

Minutes

CAETS Energy Committee Meeting, 28 April 2017

Venue: Chinese Academy of Engineering, Beijing

Present Prof John Loughhead (Chair am), Prof Frank Behrendt (Chair pm), Prof Bob Evans, Prof Han Byungmoon, Prof Rolf Hugli, Prof Philip Lloyd, Prof Seung Il Moon, Prof Chinho Park, Prof Baldev Raj

In Attendance Ms Samantha Frost, Mrs Narai Kim

Introduction

Prof Loughhead opened the meeting by welcoming old and new Committee Members to Beijing, and inviting all around the table to introduce themselves.

He gave a brief re-cap of the history of the Energy Committee, and the three reports written so far, the most recent being a report on the transport sector, launched at the 2015 CAETS Committee Meeting in New Delhi.

All present agreed to a flexible agenda, with Prof Loughhead opening by giving a rationale of the document put together with Prof Behrendt ahead of the meeting, followed by a discussion on the possible focus areas of the report.

Context

Professor Loughhead began by explaining that the discussion document, '*Energy Technologies for a Climate-Friendly Future Global, Regional, and Local Challenges and Solutions*', should not be treated as a proposal, but rather a starting point. The document recommends that the next CAETS Energy Committee Report review potential future clean technologies as well as their interaction and embedding into existing energy system architectures since there is less perceived need for new information, but an engineering perspective on applying future technologies could be helpful for international stakeholders, including [Mission Innovation](#)¹.

¹ Mission Innovation (MI) is a global initiative of 22 countries and the European Union to dramatically accelerate global clean energy innovation.

This style of report could also be valuable to CAETS member academies in their role advising their own national governments by identifying R&D activities that may be needed, in addition to technology or processes that should benefit from prioritized investment in the future.

There was general agreement that a shorter, less technical report, would be of value to member academies and to international stakeholders, and that this is what the Committee should focus on.

The group also discussed the [United Nations Sustainable Development Goals²](#), and the potential to use Goal number 5, "Ensure access to affordable, reliable, sustainable and modern energy for all" in the framing of the report.

The general consensus was that the SDGs should be used in the framing, but that we should not go as far as to suggest that this report is going to influence the SDGs. Committee members were also very concerned that the report should focus on specific energy areas, and not try to focus on everything.

Committee Members were also keen to be bold with the key messages.

Discussion on Report focus areas

The Committee actively discussed how best to split the report, with the potential to split it many different ways including- global, regional, local: or source, delivery and use.

Discussion also focused on the game-changing nature of sustainable energy storage.

The continuing importance of finding cleaner alternatives to coal was also mentioned as fossil fuel usage is foreseeably unavoidable for much of the world, despite increasing investments in renewable generation.

Committee members felt that nuclear should at least be commented on, and that geothermal and potentially fusion, should also be recognised.

It was brought to the Committee's attention that ATSE are currently writing a report on CCS, and that depending on the timescales, this is something that could be cited.

ACTION: RAEng to speak to ATSE about the time frame for the completion of their CCS report.

Prof Hugli commented that SATW recently completed a report (only available in German) focussed on electrical energy, and that there may be some useful information that could be used from this.

Committee members were all in agreement that as well as linking to other studies, the report should provide examples and case studies from other countries.

The Committee agreed that the report needs to include an element of foresight for the next 15 years if it is to be of potential use to policy makers.

Prof Moon commented that Korea has been working a lot with Lithium Ion batteries in the last two years, so can share the experience of Korea- possibly in the form of a case study

Prof Park commented that a few of the key reports such as IEA's report on self-consumption support scheme to facilitate the renewable energy expansion should be

² On September 25th 2015, countries adopted a set of goals to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years.

shared with CAETS energy committee to help the writers have a more comprehensive view prior to writing the report.

Conclusions

Professor Behrendt chaired the session directly after lunch, where the focus was on narrowing down the key messages of the report, and how it would be structured.

Key Messages

The following key messages emerged from the discussions

- Energy Storage needs to be treated seriously
- Potential value of wider interconnection- [GEIDCO](#) in China are strongly championing this
- Smart grid investments are essential in transitioning from coal to renewable energy investment and prepare for a sustainable future

Other messages to include

Electrical demand implications of electric cars- might need to be at least mentioned.
Sector coupling should be included

Contents

The following sections were agreed. There should be no more than 10 pages per section.

1. Facilitating the need for deployment of renewable energy (South Africa, UK, India)
 - Recognising that whilst not the focus of the report, for practical and economic reasons there will be a continuing need for fossil fuel usage, and therefore it is very important to invest in R&D to make fossil fuel usage cleaner.
2. Global Inter-connection and storage section-linked together (China and Korea to collaborate on this section, with Australia to contribute information from their report on storage)
 - This section should also advocate for minimising cost by making intelligent combinations, recognising that this may vary regionally
3. Evidence and advocate the need for deployment of Smart grids (Germany, Canada, Switzerland)

Timescales

1 st draft of sections	30 June
<i>RAEng to work sections into a first draft</i>	
1 st draft of full report	31 July
Feedback on first draft	8 September
Strengthen report and decide whether additional input is needed	13 October
Final review	27 October
Final report	3 November
Present report at CAETS Convocation in Madrid	10 November

Prof Loughhead encouraged The Committee to reach out to other experts within their academies, to ensure that the wider CAETS network feel ownership of this report.

Report title

Committee Members were reminded that CAETS has adopted Engineering a Better World as an overall title for at least the next two convocations, so we could make a list, and title the report, *Powering a Better World*. Other suggestions included:

- Energy sans frontiers
- Towards a carbon free future
- Looking to the energy future
- Energy foresight