

INTRODUCTION

In this research a participatory futures approach is adopted to develop energy futures at the community scale for a particular case study: Findhorn Ecovillage in the north of Scotland.

This research addresses the following:

1. What are the future decarbonisation challenges and opportunities for Findhorn Ecovillage?
2. How can participatory futures support decision making at a community scale?
3. What are the implications for community decarbonisation?

METHODOLOGICAL APPROACH

This research adopted a participatory exploratory energy futures approach. The futures developed here are qualitative and without the use of quantitative models. The energy futures were based on discussions held in an online workshop with 14 invited Findhorn Ecovillage members.

A popular method in exploratory futures studies is known as the "2x2 Matrix" method. This is where two important drivers or issues are used as axes to frame four future scenarios with combinations of high and low of each driver.

The participants were guided through four process steps to develop the 2x2 Matrix and future scenarios as outlined below:

1. Identify drivers for change in the energy system
2. Vote for two most important drivers to form a 2x2 matrix of four scenarios
3. Discuss the four scenarios to develop a pathway over time for each
4. Name each scenario

REFERENCES

- [1] Climate Change Committee. Independent assessment: The UK's net zero strategy.
- [2] Peter Schwartz. *The Art of the Long View: Planning for the Future in an Uncertain World*. John Wiley & Sons.

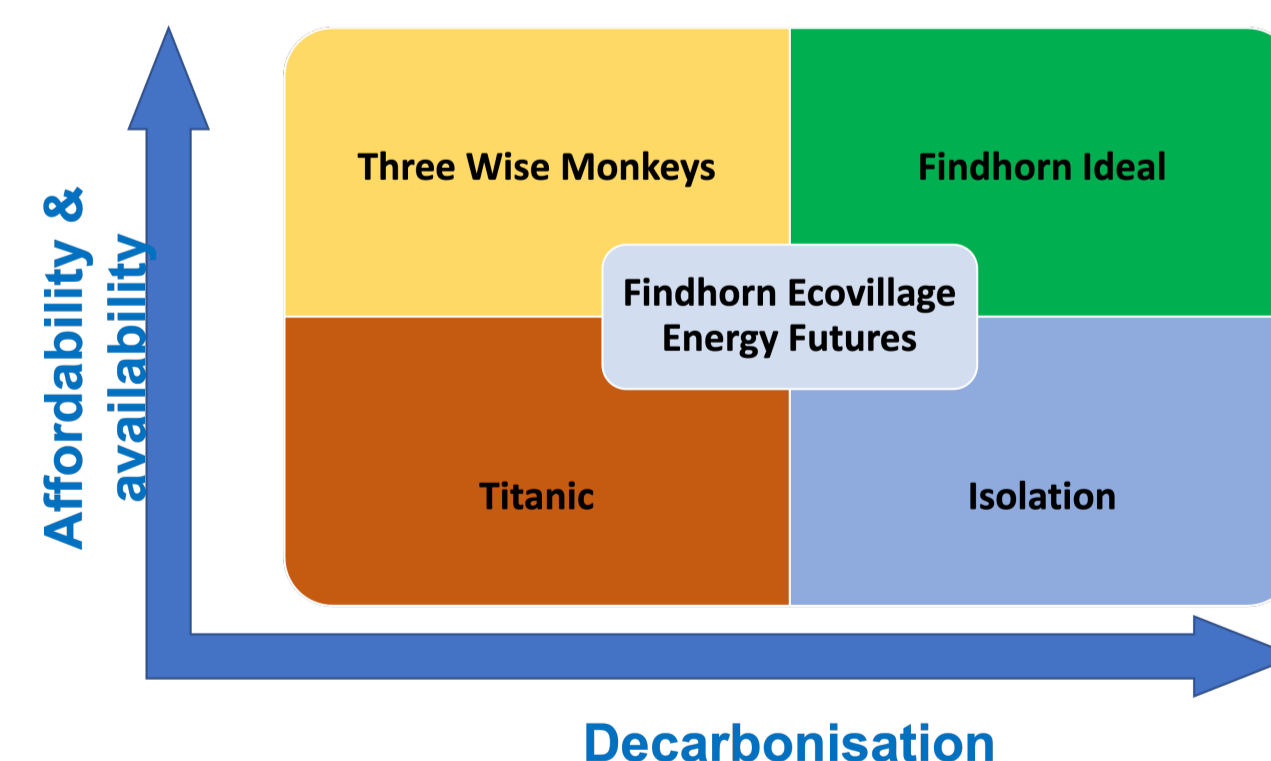
2X2 MATRIX

In the first stages participants discussed what may be drivers for change in the local energy system under four categories; economy, environment, society and any/other.

The generated suggestions were aggregated where there was similarity or overlap, and the participants were then asked to vote for the two most important drivers. The result of this poll is below.

Driver	No. Votes
Air Quality	0
Availability & Affordability of Energy & Technology	7
Decarbonisation	8
Economic Growth	0
Equality & Fairness	4
Findhorn Values	4
Government Funding	3
Resilience	2
Sea Level Rise	0

The most important drivers were therefore "decarbonisation" and "availability & affordability of energy & technology". These drivers were then used to form a 2x2 matrix of four possible scenarios shown below along with the names the participants assigned to them.



FUTURE RESEARCH

Further research is needed to understand how adopting these methods over time may support and improve strategic decision making at the community scale.

FUTURE PATHWAYS

Participants were divided into four groups and assigned one of the four scenarios to discuss a possible pathway over time. The tables below highlight key features of each of these scenarios.

Three Wise Monkeys
High Affordability/Availability of Energy/Technology Low Decarbonisation
<ul style="list-style-type: none"> o Consumption patterns continue o Missed net zero emissions targets o Flying rebound post pandemic o High private car ownership o Strong economic growth o Weaker sustainability principles

Titanic
Low Affordability/Availability of Energy/Technology Low Decarbonisation
<ul style="list-style-type: none"> o Failure in national economic growth efforts and rising inequality and civil unrest o Low crime in the ecovillage increasing its appeal for the wealthy and a shift in demographics o Sustainability abandoned initially, stronger restrictions brought in 2040s

Findhorn Ideal
High Affordability/Availability of Energy/Technology High Decarbonisation
<ul style="list-style-type: none"> o Strong decarbonization policies, grants, financial incentives and skills o New wind turbine, solar farm and battery o EVs and Vehicle-to-Grid o Low levels of flying and private car ownership o "20 minute" village

Isolation
Low Affordability/Availability of Energy/Technology High Decarbonisation
<ul style="list-style-type: none"> o Carbon taxes leads to economic contraction o Reuse, recycling strong o Caring and sharing ethos o Self sufficiency needs drives food production o Wood burning more o Scottish independence

FINDINGS

1. *Challenges and opportunities for Findhorn Ecovillage further decarbonisation*

- The driver "affordability & availability of energy & technology" highlights the embeddedness in wider societal and economic system
- Wider system interactions present a risk of undermining Findhorn values but also provides opportunities for further decarbonisation.

2. *Participatory exploratory futures as decision support for communities*

- Participatory exploratory approach facilitates social learning and takes account of diverse perspectives
- These futures can be used to supplement quantitative approaches.

3. *Implications for community decarbonisation*

- Participatory futures approaches enable diverse worldviews to be debated
- Interactions with the wider societal, economic and environmental systems can be explored and can stimulate creative thinking.

To reach the UK's net zero emissions target by 2050 more than half the emissions reductions are needed from people making low carbon choices. So far decarbonisation progress has been mostly on the energy supply side i.e. electricity systems. Participatory exploratory futures approaches assists in improving understanding as to what is required for citizens in the transition to a low carbon society on a variety of scales including for communities.

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The social learning aspect warrants further investigation too in bringing about the transformation in behaviour required to reach net zero emissions targets.