Multi-university Study Shows That Climate Engineering Won't Sufficiently Stem Global Warming

By Maxwell Sykes

Don’t wait for climate engineering: Reducing emissions is the best way to fight climate change.

That’s one of the conclusions of a new article co-authored by Dr. Jonn Axsen and researchers at five other universities titled *An interdisciplinary assessment of climate engineering strategies*. The article appears in the latest issue of Frontiers in Ecology and Environment.

The team evaluated a range of possible climate-altering approaches to dissipating greenhouse gases and reducing warming. The article is the first scholarly attempt to rank a wide range of approaches to minimizing climate change in terms of their feasibility, cost-effectiveness, risk, public acceptance, governability and ethics.

"Some climate engineering strategies look very cheap on paper. But when you consider other criteria, like ecological risk, public perceptions and the abilities of governments to control the technology, some options look very bad," says Jonn. The team concluded that reducing emissions through some combination of switching away from fossil fuels to low-carbon energy sources, improving energy efficiency and changing human behaviour is still the most effective way of confronting climate change.

The authors conceded though that some approaches to climate engineering are more promising than others, and they should be used to augment efforts to reduce the climate change effects resulting from human activity. For example, strategies such as forest management and geological storage of carbon dioxide may be useful complements. Other climate engineering strategies are less appealing, such as fertilizing the ocean with iron enhance life and increase the absorption of carbon dioxide or reducing global warming by injecting particles into the atmosphere to block sunlight.

“Take the example of solar radiation management, which is the idea of putting aerosols into the stratosphere – kind of like what happens when a large volcano erupts,” Jonn explains. “This is a surprisingly cheap way to reduce global temperatures, and we have the technology to do it. But our study asked other important questions. What are the environmental risks? Will global citizens accept this? What country would manage this? Is that fair? Suddenly, this strategy does not look so attractive.”

Working under the auspices of the National Science Foundation, the authors spent two years evaluating more than 100 studies that addressed the various implications of climate engineering and their anticipated effects on greenhouse gases. Jonn's collaborators included Daniela Cusack, an assistant professor of geography in the University of California, Los Angeles’ College of Letters and Science; Lauren Hartzell-Nichols, acting assistant professor in the program on values in society and the program on environment at the University of Washington; Katherine Mackey, a postdoctoral researcher at Woods Hole Oceanographic Institution and the Marine Biological Laboratory; Rachael Shwom, assistant professor in human ecology at Rutgers University; and Sam White, assistant professor of environmental history at Ohio State University.
EMRG NEWS

EMRG at British Columbia Liquefied Natural Gas Workshop

By Maxwell Sykes

On April 11, 2014, Carbon Management Canada in partnership with SFU Carbon Talks convened an invitational workshop titled Public Finance and Climate Policy Implications of BC’s LNG Export Strategy. The workshop built upon a November 2013 workshop organized by the Pacific Institute for Climate Solutions titled A Natural Gas Agenda for BC. The workshop focused on sharing research and information about the implication of an LNG export industry in BC, particularly related to international gas markets, royalty schemes, public finances, BC’s greenhouse gas emissions, and the net effect of BC’s LNG export strategy on global greenhouse gas emissions.

Workshop attendees included representatives of universities, industry, NGOs and non-profits, first nations, and consultancies. Some of the main points raised during the session included:

- The likelihood that construction would be over budget and delayed due largely to a lack of skilled labour based on experiences in Alberta’s oil sands and Australia’s LNG industry;
- Increasing global supply competition and thus the necessity for BC to leverage any price differential, carefully and cautiously coordinate construction activities, and get the fiscal (tax, royalty) regime right in order to compete;
- BC is extremely unlikely to earn revenues of $100 billion as advertised by the BC government;
- Any benefits from LNG need to be calculated as net benefits inclusive of economic, social, and environmental issue to account for negative impacts and opportunity costs;
- The need to support local communities in developing the capacity to absorb the demands that will be put on them;
- The need to assume a high embedded cost of carbon in the long-term;
- Questions about how to get information to the public that is not only negative, but so that citizens can make an informed decision about how they feel LNG should proceed in BC;
- BC gains more jobs from taking steps to minimize emissions from the liquefaction process through the use of renewable energy; and
- BC will not achieve its 2020 ad perhaps 2050 GHG reduction targets with a large LNG export industry unless policy and regulations are put in place to minimize emissions from natural gas extraction, production, and liquefaction into LNG.

Dr. Mark Jaccard moderated the workshop and recent EMRG graduate Jeremy Moorhouse spoke about the GHG implications for BC on behalf of Carbon Management Canada. Other EMRGers in attendance included Dr. John Nyboer, Dr. Jonn Axsen, PhD students Jeff Rambharack and Stephen Healey, masters students Maxwell Sykes and Lejla Uzicanin, and former EMRGers Matt Horne of the Pembina Institute and Jotham Peters and Michael Wolinetz of Navius Research. Maxwell Sykes is also co-author on an upcoming report on the policy implications of BC’s burgeoning LNG industry to be released in June/July 2014.

Mark Jaccard at Shale Energy Revolution Conference in the UK

By Maxwell Sykes

Dr. Mark Jaccard attended the Ditchley Foundation’s invitational conference The Shale Energy Revolution and Geopolitics from May 22 to 24, 2014 in the United Kingdom. The Ditchley Foundation holds approximately twelve conferences a year with programmes designed to address the international policy issues of the day. Each conference brings together some 40 experts from different professions to brainstorm on problems urgently needing new solutions.

Op-ed: Why the Media Should Take a Stand on Climate Change

By Maxwell Sykes

On Earth Day, April 22, 2014, EMRG students received their regular batch of climate change and energy related news items from the Vancouver Sun via PhD researcher Ekaterina (Katya) Rhodes. One of the items was titled Earth Day is cult indoctrination: Environmental extremism is destroying the basics of scientific inquiry in our schools. The guest editorial was originally published by Troy Media and was written by Michelle Stirling-Anosh, Communications Manager of the Friends of Science. In her editorial, Ms. Stirling-Anosh argues that our education system no longer supports “hard sciences” and “the basics of scientific inquiry”. She laments that 26,000 people recently signed a petition in Alberta to “try to stop oil companies from helping redraft the school curriculum.” She makes a variety of statements about what school should teach about climate change then asks parents to question whether we should “sacrifice the work of centuries of
scientists on the altar of Gaia.”

The article was a frustrating read for several EMRGers and SFU and UBC professors that understand that articles in news media like this one confuse public understanding regarding the scientific certainty that climate change is human-caused and a serious threat to our quality of life. These articles, thus, hinder progress on necessary government policy.

In response to Ms. Stirling-Anosh’s article, on May 7, 2014, Maxwell Sykes had an op-ed published on the Vancouver Sun website titled There’s no scientific debate on climate change: It’s time to stop arguing and take action on this global issue. A modified version of the op-ed was published by Troy Media on May 16, 2014 titled Misleading reporting on climate change eroding public trust in scientists: Climate science as settled as connection between smoking and lung cancer. In his articles, Maxwell focused on the fact that the scientific certainty of the risks associated with anthropogenic climate change is akin to the scientific certainty that cigarettes contribute to lung cancer. He called on media to follow the example of the L.A. Times, which in 2013 publicized a policy that it would no longer print letters stating humans don’t cause climate change because that is “not stating an opinion, it’s asserting a factual inaccuracy.”

The two versions of the op-ed can be found on the websites of Troy Media (http://bit.ly/1lluyAQ) and the Vancouver Sun (http://bit.ly/1srbdqX).

EMRG NEWS

EMRG at the Unlocking the Potential of Smart Grids Conference

By Derek Peters

In May 2014, Dr. Jonn Axsen and Derek Peters attended the second annual symposium held by the smart grid partnership Unlocking the Potential of Smart Grids: A Partnership to Explore Policy Dimensions. Founded in 2012, the research network is supported by the Social Sciences and Humanities Research Council of Canada (SSHRC) to investigate and build Canadian research capacity around the societal and policy dimensions of smart grids.

This year’s conference was held in Wakefield, Quebec and brought together researchers from universities in Ontario, Quebec, British Columbia, and the United States studying the significance of smart grids and the policy issues raised by them. Jonn gave a presentation titled Exploring consumer acceptance for utility controlled charging of plug-in electric vehicles, based on the research of PhD student Joseph Bailey, while Derek presented part of his master’s research titled Smart grid deployment in BC: a socio-political case study.

By Karen Mascarenhas

EMRG at the Carbon Management Conference in Banff

From May 27 to 29, 2014, Dr. John Nyboer and masters students Karen Mascarenhas and Maximilian Kniewasser attended the fourth annual Carbon Management Canada (CMC) conference. CMC Research Institutes, Inc., operating as Carbon Management Canada (CMC), is an independent, not-for-profit business working to develop multiple, challenge-driven research institutes focused on providing high-value, low-barrier research and development services to industry or public sector clients addressing the challenge of industrial greenhouse gas emissions.

This year’s conference was held in Banff, Alberta and brought together researchers from universities from all over the world. John was a panel

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member in a discussion on *LNG – Potential Challenges and Pathways to Success in a Low Carbon Intensity World*. He also presented the results of EMRG research to the workshop participants. Karen and Maxi presented a poster to conference attendees consisting of industry representatives, researchers, professors and other students.

### Month of Presentations for Dr. Jonn Axsen

By Maxwell Sykes

May was a busy month for Jonn and his work on plug-in electric vehicles. On May 7, Jonn travelled to Ottawa, where he gave a presentation titled *Electric Vehicle Hype and Hope* to several policymakers at Environment Canada. An older version of Jonn’s presentation is available online at [http://bit.ly/1oRsGqS](http://bit.ly/1oRsGqS).

Jonn then travelled to Victoria, where he co-facilitated a two day workshop with University of Victoria Associate Professor Dr. Curran Crawford on May 12 and 13. This was the second workshop for an ongoing collaboration between the Drs. Axsen and Crawford, *Powering plug-in electric vehicles with renewable energy supply in BC*. From the SFU side, presentations were given by masters students George Kamiya, Brad Langman, Dominique Atherley, and Joshua Cairns, as well as by Jonn himself on behalf of PhD student Joseph Bailey.

While in Victoria, Jonn and EMRG Research Associate Suzanne Goldberg delivered a workshop introduction to EMRG’s energy economy simulation model, CIMS, as part of the University of Victoria’s *Grid Integration* workshop on May 12. Attendees were from the Institute for Integrated Energy Systems at UVic (IESVic).

Bill Tubbs left Spectra Energy in April and has joined the consulting firm ICF International to work with SaskPower, SaskEnergy and their industrial customers on energy efficiency projects in Saskatchewan.

Paulus Mau has been part of EMRG and CIEEDAC since 2002. His area of specialization is in data analysis and web programming. Paulus is currently serving EMRG and CIEEDAC as an advisor on maintaining and improving CIEEDAC’s on line data center information infrastructure, supporting EMRG/CIEEDAC researchers on data mining and interpretation, and programming economic surveys and choice experiments.

### Sustainable Collective Blog

Joshua Cairns, a Master of Resource Management candidate in EMRG, founded the website Sustainable Collective (sustainable-collective.com) this past February. Sustainable Collective serves as an online platform for graduate students and professionals to write articles and share their opinions on sustainability, energy, and the environment. The website hosts content from a team of 16 writers, 3 of which are in EMRG. To stay up to date on the latest content, follow Sustainable Collective on Twitter (@sustaincollect) and ‘like’ it on Facebook ([facebook.com/sustainablecollect](http://facebook.com/sustainablecollect)).

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**Contact Us**

**EMRG News**

For more information contact Noory Meghji at noory_meghji@sfu.ca

Simon Fraser University  
School of Resource and Environmental Management  
Vancouver, BC, Canada V5A 1S6  
Phone: (778) 782-6621  
Web: http://www.emrg.sfu.ca/

**EMRG Online**

In addition to this newsletter, stay up to date with current and former EMRGers online anytime.

- **Dr. Mark Jaccard**: Sustainability Suspicions blog *markjaccard.com* | Twitter [@MarkJaccard](http://twitter.com/MarkJaccard)
- **Maxwell Sykes**: Twitter [@MaxwellSykes](http://twitter.com/MaxwellSykes) | Sustainable Collective contributor *sustainable-collective.com*
- **Joshua Cairns**: Twitter [@joshuacairns](http://twitter.com/joshuacairns) | Sustainable Collective Founder *sustainable-collective.com*
- **Jotham Peters**: Twitter [@JothamPeters](http://twitter.com/JothamPeters)
- **Katya Rhodes**: LinkedIn [http://linkd.in/1tu1mil](http://linkd.in/1tu1mil)