

# Thesis Proposal: International cooperation and technological change

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## 1 Introduction and Motivation:

Climate change occupies a central place in the contemporary social discourse as becomes apparent by opening any major daily newspaper. The 16th of February 2022 was no different, the front page of the Financial Times titled “Biden’s petrol problem: president eyes gas tax cut as pump prices soar” (Brower and McCormick 2022) reporting on potential gas tax cuts in contradiction with Biden’s electoral promises. This example highlights the fact that climate change is at the center the political debate at the national and the international level. The motivation for this thesis originated from the Stern Review which dedicates two chapters on technological innovation and international cooperation for technological innovation (Stern, Stern, and Treasury 2007) as well as the work I am undertaking on international treaty networks for Prof. Hollway. While the Stern review provides readers with a good introduction into the complementary nature of national and international technological policy with respect to other measures such as carbon pricing, I am interested in investigating the impact of international cooperation of environmental technology on innovation outcomes such as patents and patent citations.

## 2 Literature Review:

To the best of my knowledge, I was not able to find any similar empirical analysis of the impact of international cooperation on technological innovation. The closest I have come the

## 3 Methodology:

panel model

## 4 Data:

Panel data would be ideal. Might be hard to find for eco innovations though.

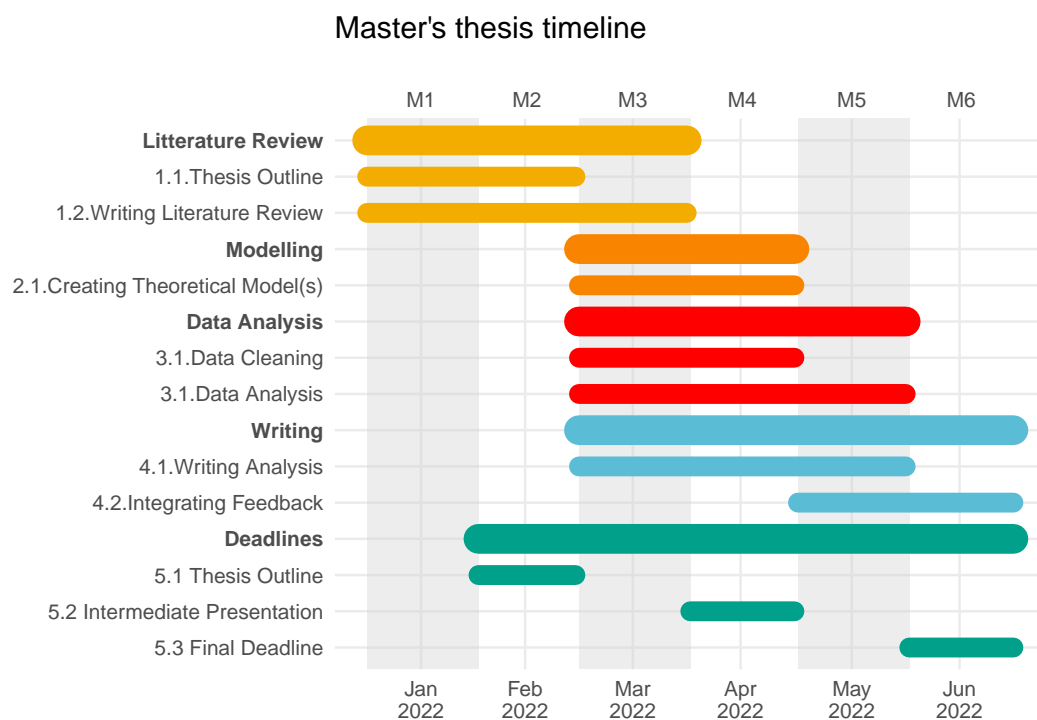
## 5 Format:

I will most certainly use R as the primary data analysis programming language to execute my analysis since I am most familiar with it and since there is a very wide ecosystem of packages for network analysis. This

also implies that I will be writing the thesis in R-Markdown using the `{iheiddown}` dissertation template which will neatly integrate the code with the analysis. Furthermore, I will be able to use version control (GitHub) to track changes throughout the thesis writing and data analysis processes which will improve the transparency of the results and ensure academic honesty. To that effect, the repository will be made public before the 15th of June. Note that since my thesis is still in the early stages, the repository is still private but I can grant you or my potential second reader access if you would like to.

## 6 Schedule:

The following Gantt chart outlines the projected timeline of the thesis by breaking down key tasks into smaller goals. This will allow me to track progress over the course of the coming months and will be updated once a month to reflect eventual changes.



## 7 Conclusion and feedback:

Thank you in advance for taking the time to read this thesis outline. I would be extremely grateful for any feedback regarding the overall idea, tentative methodology or the format of the thesis.

## 8 References:

- 10 Brower, Derek, and Myles McCormick. 2022. "Biden's Petrol Problem: President Eyes Gas Tax Cut as Pump Prices Soar." *Financial Times*, February. <https://www.ft.com/content/5c93a55f-1d34-48d5-b96a-ae3dec>
- Hojnik, Jana, and Mitja Ruzzier. 2016. "The Driving Forces of Process Eco-Innovation and Its Impact on Performance: Insights from Slovenia." *Journal of Cleaner Production* 133 (October): 812–25. <https://doi.org/10.1016/j.jclepro.2016.06.002>.

- Jaffe, Adam B., Richard G. Newell, and Robert N. Stavins. 2004. "Technology Policy for Energy and the Environment." In *Innovation Policy and the Economy, Volume 4*, 35–68. The MIT Press. <https://doi.org/10.1086/ipe.4.25056161>.
- Mitchell, Ronald B., Liliana B. Andonova, Mark Axelrod, Jörg Balsiger, Thomas Bernauer, Jessica F. Green, James Hollway, Rakhyun E. Kim, and Jean-Frédéric Morin. 2020. "What We Know (and Could Know) About International Environmental Agreements." *Global Environmental Politics* 20 (1): 103–21. [https://doi.org/10.1162/glep\\_a\\_00544](https://doi.org/10.1162/glep_a_00544).
- Noailly, Joëlle. 2012. "Improving the Energy Efficiency of Buildings: The Impact of Environmental Policy on Technological Innovation." *Energy Economics* 34 (3): 795–806. <https://doi.org/10.1016/j.eneco.2011.07.015>.
- Río, Pablo del, Cristina Peñasco, and Desiderio Romero-Jordán. 2016. "What Drives Eco-Innovators? A Critical Review of the Empirical Literature Based on Econometric Methods." *Journal of Cleaner Production* 112 (January): 2158–70. <https://doi.org/10.1016/j.jclepro.2015.09.009>.
- Stavins, Robert N. 2011. "The Problem of the Commons: Still Unsettled After 100 Years." *American Economic Review* 101 (1): 81–108. <https://doi.org/10.1257/aer.101.1.81>.
- Stern, Nicholas, Nicholas Herbert Stern, and Great Britain Treasury. 2007. *The Economics of Climate Change: The Stern Review*. Cambridge University Press.
- Veugelers, Reinhilde. 2012. "Which Policy Instruments to Induce Clean Innovating?" *Research Policy*, The need for a new generation of policy instruments to respond to the Grand Challenges, 41 (10): 1770–78. <https://doi.org/10.1016/j.respol.2012.06.012>.