



University of Tasmania *Future Energy*

Submission to the ACOLA Research Design Plan Consultation Process

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About *Future Energy*

Future Energy was established as an interdisciplinary energy research group at the University of Tasmania (UTAS) in early 2017. Our goal is to engage with energy institutions, industry, and local government to produce high quality research that informs policy and identifies options for future energy provision in Tasmania as well as nationally. We currently have just under forty active members, and meet regularly. The main purpose of *Future Energy* is to bring together UTAS scholars working on energy governance, markets, culture, and technologies from a range of disciplinary perspectives. *Future Energy* includes core expertise from economics, law, engineering, geography, marine science, architecture, ICT, social sciences, and the humanities.

This *Future Energy* submission into the ACOLA proposed Energy Transition Research Plan (Research Plan) is informed by the expertise and collective views of our members, drawn from across the disciplines. We base our submission upon consideration of the cultural, socio-economic, and technological implications of energy transition in Australia. We have also made recommendations and are willing to be contacted by ACOLA for clarification and further participation in the Research Plan.

Our Submission

Submission Overview & Summary

Future Energy appreciates the opportunity to make contributions to the Australian Energy Transition Research Plan (the Research Plan). *Future Energy* recognises the challenges of energy transition in Australia and need for the development/design of the Research Plan. Australia has a unique environment and is strategically placed to be a major power house for export of renewable fuels and play an international role in energy transition. This comes at a time when a gradual shift from fossil fuel to renewables is occurring around Australia but a clear research plan on energy transition is lacking. Therefore, the call for submission to develop the Research Plan by ACOLA is timely, and *Future Energy* welcomes the opportunity to address the consultation questions.

The submission relates to contributions to the proposed Research Plan by ACOLA and suggestions to improvement on research priorities in Australia. In summary, UTAS *Future Energy* recommends a slight revision of the scope to align Australia's research priorities with regional differences and regional energy needs, identify clusters of research expertise and have a degree of selectivity based on Australia's energy system trajectory. We suggest that the Research Plan should produce a research profile, incorporate findings into teaching/research programs in Australian universities, allow for regular revisions, international benchmarking, and information sharing. Also, we suggest the formation of a national committee to govern energy research in Australia, and have identified some potential risks that might need to be managed.

Responses to the Consultation Questions

1. Would you or your organisation be willing to participate with ACOLA in the development and ongoing support of a Research Plan?

Yes, we would be willing to participate with ACOLA and very much welcome the opportunity. We believe that UTAS, through the Future Energy research group, is in a good position to contribute because of our interdisciplinary research expertise. Further, we have longstanding strong collaboration with energy sector stakeholders in Tasmania and have also worked closely with state and federal government organisations. For example, Future Energy has recently established a two-year Future Energy Postdoctoral Research Fellowship, jointly funded by Tasmanian utilities and UTAS. A key part of the work of the Fellow involves the development of an energy research plan for Tasmania, which has strong overlap with the ACOLA Research Plan. Between now and early 2022 the research fellow will develop a 5-10 year research plan for Tasmania incorporating input from industry, government and UTAS, to map current research activities and explore future research opportunities.

2. What should be the scope of the Research Plan (how should we define 'energy', 'transition' and 'research')?

We welcome the focus of ACOLA on interdisciplinary energy research, and broadly agree with how the key terms have been defined. In addition:

- There is a question on the use of singular 'transition' which implies a pre-defined single pathway of innovation. The reality is much messier – there are likely to be multiple diverse energy transitions across Australia, with the possibility of competing technologies and incompatible objectives. The Research Plan would ideally acknowledge this and include a broader (plural) definition of 'transition'.
- The academic research timeframe for researching transitions is typically long (decades to centuries), whereas industry and government timeframes are typically shorter. Misunderstandings might arise, among stakeholders providing input into the Research Plan and subsequently drawing upon the outcomes of the plan, about the timeframe of the transition. It should be stated clearly in the scope that the Research Plan will address energy transitions - and associated research opportunities - on a range of different timescales, providing definition or guidance as to what those timescales are.
- Aligning Australia's energy research priorities should take account of regional differences and regional energy needs. For example, Tasmania has a winter electricity peak, not summer; the large majority of energy consumption is from renewable energy; over 50% of Tasmania's electricity demand is from just a few major industrial sites. Energy sector priorities in Tasmania are therefore quite different to other Australian states.
- The Research Plan should not only document Australia's current research activities and gaps in research, but should also identify areas where Australia has particular research strengths

or clusters of research expertise. Likewise, it will be important to identify gaps where Australia is unlikely, in an acceptable time frame, to catch up and become internationally competitive.

- The Research Plan should provide priorities and a degree of selectivity, based on Australia's particular needs and likely energy system trajectory, which themselves must be guided by evidence and rigour, whilst reconsidering issues such as path dependency and party politics. For instance, research in new photovoltaic technologies or in network integration of distributed resources both have considerably more momentum and relevance to Australia's future energy landscape than coal extraction technologies or integration of nuclear power generation. While it is important to be broad in scope, the research plan should reflect these types of differences if it is to be of most use. Ultimately, limited research resources should be directed where they are likely to have the largest, lasting impact.

3. *What processes and products should the Research Plan deliver?*

Future Energy welcomes the proposed processes and products of the Research Plan, which are clear and appear to be an excellent foundation to the Research Plan. In addition, we suggest the following:

- A research profile with visible research activities should be developed to capture what researchers (in universities and industries) are working on and their future energy projects. The research profile can be used to inform the scientific community on a specific energy transition research currently being undertaken by an energy researcher. This research profile can be a web portal with energy research areas and researchers working in the area. This can boost collaboration and increase the visibility of researchers to potential industry partners seeking expertise in energy research areas. Also, the research profile can enable researchers in the scientific community to take stock of research areas that are needed, and this can be communicated into the Research Plan on an annual basis.
- the information communicated to the Research Plan can be combined with teaching/research programs in Australian universities to adopt new innovative approaches to address challenges of the current and future energy system. This will also build bridges across engineering, science, economics, social science, policy makers and other energy-related disciplines while increasing interdisciplinary dialogue among experts.
- Regular revisions of the Research Plan should take into account any major changes in the Australian energy landscape or in international energy markets.
- An observation that the Research Plan processes do not talk much about tensions and conflicts and how to best manage these, e.g. between different types of organisations (commercial vs public sector), and different research specialisms/disciplines.
- International benchmarking and information sharing of the Research Plan.

4. *What existing research plans and design approaches can ACOLA draw on for the proposed Research Plan?*

The Research Plan could examine international transition plans to understand what contributes to successful roadmaps and identify those that were less successful, and the reasons for this. Some international examples include the *UK Low Carbon Transition Plan (2009)*, the *Dutch Energy Transition Approach* which has been active since the early 2000s and the *Danish Energy Strategy 2050 (2011)*. In Australia, the *AEMO Integrated System Plan (2018, 2020)* and *ARENA Investment Plan (2013-2019)* should be drawn on for the proposed Research Plan.

5. *How would you or your organisation like to be engaged in the development of the Research Plan?*

UTAS could host a series of workshops in Tasmania, and actively participate in Australia-wide workshops, to generate inputs for the Research Plan. We are planning these activities anyhow during 2021, in order to develop the Tasmanian energy research plan as part of the Future Energy Postdoctoral Fellowship (see above). Also, we could engage with energy users and the industry sector, leveraging strong linkages with local energy industry players, for inputs that can be incorporated into the Research Plan. We would willingly provide input into, and readily review and provide feedback on a draft Plan, drawing on a wide range of energy research expertise at UTAS.

6. *How should ACOLA govern and fund the development and ongoing support of the Research Plan?*

ACOLA could form a National Committee on Energy Research. The committee members could be drawn from Fellows of the learned academies with an observer who may not necessarily be a Fellow but provide oversight to the committee. Funding could come as contributions from the general revenue of the participating academies (usually grants-in-aid plus philanthropic contributions). Extra funding could be sourced when the committee represents Australia on international bodies such as IRENA, IEA or the UNFCCC - which is essentially diplomatic funding.

7. *What do you see as the key risks that ACOLA will need to manage in the development of the Research Plan?*

We foresee the following risks:

- Difficulties in gaining agreement on the research priorities such as competing interests, etc.

- There might be tension between regional and national interests regarding energy research.
- There is a predefined vision for a particular (singular) transition underpinning the Research Plan which in reality does not eventuate, and other transitions/types of change are consequently under-researched.
- Energy stakeholders in rural areas may be left out or fail to contribute to the Research Plan.
- Problems in converting the Research Plan into the basis for funding of future research, because of a failure to adequately align priorities with or “sell” the Plan to key research funding bodies and industry.
- Risks in navigating politics (that is, state and national level government policies and agendas) when developing the Plan, e.g. not appealing adequately to government decision-makers when public funding priorities or decisions are being made.
- Ensuring that large organisations (particularly those active participants in the current energy markets) are not given a disproportionate level of attention.

8. Are there any other issues that ACOLA should be considering in the design of the Research Plan?

The Research Plan should account for changing economic conditions in Australia such as possible fossil fuel/large industry exit in response to the Covid-19 pandemic, and how consumers and energy industry could better respond to economic shocks.