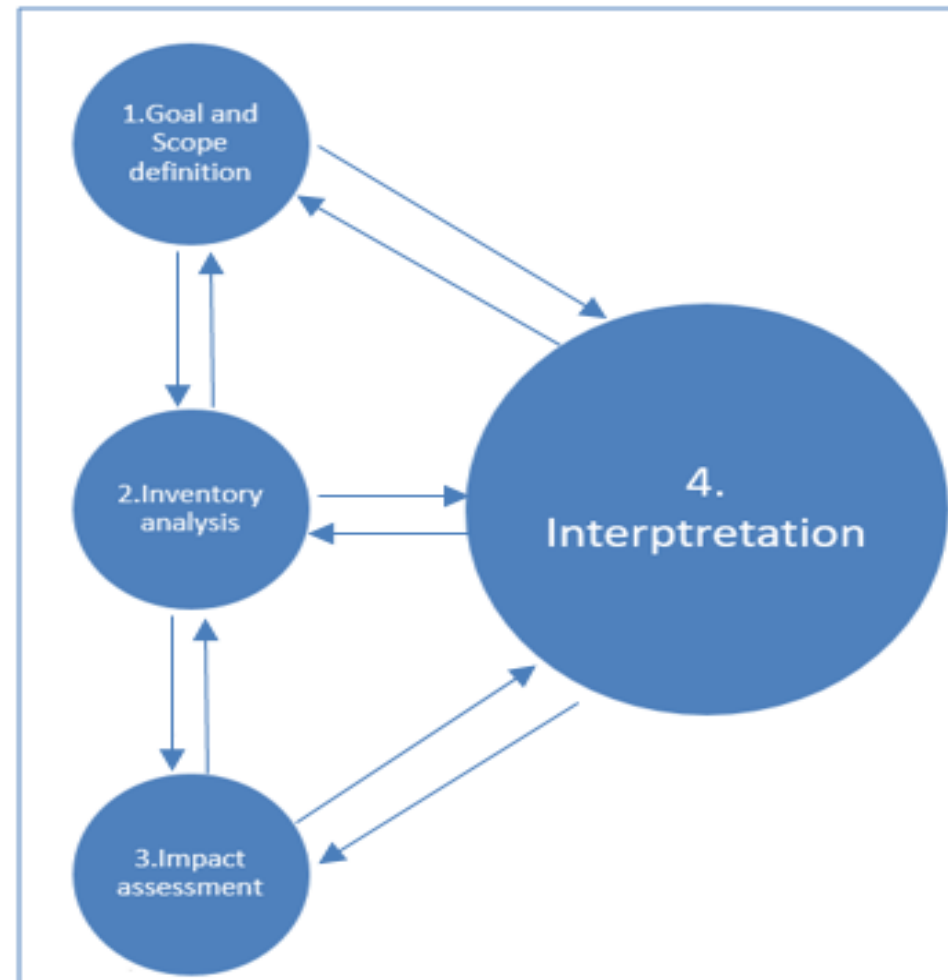
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- **ISO 14040:2006** Environmental Management—Life cycle assessment – Principles and framework.



- **ISO 14044:2006** Environmental management -- Life cycle assessment -- Requirements and guidelines.



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GOAL

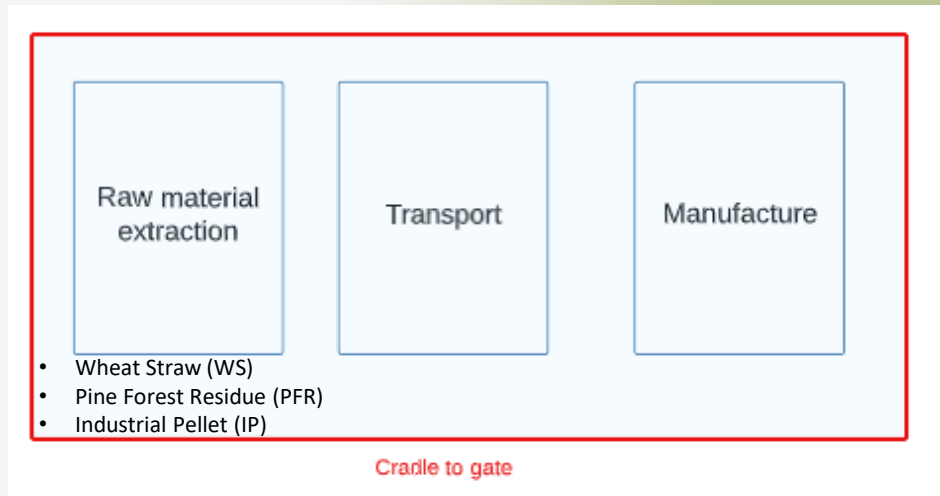
To calculate the **sustainability impacts of BIOFUEL production with different Biomass feedstocks.**

- Climate Change – CO₂ eq
- Non-Renewable, Fossil Energy - MJ

SYSTEM BOUNDARIE

Cradle to Gate

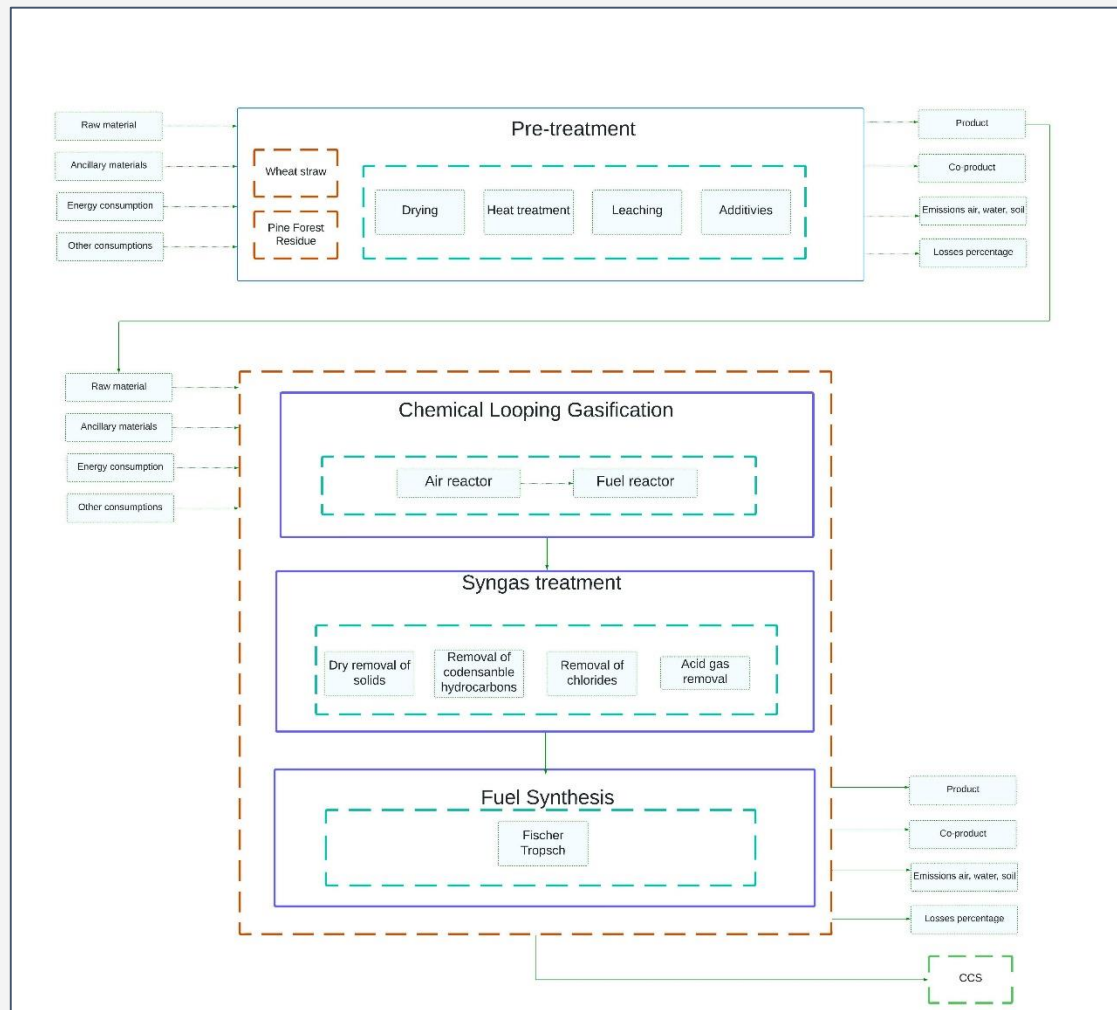
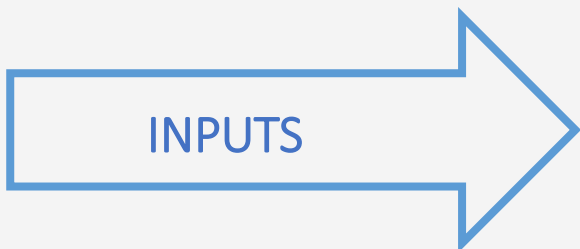
SCOPE



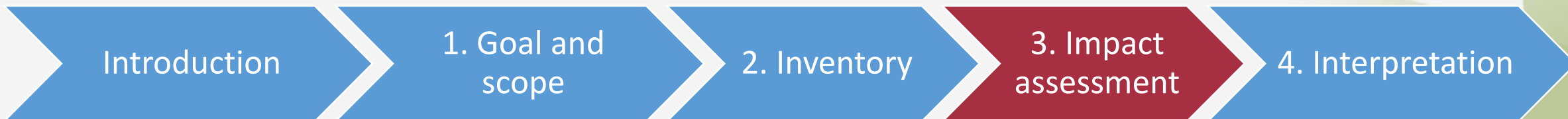
FUNCTIONAL UNIT

1 ton of liquid Fischer-Tropsch (FT) product

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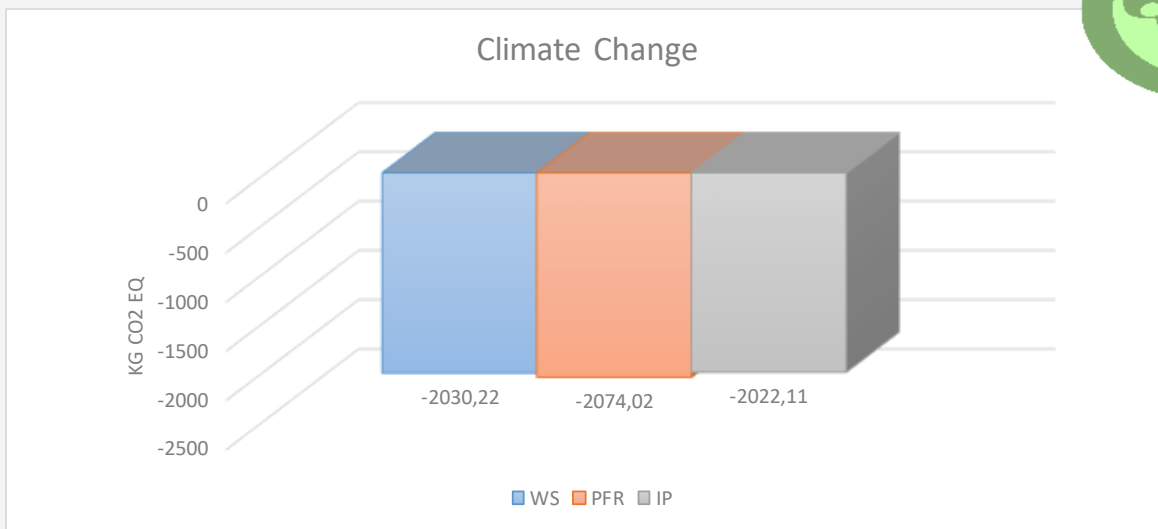


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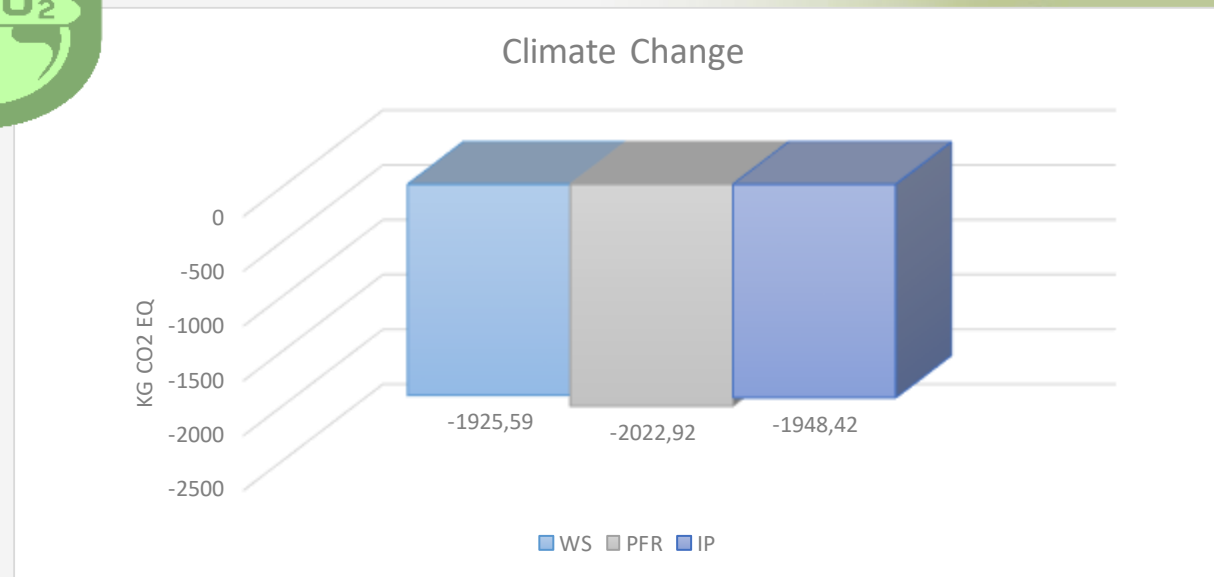


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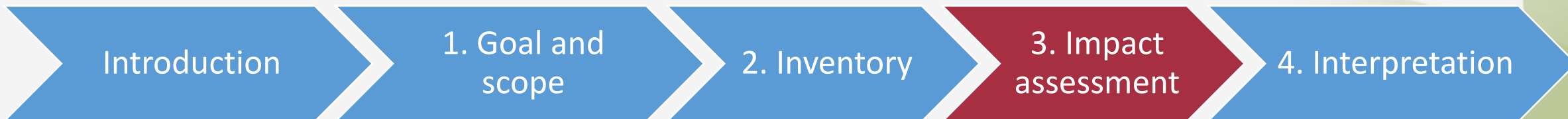
NOVEL METHOD



RECTISOL METHOD

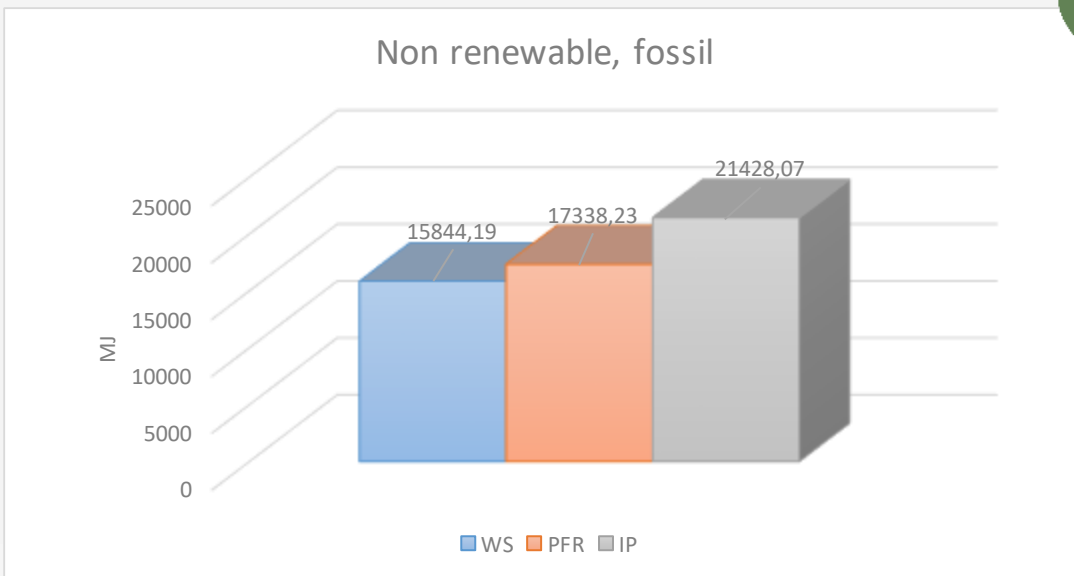


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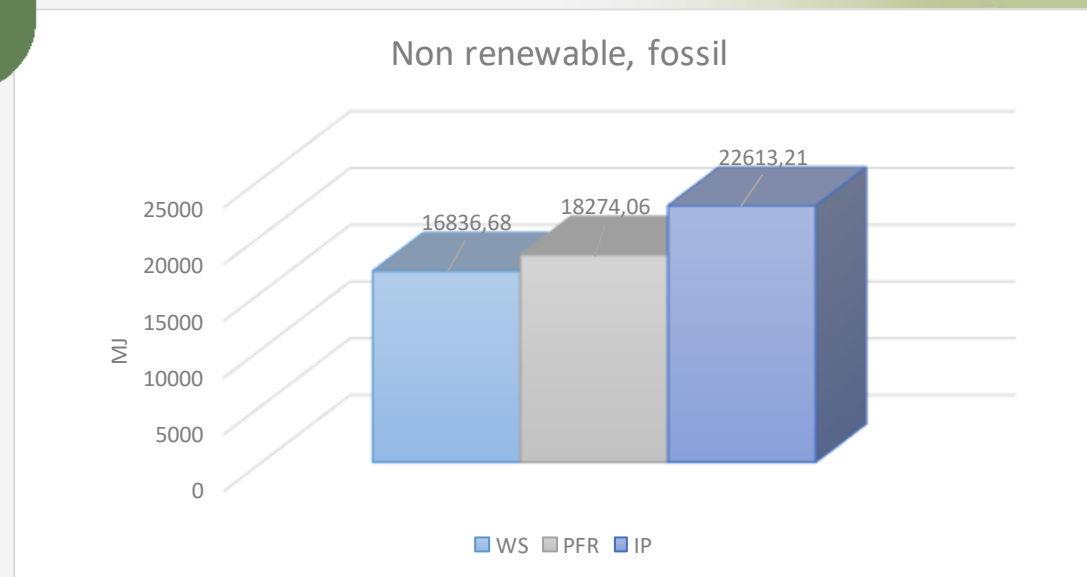


FUNCTIONAL UNIT
1 ton of liquid Fischer-Tropsch (FT) product

NOVEL METHOD




RECTISOL METHOD



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- Of the three types of feedstock, the results for the climate change indicator are very similar.
- About the fossil energy use indicator, wheat straw has a lower impact than Pine Forest Residue, which is in second place, and Industrial Pellets, which has the most significant impact on this indicator.
- For the two indicators analysed, climate change and fossil energy use, the greatest impact is represented by electricity consumption, in pretreatment, core process and carbon capture.
- The novel method in the gas cleaning stage is more sustainable, as it has a lower impact in terms of emissions and electricity consumption.



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THANKS A LOT.

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