PhD Thesis Template
An Example to Work On

PHD Thesis

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To my family,
and friends.

I hereby declare that this thesis and the work presented herein is my own work except where appropriately referenced or acknowledged.

Your Name

ABSTRACT

ACKNOWLEDGEMENTS

DISSEMINATION

- Paper 1: Title, Journal/Conference, Year

- Paper 2: Title, Journal/Conference, Year

- Poster 1: Title, Conference, Year

ACRONYMS

TLA   Three Letter Acronym

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

This template is not intended to be a full tutorial on LaTeX. However, throughout the thesis we have included examples of the most commonly used elementssuch as equations, nomenclature, images, acronyms, and tablesto help you incorporate them effectively into your own work.

To develop a scientific thesis, you will almost certainly need to manage both **acronyms** and **scientific symbols**. The `acronym` package allows you to define acronyms once and use them uniformly throughout the document. For instance, the acronym Three Letter Acronym (TLA) is printed in full the first time it appears, then abbreviated afterwards.

Scientific nomenclature, on the other hand, is handled differently. Symbols and technical quantities can be defined using the `\nomenclature` command, allowing them to be automatically compiled into a neatly formatted list.

For example: - the speed of light: c - force: $F = ma$ - energy: E - operators such as ∇ and ∂

All these definitions are collected and printed in the *Nomenclature* section using the `\printnomenclature` command found in the main file.

For more information, you can consult the official LaTeX documentation or support material from postgraduate research centres such as the Early Career Researcher Institute Imperial College London, Early Career Researcher Institute 2025.

You will also likely need to include figures and illustrations throughout your thesis. Figures may show experimental results, conceptual diagrams, or processed data visualisations. The example below demonstrates how to insert a typical image using the `figure` environment.

1.2 RESEARCH QUESTIONS

The thesis is guided by a set of core research questions that structure the investigation and provide a clear analytical direction. These questions help define the scope of the study and ensure that each chapter contributes meaningfully to the overarching aims of the work. It is entirely up to the author how to organise the chapters; however, a clear list of research questions is considered good academic practice and greatly benefits the reader.

A common way to present the key research questions is through a list, such as:

- How do existing frameworks or theoretical models influence the interpretation of the studied phenomena?
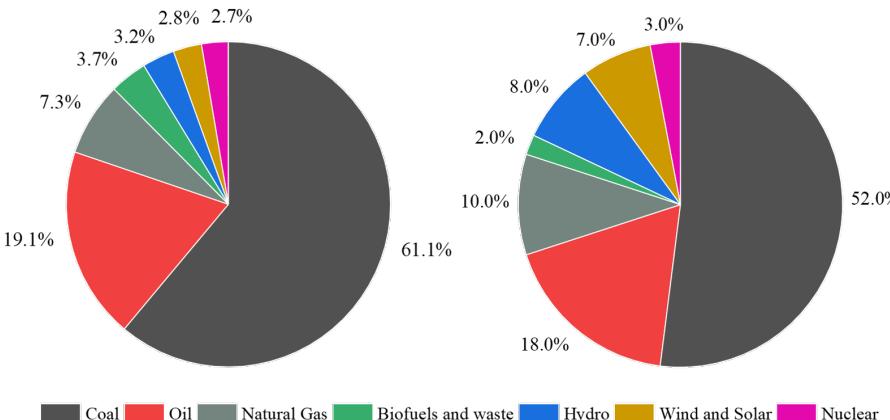
Figure 1.1: Supply chain diagram of green hydrogen production. Adapted from Godinho et al. 2024.

- What are the main methodological challenges associated with analysing the selected datasets or experimental conditions?

- Which approaches or technologies offer the most effective pathway for addressing the problem outlined in the introduction?

1.2.1 CONTRIBUTIONS

This thesis provides several contributions to the existing body of knowledge.

First, it advances theoretical understanding by examining how established frameworks shape the interpretation of complex systems or phenomena.

Second, it addresses methodological limitations in current literature by proposing more robust analytical strategies tailored to the datasets and experimental conditions investigated.

Third, it evaluates and compares state-of-the-art approaches and technologies, identifying the most effective pathways for addressing the central research problem.

Taken together, these contributions extend contemporary scholarship and guide future work in the area, much in the same way that influential earlier works have shaped their fields. For example, the impact of Orwell 1949 on British dystopian literature is difficult to overstate; discussing dystopia without referencing Orwell is rather like attempting a PhD without caffeine: possible in principle, but seldom observed in practice.

Chapter 2

Related Work

The Related Work chapter is a crucial component of most theses. A practical way to organise your projectand to simplify writing, editing, and version controlis to create a separate LaTeX `.tex` file for each chapter. In this section, we demonstrate how to include and format tables within your thesis, using common academic layouts. Tables can be a valuable tool in your thesis for a variety of purposes, from presenting results to explaining parameters and organizing complex data.

As shown in Table 2.1, the following 3Œ3 table presents placeholder data for parameters X, Y, and Z. This structure is useful for showing compact relationships or comparing small sets of variables. Table 2.2 shows a 5-column table, suitable for experimental out-

Table 2.1: A 3Œ3 table template with parameters X, Y, and Z.

Parameter	Value	Units
X1	10	m
X2	20	m
X3	30	m

puts, benchmarking studies, or design specifications. You can easily extend the number of columns or replace placeholder values with your own data.

Table 2.2: A 5-column table template suitable for experimental results or design specifications with parameters AE.

Sample	A	B	C	D	E
1	–	–	–	–	–
2	–	–	–	–	–
3	–	–	–	–	–

CHAPTER 3

METHODS

In many experimental analyses, it is important to quantify the variability present in the measurements. In this section, we demonstrate how to typeset equations in LaTeX, using the sample standard deviation as a simple example.

The standard deviation provides a measure of how spread out the data are from the mean. For a sample of n observations, $x_1, x_2, \ldots, x_n$, the sample standard deviation s is defined as:

$$s = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n} (x_i - \bar{x})^2} \tag{3.1}$$

where $\bar{x}$ is the sample mean, given by:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i \tag{3.2}$$

Equation 3.1 shows that the standard deviation increases as the data points deviate further from the sample mean. This form is commonly used when analysing repeated measurements, sensor data, or experimental uncertainty.

Chapter 4

Results

A dedicated results chapter is a standard component across most disciplines and thesis formats. Clear and effective graphical representation is crucial in this section, as figures often communicate trends, comparisons, and patterns more efficiently than text.

Figure 4.1 presents a 2Œ2 layout with four panels (ad), which is a common structure when comparing multiple experimental conditions, time points, or parameter variations. Each panel can represent a different scenario, and together they provide a cohesive visual summary of the experiment. The figures were obtained at Gomes et al. 2022.

(a) Image a

(b) Image b


(c) Image c

(d) Image d
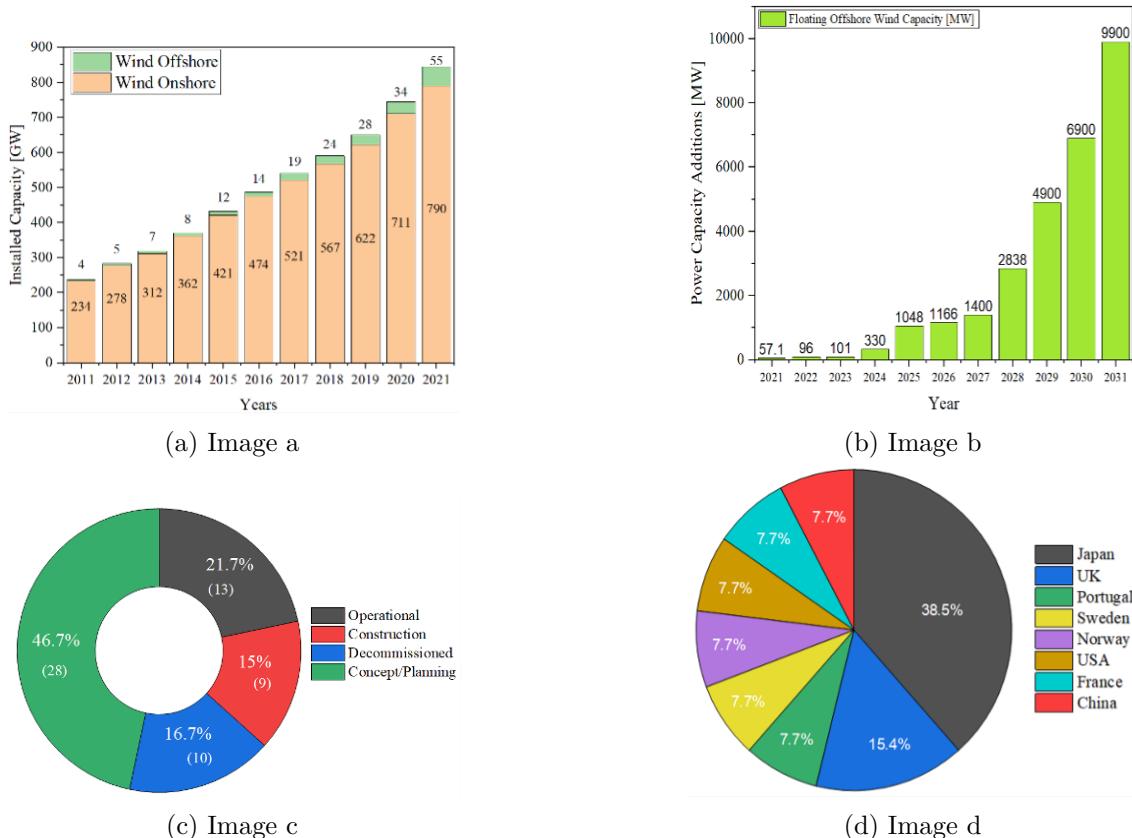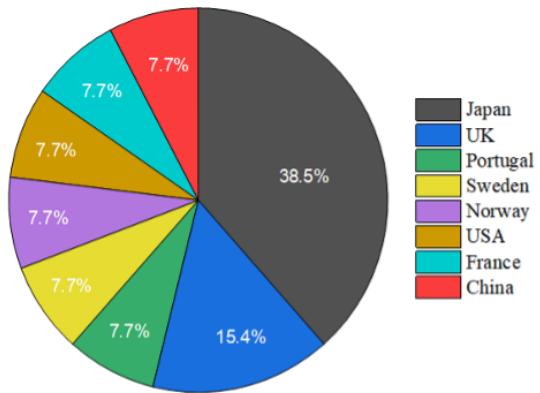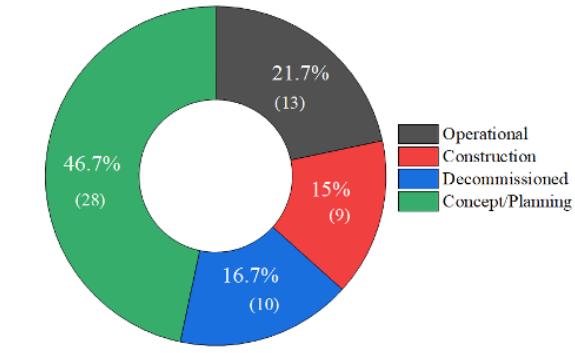
Figure 4.1: Four-panel figure showing different aspects of the experiment. Subfigures ad correspond to distinct experimental conditions or processing steps.

When comparing two related outcomes, measurements, or conditions, a two-panel

figure is often the most effective option. Figure 4.2 presents panels a) and b) side by side, allowing easy visual comparison between the two cases.


(a) Description of image a

(b) Description of image b

Figure 4.2: Two-panel figure comparing condition a) and condition b).

CHAPTER 5

DISCUSSION

CHAPTER 6

CONCLUSION

Remember that as long as you follow the mandatory regulations for the PhD thesis, you are free to adapt, extend, and improve this templateand even explore more innovative ways to present your work.

Good luck with your thesis, and congratulations on reaching this stage of your PhD journey. If you are reading this template, it likely means you are getting close to submitting your thesis. Keep goingyou are almost there!

Appendix A

Appendix A

```python
import math

def pythagoras(a, b):
    return math.sqrt(a**2 + b**2)

side1 = 3
side2 = 4
hypotenuse = pythagoras(side1, side2)
print("Hypotenuse:", hypotenuse)
```

Bibliography

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