Goal 4: To understand better the nexus between energy, land and water and the trade-offs and synergies associated with different patterns of energy development.

Over-arching considerations

- Environmental, economic & political focus to consideration important
- Must consider both supply and demand in all aspects
- Training and capacity building a fundamental component

Discussions around spatial scales

1. Conceptual:
In comparison to energy and land (food):

- Water has no global market or supply chain
- Water has local/regional supply and is therefore open to greater variability in availability
- Variability in water availability affects supply (hose pipe bans, flooding) rather than price

2. Implementation:

- Do we need to consider a top-down (system architect) or bottom-up (participatory democracy) approach?
- Can patterns in energy development be emergent properties of bottom-up approach through spatial variation in local economic/social/environmental drivers or is governance required?
- Should we operate within political or biogeographical units?

Discussions around temporal scales

- How do political cycles and future planning trade-off; comparison of food/water/energy security of supply (short term) against food/water/energy security (mid-long term).
- For both supply and demand, the temporal resolution of data varies dramatically across nexus components – how can these best be integrated?

Discussions about implementation

1. Internalising externalities:

- Great need to understand and reduced risk and uncertainty in valuation methodologies across incommensurable goods and services
- Need to improve the quality of 'big' data available to underpin and support analyses
- Can we improve our statistical methodologies for dealing with uncertain data/handling risk by adopting cross-discipline (e.g. computing science) approaches

2. Life-cycle analyses:

- Improve equality of evaluation across renewable and non-renewable energy sources
- All associated costs must be considered at global scale e.g. embedded water and ecosystem services
- Opportunity to distinguish between heat and electricity in terms of environmental impact

Discussions around awareness/education

1. Civil society:

- Need to extend understanding of the sources of food, water and energy beyond supermarkets, taps and switches
- Need to better inform perceptions of stocks and supply
- Need to enable recognition and understanding of the implications of current and projected consumption patterns

2. Media:

- Knowledge exchange fundamental to successful project
- Sophisticated and complex concepts/messages need communicating

3. Government:

- Political stance continues to be focused on price rather than consumption levels – influence of 'Big 6' in this process?
- What is the hierarchy within the nexus – is it food, water or energy price/supply fluctuations that drive greatest public unrest?
- Energy and food geopolitical tools – can environmental considerations compete?
- Capacity building necessary – through two-way mentoring, Parliamentary Office of Science and Technology placements etc.