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## Plan Overview

*A Data Management Plan created using DMPonline*

**Title:** Assessing & Enhancing Energy Efficiency of HVAC Systems in Saudi Arabia's Residential Buildings

**Creator:** Mustafa Alobaid

**Affiliation:** University of Manchester

**Template:** University of Manchester Generic Template

### **Project abstract:**

This project aims to develop a holistic strategy to address residential energy demand in Saudi Arabia, focusing on optimising energy use by enhancing energy efficiency and sustainable practices. To achieve this aim and objectives, an extensive literature review was undertaken on the area related to HVAC performance from building characteristics, operational & maintenance factors, and climate & environmental factors. Furthermore, a research methodology was drawn to fulfil each objective. It includes five stages plus the conclusion and recommendations. Each stage has a different research method. For example, the first stage is assessing factors affecting HVAC performance from three perspectives, namely, building characteristics, operation & maintenance factors and climate & environmental factors- by Literature Review. The other stages are based on primary data collection from various methods, including future climate data, on-site building assessment, stakeholders' surveys and expert consultation. Then the modelling and simulation stage will be performed, considering current and future climate data. Finally, some analysis methods will be conducted to validate the results.

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**Start date:** 01-01-2025

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### **Copyright information:**

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# Assessing & Enhancing Energy Efficiency of HVAC Systems in Saudi Arabia's Residential Buildings

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## Manchester Data Management Outline

**1. Will this project be reviewed by any of the following bodies (please select all that apply)?**

- Ethics

**2. Is The University of Manchester collaborating with other institutions on this project?**

- No - only institution involved

**3. What data will you use in this project (please select all that apply)?**

- Re-use existing data (please list below)
- Acquire new data

Architectural Drawing.

Building Characteristics Data such as insulation type, window types, etc.

Air-Conditioning and Lighting Data.

**4. Where will the data be stored and backed-up during the project lifetime?**

- P Drive (postgraduate researchers and students only)

**5. If you will be using Research Data Storage, how much storage will you require?**

- Not applicable

**6. Are you going to be receiving data from, or sharing data with an external third party?**

- No

**7. How long do you intend to keep your data for after the end of your project (in years)?**

- 0-4 years

***Guidance for questions 8 to 13***

Highly restricted information defined in the [Information security classification, ownership and secure information handling SOP](#) is information that requires enhanced security as unauthorised disclosure could cause significant harm to individuals or to the University and its ambitions in respect of its purpose, vision and values. This could be: information that is subject to export controls; valuable intellectual property; security sensitive material or research in key industrial fields at particular risk of being targeted by foreign states. See more [examples of highly restricted information](#).

If you are using 'Very Sensitive' information as defined by the [Information Security Classification, Ownerships and Secure Information Handling SOP](#), please consult the [Information Governance Office](#) for guidance.

Personal information, also known as personal data, relates to identifiable living individuals. Personal data is classed as special category personal data if it includes any of the following types of information about an identifiable living individual: racial or ethnic origin; political opinions; religious or similar philosophical beliefs; trade union membership; genetic data; biometric data; health data; sexual life; sexual orientation.

Please note that in line with [data protection law](#) (the UK General Data Protection Regulation and Data Protection Act 2018), personal information should only be stored in an identifiable form for as long as is necessary for the project; it should be pseudonymised (partially de-identified) and/or anonymised (completely de-identified) as soon as practically possible. You must obtain the appropriate [ethical approval](#) in order to use identifiable personal data.

**8. What type of information will you be processing (please select all that apply)?**

- No confidential or personal data

Building Data and Energy Usage, such as hours of turning on the air conditioning in day.

**9. How do you plan to store, protect and ensure confidentiality of any highly restricted data or personal data (please select all that apply)?**

- Not applicable

**10. If you are storing personal information (including contact details) will you need to keep it beyond the end of the project?**

- Not applicable

**11. Will the participants' information (personal and/or sensitive) be shared with or accessed by anyone outside of the University of Manchester?**

- Not applicable

All data that will be shared is related to building characteristics and energy consumption.

**12. If you will be sharing personal information outside of the University of Manchester will the individual or organisation you are sharing with be outside the EEA?**

- Not applicable

**13. Are you planning to use the personal information for future purposes such as research?**

- No

**14. Will this project use innovative technologies to collect or process data?**

- No

**15. Who will act as the data custodian for this study, and so be responsible for the information involved?**

Mustafa Ridha Alobaid

**16. Please provide the date on which this plan was last reviewed (dd/mm/yyyy).**

2025-06-03

**Project details**

**What is the purpose of your research project?**

This PhD research aimed to develop a holistic strategy to address residential energy demand in Saudi

Arabia, focusing on optimising energy use by enhancing energy efficiency and sustainable practices.

### **What policies and guidelines on data management, data sharing, and data security are relevant to your research project?**

Already Mentioned

## **Responsibilities and Resources**

### **Who will be responsible for data management?**

Mustafa Ridha Alobaid

### **What resources will you require to deliver your plan?**

Online resources (Access to academic literature and databases).

## **Data Collection**

### **What data will you collect or create?**

Primary Data, such as building characteristics data, energy consumption "bill", and architectural drawing.

### **How will the data be collected or created?**

1. Gathering information regarding insulation types, HVAC type and specification, window type and specification, and any other significant data that will assist in improving energy consumption. **(Occupants and/or Homeowners).**
2. Collecting previous energy usage from utility bills. **(Saudi Electricity Company, in case the homeowner did not have their bills).**
3. Collecting architectural drawings, plans, etc. **(Al-Qatif Municipality, in case the homeowner did not have their plans).**

## **Documentation and Metadata**

### **What documentation and metadata will accompany the data?**

Online (PhD Project), when this project is finished, the data will be available for secondary users to view and use.

### **Ethics and Legal Compliance**

#### **How will you manage any ethical issues?**

Already done the participant information sheet and the consent form.

#### **How will you manage copyright and Intellectual Property Rights (IPR) issues?**

The data will be available for any researchers, but any use of the data should be cited.

### **Storage and backup**

#### **How will the data be stored and backed up?**

Research Data Storage

#### **How will you manage access and security?**

It will be published online as there is no personal & confidential data.

### **Selection and Preservation**

#### **Which data should be retained, shared, and/or preserved?**

All data in the PhD project

#### **What is the long-term preservation plan for the dataset?**

Make it available for anyone interested in such a type of research.

## **Data Sharing**

### **How will you share the data?**

At the end of this PhD, the data will be available online.

### **Are any restrictions on data sharing required?**

No restriction.