

**Senate Standing Committee on Economics**  
**ANSWERS TO QUESTIONS ON NOTICE**  
Industry, Innovation, Science, Research and Tertiary Education Portfolio  
Additional Estimates Hearing 2011-12  
15 February 2012

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**AGENCY/DEPARTMENT:** COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION

**TOPIC:** Renewable Energy

**REFERENCE:** Written Question –Senator Bushby

**QUESTION No.:** AI-89

Has CSIRO's research on renewable energy ever included a comparison of the energy used to create, maintain and retire a wind driven power generator with the energy they produce? If so, what have been the findings?

**ANSWER**

Not specifically, however, one of CSIRO's employees has recently contributed to the paper: "Application of Hybrid Life Cycle Approaches to Emerging Energy Technologies: The Case of Wind Power in the UK", T.O. Wiedmann *et al.*, 2011 *Environmental Science & Technology* **45**, 5900–5907. The study found that the life cycle emissions of a United Kingdom wind generator (i.e. the emission of a wind generator including those created during the construction, maintenance and retirement) range from 13.4 to 29.7 g CO<sub>2</sub>e/kWh, subject to the methodology used.