

## List of Reading Materials for the Course AAE-E1000 Autumn 2022

Each reference is marked either as **[P]**re-reading for the lecture or as **[A]**dditional material

1. **Introduction to energy systems** - Ilkka Keppo
  - a. Grubler A., Johansson TB, Mundaca L et al. (2012) Chapter 1 - Energy Primer. In *Global Energy Assessment - Toward a Sustainable Future*, Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria, pp. 99-150. [https://iiasa.ac.at/web/home/research/Flagship-Projects/Global-Energy-Assessment/GEA\\_Chapter1\\_lowres.pdf](https://iiasa.ac.at/web/home/research/Flagship-Projects/Global-Energy-Assessment/GEA_Chapter1_lowres.pdf) **[P]**
  - b. Unruh G.C (2000) Understanding carbon lock-in. *Energy Policy* 28(12): 817-830. DOI: [10.1016/S0301-4215\(00\)00070-7](https://doi.org/10.1016/S0301-4215(00)00070-7) **[A]**
2. **HVAC technology and energy in buildings** – Panu Mustakallio
  - a. Watch the video available under “Lecture 2” in “Lecture slides **[P]**
  - b. Go through the slides “HVAC- Technology for Healthy Buildings and Sustainable Society” under “Lecture 2” in “Lecture slides **[P]**
  - c. Hirvonen J, Heljo J, Jokisalo J, et al. (2021) Emissions and power demand in optimal energy retrofit scenarios of the Finnish building stock by 2050. *Sustainable Cities and Society* 70: 102896. DOI: [10.1016/j.scs.2021.102896](https://doi.org/10.1016/j.scs.2021.102896). **[A]**
3. **Industrial Energy Systems** - Henrik Holmberg
  - a. Siitonen S, Tuomaala M and Ahtila P (2010) Variables affecting energy efficiency and CO2 emissions in the steel industry. *Energy Policy* 38(5). Greater China Energy: Special Section with regular papers: 2477–2485. DOI: [10.1016/j.enpol.2009.12.042](https://doi.org/10.1016/j.enpol.2009.12.042). **[A]**
4. **Transport systems and fuels** – Milos Mladenovic & Annukka Santasalo-Aarnio
  - a. Santasalo-Aarnio A, Nyari J, Wojcieszuk M, et al. (2020). Application of Synthetic Renewable Methanol to Power the Future Propulsion. *SAE Technical Papers* 2020-01-2151. <https://doi.org/10.4271/2020-01-2151> [available here: [https://acris.aalto.fi/ws/portalfiles/portal/54829278/ENG\\_Santasalo\\_Aarnio\\_et\\_al\\_Application\\_of\\_Synthetic\\_Renewable\\_SAE\\_Technical\\_Papers.pdf](https://acris.aalto.fi/ws/portalfiles/portal/54829278/ENG_Santasalo_Aarnio_et_al_Application_of_Synthetic_Renewable_SAE_Technical_Papers.pdf)] **[A]**
  - b. Schwanen T, Banister D and Anable J. (2012) Rethinking habits and their role in behaviour change: the case of low-carbon mobility. *Journal of Transport Geography* 24. 522-532. DOI: [10.1016/j.jtrangeo.2012.06.003](https://doi.org/10.1016/j.jtrangeo.2012.06.003). **[A]**
5. **Thermal power plants and renewable energy sources** – Mika Järvinen

- a. Gülen SC (2021) Steam Turbine—Quo Vadis? *Frontiers in Energy Research*. 8::612731. DOI: [10.3389/fenrg.2020.612731](https://doi.org/10.3389/fenrg.2020.612731) [A]
6. **Renewables inside the power infrastructure** - John Millar
  - a. Glassmire et al. 2020. Using energy storage to stabilise grids and increase revenues. *IET Conference Publications*, 2020 (CP767), pp. 484-486. <https://doi.org/10.1049/oap-cired.2021.0096> [P]
  - b. Kachirayil et al. 2022. Reviewing local and integrated energy system models: insights into flexibility and robustness challenges. *Applied Energy* 324: 119666. <https://doi.org/10.1016/j.apenergy.2022.119666> [A]
7. **Introduction to Solar Power** - Mika Järvinen
  - a. Flowers ME, Smith MK, Parsekian AW, et al. (2016) Climate impacts on the cost of solar energy. *Energy Policy* 94: 264–273. DOI: [10.1016/j.enpol.2016.04.018](https://doi.org/10.1016/j.enpol.2016.04.018). [A]
8. **Introduction to Wind Power** - Mika Järvinen
  - a. Hvelplund F, Østergaard PA and Meyer NI (2017) Incentives and barriers for wind power expansion and system integration in Denmark. *Energy Policy* 107: 573–584. DOI: [10.1016/j.enpol.2017.05.009](https://doi.org/10.1016/j.enpol.2017.05.009). [P]
9. **Energy storage and Material dependency**- Annukka Santasalo-Aarnio
  - a. Dehghani-Sanija AR, Tharumalingam E, Dusseault MB et al., 2019. Study of energy storage systems and environmental challenges of batteries. *Renewable and Sustainable Energy Reviews* 104: 192–208. DOI: [10.1016/j.rser.2019.01.023](https://doi.org/10.1016/j.rser.2019.01.023). [A]
10. **Energy system in transition** - Ilkka Keppo
  - a. Wilson C, Grubler A, Bento N, et al. (2020) Granular technologies to accelerate decarbonization. *Science* 368(6486). American Association for the Advancement of Science: 36–39. DOI: [10.1126/science.aaz8060](https://doi.org/10.1126/science.aaz8060). [A]
  - b. Geels FW. (2002), Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy* 31(8-9): 1257-1274 [https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/10.1016/S0048-7333(02)00062-8) [A]
11. **Interactions between energy and other systems** – Ilkka Keppo
  - a. Cronin J, Anandarajah G and Dessens O. (2018) Climate change impacts on the energy system: a review of trends and gaps. *Climatic Change* 151: 79-93. <https://doi.org/10.1007/s10584-018-2265-4> [A]

- b. Carley, S., Evans, T.P., Graff, M. et al. (2018) A framework for evaluating geographic disparities in energy transition vulnerability. *Nature Energy* 3: 621–627. <https://doi.org/10.1038/s41560-018-0142-z> [A]

**12. Modelling and scenarios for the energy system – and beyond – Ilkka Keppo**

- a. Trutnevyte E, McDowall W, Tomei J, et al. (2016) Energy scenario choices: Insights from a retrospective review of UK energy futures. *Renewable and Sustainable Energy Reviews* 55: 326–337. DOI: [10.1016/j.rser.2015.10.067](https://doi.org/10.1016/j.rser.2015.10.067). [A]
- b. Hall LMH and Buckley AR (2016) A review of energy systems models in the UK: Prevalent usage and categorisation. *Applied Energy* 169: 607-628. <https://doi.org/10.1016/j.apenergy.2016.02.044> [A]
- c. Hughes N, Strachan N, Gross R (2013) The structure of uncertainty in future low carbon pathways. *Energy Policy* 52: 45-54. <https://doi.org/10.1016/j.enpol.2012.04.028> [A]