

Offshore Wind and Green Hydrogen: The Impact of Variability

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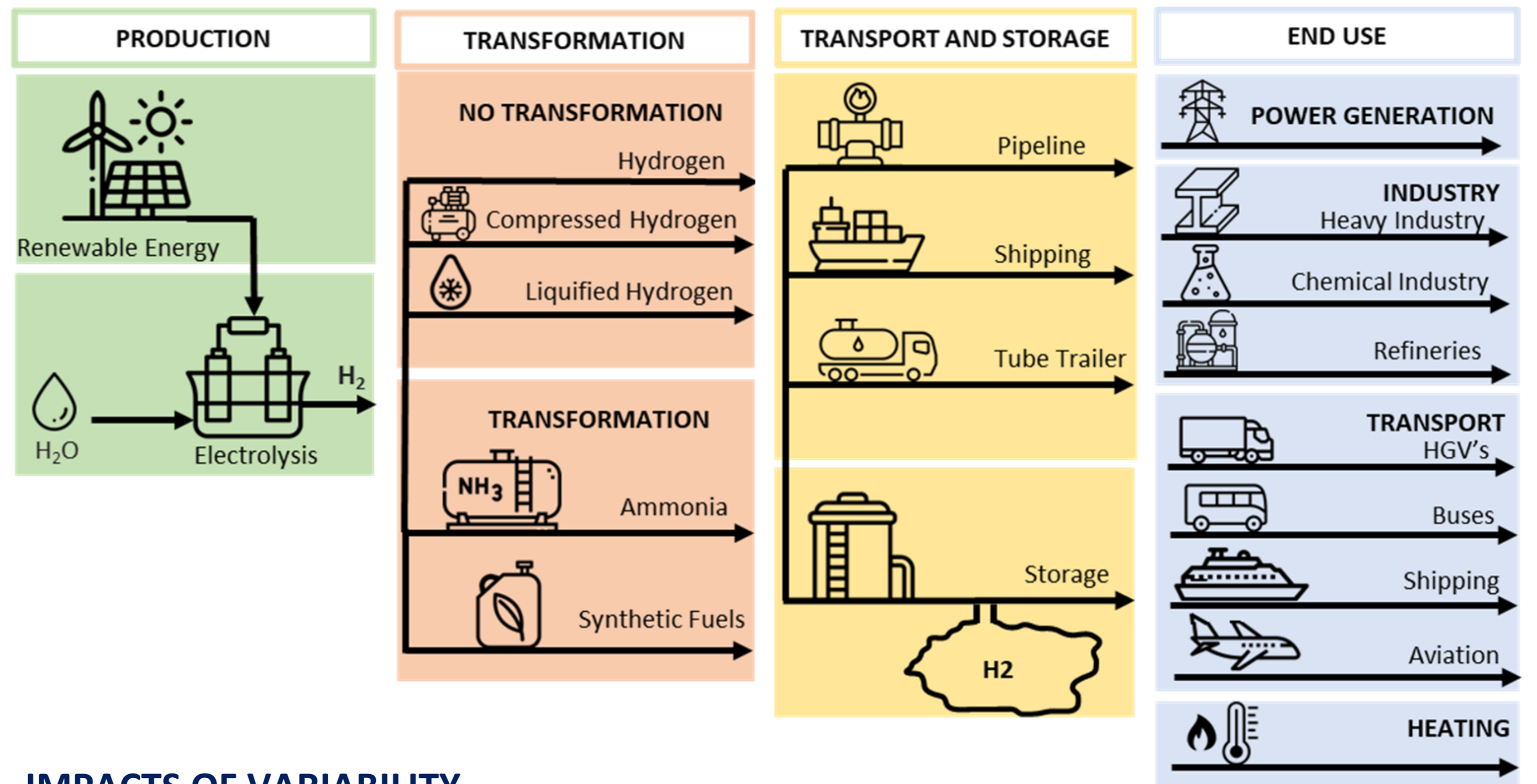
SUMMARY

This research focusses on the impact of variability on an offshore wind to green hydrogen system. The impacts of a **variable power supply to an electrolyser plant** from an offshore wind farm, and a **variable flow of hydrogen gas in pipelines** will be investigated, and recommendations will be made to optimize system planning to mitigate variability, regarding the technical and economic limitations:

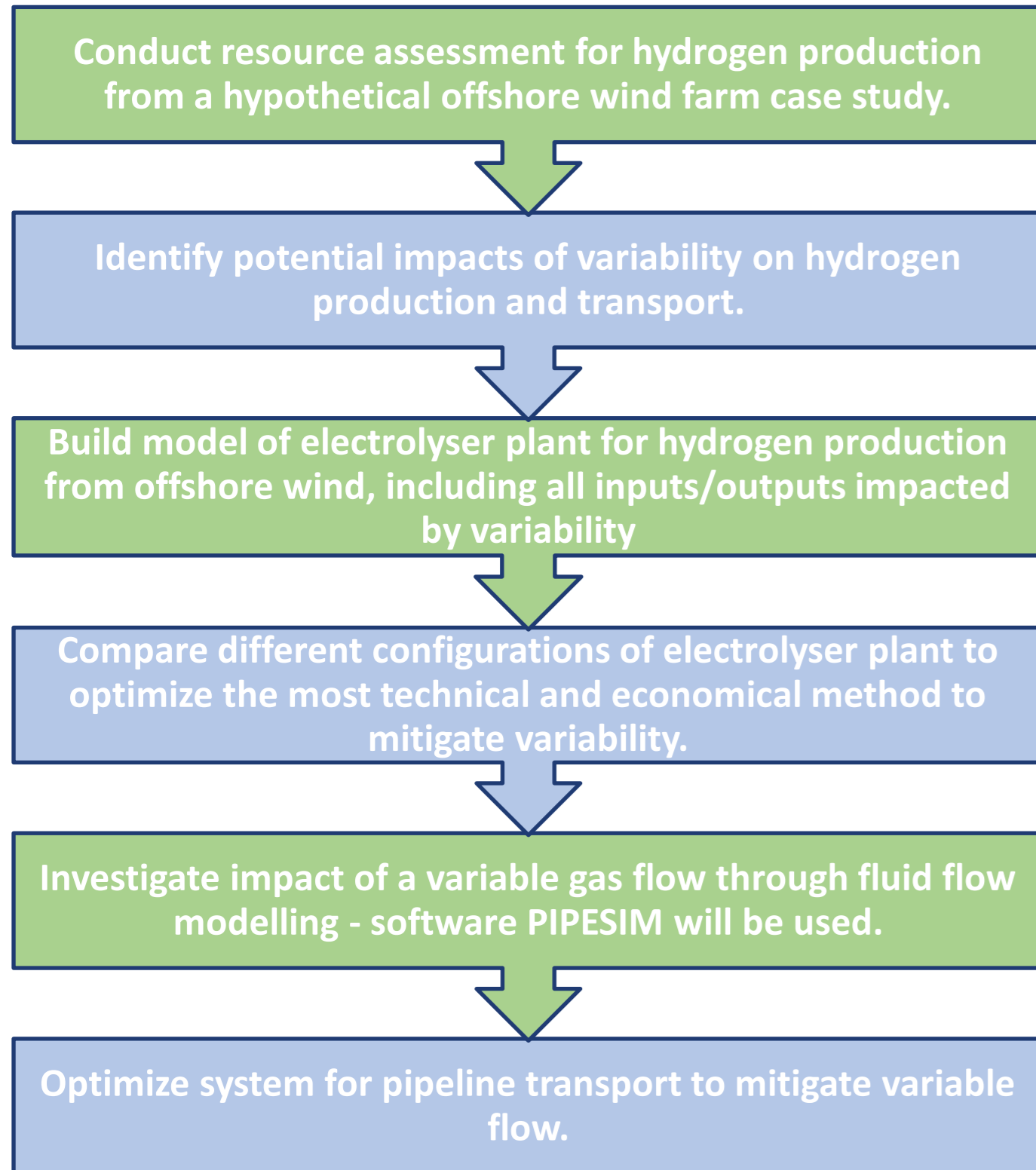
INTRODUCTION

- Hydrogen has the potential to become a carbon-free substitute for fossil fuels in many sectors: **transport, industry, heating** and as a **dispatchable fuel for power generation**.
- When hydrogen is produced via electrolysis, using electricity from a renewable energy source, it is termed **green hydrogen**, to signify that its production is carbon free also.
- The UK & Ireland aim to make use of their considerable offshore wind resource to scale up green hydrogen production.
- Offshore wind is a **variable renewable energy source**. A variable supply of electricity from offshore wind has impacts on hydrogen **production and transport**.

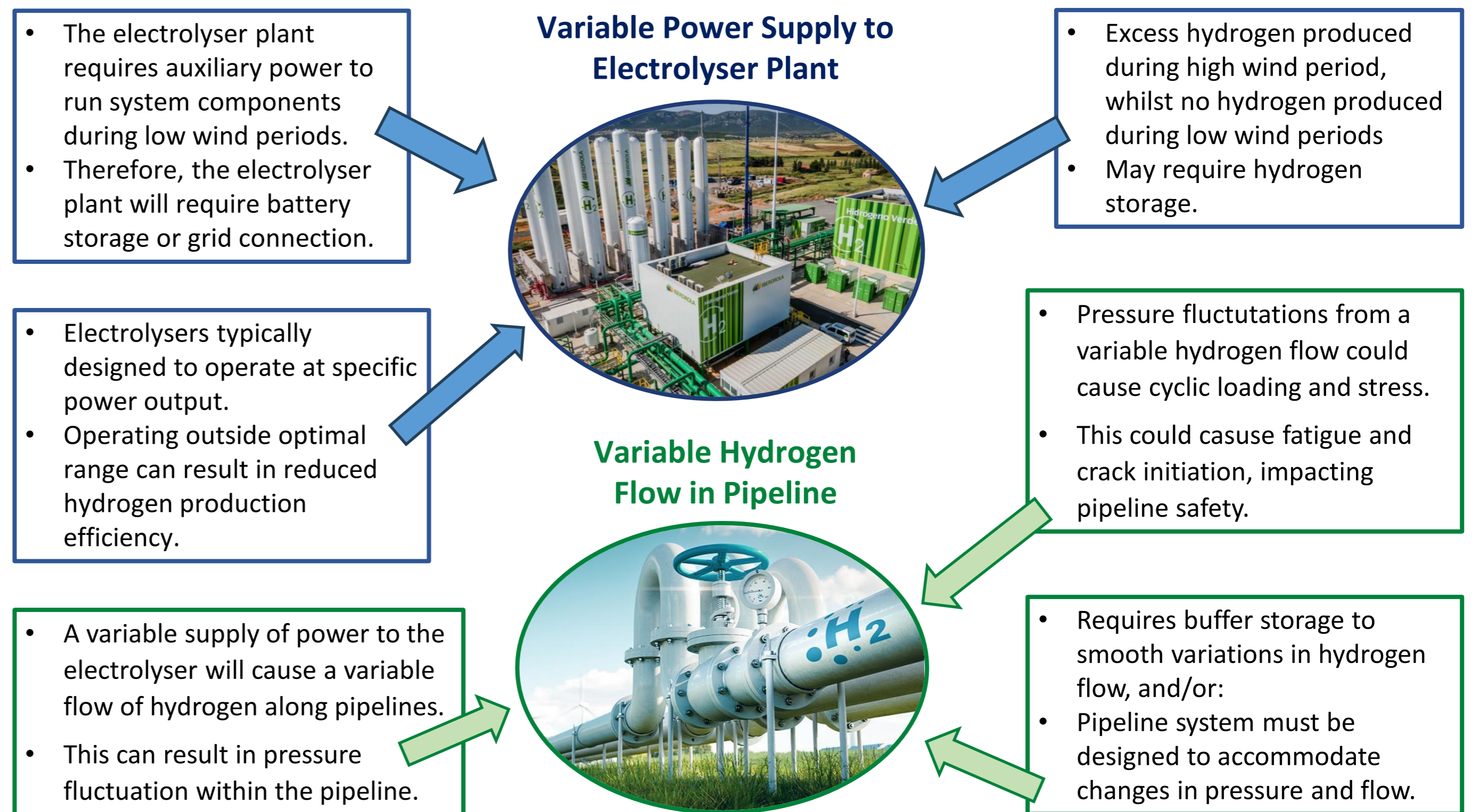
GREEN HYDROGEN SYSTEM



METHODOLOGY



IMPACTS OF VARIABILITY



FUTURE WORK

- Investigate the impact of a **variable demand** for hydrogen on a green hydrogen system.
- Potential case study: using hydrogen for **sustainable shipping**
- Will have **infrastructure and storage requirements** to accommodate minimum and maximum demand from a sustainable shipping case study.

REFERENCES

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