

Edward Byers

Energy Program

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PubLons: <https://publons.com/author/1238080/edward-a-byers>

EDUCATION

- 2015 Ph.D. in Civil Engineering. School of Civil Engineering & Geosciences, Newcastle University, 2015.
- 2009 M.Eng in Civil & Environmental Engineering, 1st Class Hons, 2009.

PROFESSIONAL APPOINTMENTS

- 2018 – present Research Scholar, IIASA, Energy Program, Laxenburg, Austria.
- 2016 – 2018 IIASA Postdoctoral Research Fellow, Energy & Water Programs, Laxenburg, Austria.
- 2015 Postdoctoral Research Associate, Environmental Change Institute, University of Oxford, Oxford, UK.
- 2014-2015 Research Assistant, School of Civil Engineering & Geosciences, Newcastle University, Newcastle upon Tyne, UK.
- 2012-2014 Scientific Officer, Planet Earth Institute, London, UK.
- 2010 Research Assistant, School of Civil Engineering & Geosciences, Newcastle University, Newcastle upon Tyne, UK.

AREAS OF INTEREST

Climate impacts, infrastructure systems, development

REFEREED JOURNAL ARTICLES ([Google Scholar](#))

- **Byers, E. A.**, Gidden, M., Leclère, D., Burek, P., Ebi, K. L., Greve, P., . . . Riahi, K. Global exposure and vulnerability to multi-sector development and climate change hotspots. In review: Environmental Research Letters.
- 2018 Liu, L., Parkinson, S., Gidden, M., **Byers, E. A.**, Satoh, Y., Riahi, K., & Forman, B. (2018). Quantifying the potential for reservoirs to secure future surface water yields in the world's largest river basins. Environmental Research Letters. doi:10.1088/1748-9326/aab2b5
- 2017 Satoh, Y., Kahil, T., **Byers, E.**, Burek, P., Fischer, G., Tramberend, S., . . . Wada, Y. (2017). Multi-model and multi-scenario assessments of Asian water futures: the Water Futures and Solutions (WFaS) initiative. Earth's Future. doi:10.1002/2016ef000503

- 2016 **Byers, E. A.**, Hall, J. W., Amezaga, J. M., O'Donnell, G. M., & Leathard, A. (2016). Water and climate risks to power generation with carbon capture and storage. *Environmental Research Letters*, 11(2), 024011. doi:10.1088/1748-9326/11/2/024011
- 2015 **Byers, E. A.**, & Amezaga, J. M. (2015). UK nuclear and fossil fuel energy infrastructure climate risks. *Infrastructure Asset Management*, 2(3), 120-130. doi:10.1680/iasma.14.00031
- 2015 **Byers, E. A.**, Gasparatos, A., & Serrenho, A. C. (2015). A framework for the exergy analysis of future transport pathways: Application for the United Kingdom transport system 2010–2050. *Energy*, 88, 849-862. doi:10.1016/j.energy.2015.07.021
- 2015 **Byers, E. A.**, Qadrdan, M., Leathard, A., Alderson, D., Hall, J. W., Amezaga, J. M., . . . Chaudry, M. (2015). Cooling water for Britain's future electricity supply. *Proceedings of the Institution of Civil Engineers - Energy*, 168(3), 188-204. doi:10.1680/ener.14.00028
- 2014 **Byers, E. A.**, Hall, J. W., & Amezaga, J. M. (2014). Electricity generation and cooling water use: UK pathways to 2050. *Global Environmental Change*, 25, 16-30. doi:10.1016/j.gloenvcha.2014.01.005

Book Chapters

- 2016 Tran, M., **Byers, E. A.**, Blainey, S. P., Baruah, P., Chaudry, M., Qadrdan, M., . . . Jenkins, N. (2016). Quantifying interdependencies: the energy–transport and water–energy nexus. In A. J. Hickford, J. W. Hall, M. Tran, & R. J. Nicholls (Eds.), *The Future of National Infrastructure: A System-of-Systems Approach* (pp. 227-240). Cambridge: Cambridge University Press. [link](#)

Reports

- 2017 Wiberg D, et al. (2017). *Water Futures and Solutions: Asia 2050 (Final Report)*. Knowledge and Innovation Support for the Water Financing Program of the Asian Development Bank (RETA 6498). IIASA, Laxenburg, Austria [link](#)
- 2015 Ergin, E., **Byers, E.A.**, Erik, Z., et al., 2015. Resilient, efficient and low-carbon thermal energy production and supply for Turkey. GTE Carbon.
- 2014 **Byers, E.A.**, Amezaga, J.A., Working Paper 9 (Energy: Nuclear, coal, oil & gas) of the Living With Environmental Change Infrastructure Report Card. [link](#)
- 2013 Tran, M., Hall, J., Hickford, A., Nicholls, R., Alderson, D., Barr, S., . . . Blainey, S. (2014). National infrastructure assessment: Analysis of options for infrastructure provision in Great Britain, Interim results. [link](#)

AWARDS AND HONORS

- 2015 IIASA Postdoctoral Fellowship, IIASA.
- 2012 1st place Newcastle Institute for Research on Sustainability Rio+20 competition.
- 2012 Santander Community Engagement award
- 2011 2nd prize Poster at CEG Postgraduate Conference, Newcastle University, UK.
- 2011 2nd prize for Elsevier Best Presentation at Tyndall Centre & SCI ‘Sustainable Futures’ PhD Conference, Manchester University, UK.
- 2009 3rd place RWE npower Energy Challenge 2009.
- 2009 Brian Lewis award for ‘Best essay on professionalism in engineering’, Newcastle University, UK.
- 2005 School Undergraduate Merit Scholarship, Newcastle University, UK.

GRANTS AND FELLOWSHIPS

- 2015 IIASA Postdoctoral Fellowship (2016-18)

INVITED TALKS

- 2015 *Modelling the water footprint of electricity supply at multiple scales.* CIWEM Central Southern branch evening seminar. University of Oxford, Oxford. 14/05/2015
- 2014 [Cooling water use in a water constrained and low carbon future.](#) Energy & Water Interdependencies and Governance workshop, Royal Academy of Engineering, London. 02/12/2014
- 2014 *Current Global Progress.* Discover2Inspire Youth conference, Dundee University, Dundee. 04/04/2014

CONFERENCE ACTIVITY

Presentations

- 2017 Working with big, multi-dimensional geoscientific datasets in Python: a tutorial introduction to xarray. Convenor of short course. European Geophysical Union 2017 General Assembly. 27/04/2017
- 2017 ERE1.2 Energy & environmental system interactions. Co-convenor of session. European Geophysical Union 2017 General Assembly. 24/04/2017
- 2016 *Water use and water availability constraints to decarbonised electricity systems.* ERE1.2 Energy & environmental system interactions. European Geophysical Union 2016 General Assembly, Vienna. 21/04/2016
- 2014 *Carbon capture clustering: the case for coordinated approaches to address freshwater use concerns.* International Symposium on Next Generation Infrastructure, IIASA, Laxenburg. 30/09/2014
- 2014 *Electricity generation, cooling water use and pathways to 2050: Results and methodological insights from a UK study.* World Water Week 2014: Mitigation & adaptation to climate change, SIWI, Stockholm. 03/09/2014.
- 2014 *Electricity generation and cooling water use in the UK.* Sustainability in the Water Energy Food Nexus conference, Bonn. 19/05/2014.
- 2012 *The UK Water-Energy nexus.* Infrastructure Transitions Research Consortium Early Career Researchers Conference, University of Cambridge, Cambridge. 12/12/2012
- 2012 *The UK Water-Energy nexus.* Civil Engineering & Geosciences Postgraduate conference,

- 2011 Newcastle University, Newcastle upon Tyne. 13/07/2012.
Sustainable infrastructure transitions. Tyndall Centre Sustainable Futures conference, University of Manchester, Manchester. 29/03/2011.

Posters

- 2012 [*Modelling and transitions of the UK water-electricity nexus*](#). Water Security, Risk & Society conference, University of Oxford, Oxford. 16-18 /04/2012
2012 Tyndall Centre 'Knowledge Gaps' conference, University of East Anglia, Norwich. 12/04/2012
2011 Modelling of interdependent infrastructure futures. Civil Engineering & Geosciences Postgraduate conference, Newcastle University, Newcastle upon Tyne. 13/07/2011.

RESEARCH EXPERIENCE

- 2016 - Integrated Solutions for Water, Energy and Land -- IIASA, GEF, UNIDO
2016-18 Water Futures and Solutions – IIASA, Austria
2015-18 Managing the Risks, Impacts and Uncertainties of drought and water Scarcity (MaRIUS) – University of Oxford, UK
2011-15 Infrastructure Transitions Research Consortium,. -- Newcastle University, Oxford University
2010-15 Tyndall Centre– Newcastle University, UK

TEACHING EXPERIENCE

Newcastle University:

- Design of Sustainable Engineering Systems
- Engineering Ethics & Sustainability.

SELECTED PROFESSIONAL AND REVIEW ACTIVITIES

Regular peer-reviewer for journals including:

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| • Global Environmental Change | • Water Resources Research |
| • Environmental Research Letters | • Applied Energy |
| • Climatic Change | • Energy |

PubLons profile: <https://publons.com/author/1238080/edward-a-byers>

- 2013-16 Energy topic Editor of the Global Water Forum.
2017 Research grant reviewer for Swedish Energy Agency

INSTITUTIONAL SERVICE

- 2017 IIASA Staff Association Committee, Deputy Chair of Environment Committee

POLICY ENGAGEMENT AND OUTREACH

- 2011-12 UK Department for Energy & Climate Change Youth Advisory Panel.

MEDIA COVERAGE

On water use of UK electricity sector:

- <http://www.theguardian.com/sustainable-business/energy-sector-water-challenges-world-water-day>
- <http://www.theguardian.com/environment/2014/feb/16/water-shortages-electricity-supply-climate-change>

RELATED PROFESSIONAL SKILLS

Python, Matlab, ArcGIS, QGIS

(CO-)SUPERVISION OF MASTERS / PHD STUDENTS

- | | |
|------|---|
| 2018 | Ansir Ilyas - IIASA YSSP program / Ph.D candidate at LUMS, Pakistan |
| 2018 | Fabio Diuana - IIASA YSSP program / Ph.D candidate at UFRJ, Brazil |
| 2017 | Yaoping Wang –IIASA YSSP program / Ph.D candidate at Ohio State University, US. |
| 2016 | Lu Liu –IIASA YSSP program / Ph.D candidate at University of Maryland, US. |
| 2014 | Rudolph Retief – Addressing Complexity: The Water- Energy-Food Nexus in the Ouémé-Bonou Basin in Benin, West Africa. M.Sc Water Science, Policy and Management, University of Oxford, UK. |
| 2013 | Josh Stitt – Multi-criteria analysis of UK water resource supply options. M.Eng Civil Engineering, Newcastle University, UK. |
| 2012 | Mark Smith – UK energy-water nexus to 2050. M.Eng Civil Engineering, Newcastle University, UK. |
| 2012 | Justyna Ganczak - Energy eco-transformation in the UK, Germany and Poland. M.Eng Civil Engineering, Newcastle University, UK. |

PROFESSIONAL MEMBERSHIPS/AFFILIATIONS

- 2005-15 Institution of Civil Engineers
2014 - European Geosciences Union