

# Supporting better decisions across the nexus of water-energy-food challenges

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## Introduction

Water, energy and food are inextricably linked. There are many synergies between water, energy and food production.

Nexus issues span multiple scales from local to global. Comparative studies highlight the role of cross-cutting issues such as land use, social, economic, and ecosystem services (Figure 1).

So far issues related to food, energy and water are addressed in isolation within sectoral boundaries. Integrative approaches are vital to achieve sustainable outcomes; but are often lacking

New decision support tools are needed to ensure the co-benefits and trade-offs are considered between these sectors.

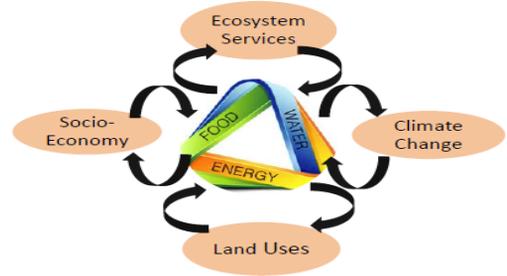


Fig. 1: Illustration of W-E-F Nexus

(Adapted from <https://www.soils.org/science-policy/get-involved/infews-white-papers>)

## Research Questions

What are the challenges and solutions to using systems based integrative concepts?

What do we learn about relationships between water, energy, and food when our systems based integrative approach is applied?

**NB.** PhD still at the beginning so I'm in the process of revising research questions and focus of the research.

Any thoughts or suggestions or knowledge of resources on WEF Nexus? Please do share!

## Methods

Review existing systems based approaches

Develop integrative decision support modelling approach

Test approach in the Zambezi basin and Scotland

Operationalise approach in the Zambezi and Scotland

PhD will contribute to the Hydro Nation policy through its international approach. It will build on my research experiences in the Zambezi river basin.

The project will examine WFE nexus issues in the 1.4 M km<sup>2</sup> Zambezi basin of Southern Africa and Scotland (78,387 km<sup>2</sup>).

The diversity of challenges will be compared with the situation in Scotland with its more mature policy and regulatory frameworks.

## Acknowledgements

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