Apsis - Document Review Platform

Max Callaghan

October 16, 2018

Background

The exponential growth in literature about climate change raises challenges for environmental assessments:

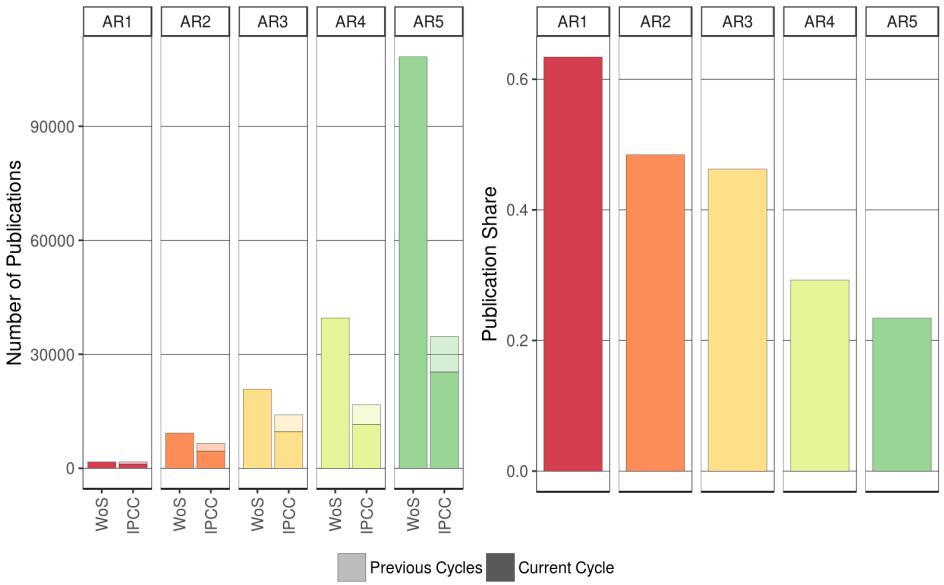

Figure: (Minx et al., 2017)

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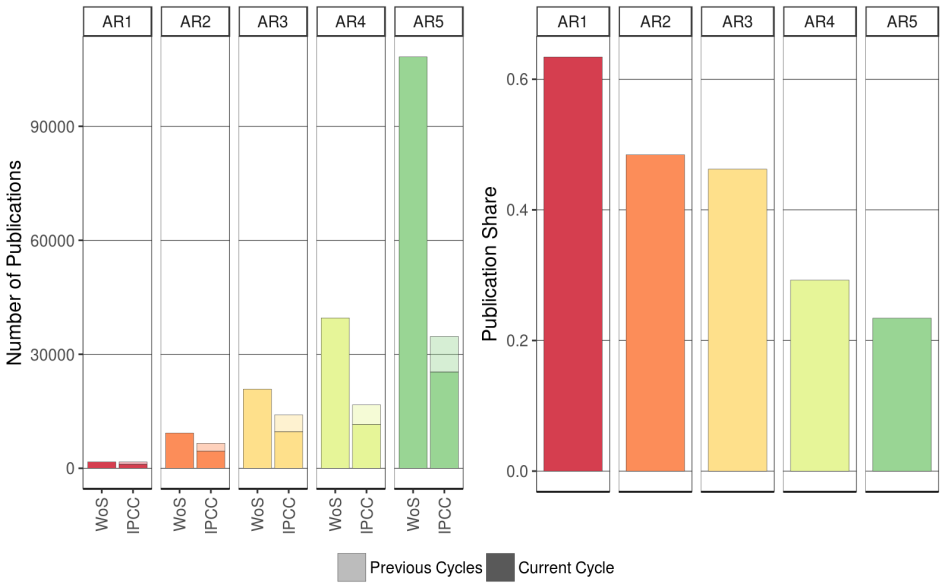

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- We need to develop ways of being more systematic in engaging with the literature

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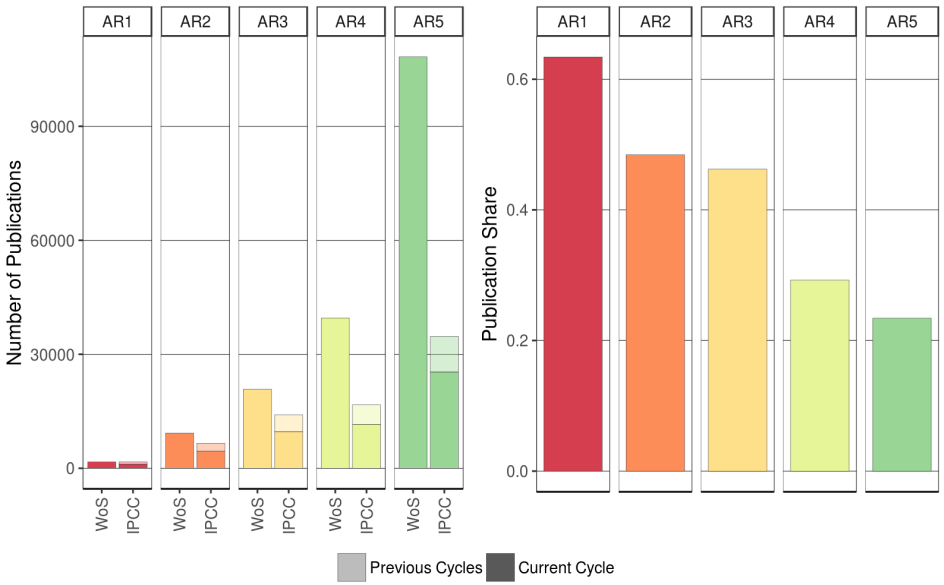

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- We need more research on research results

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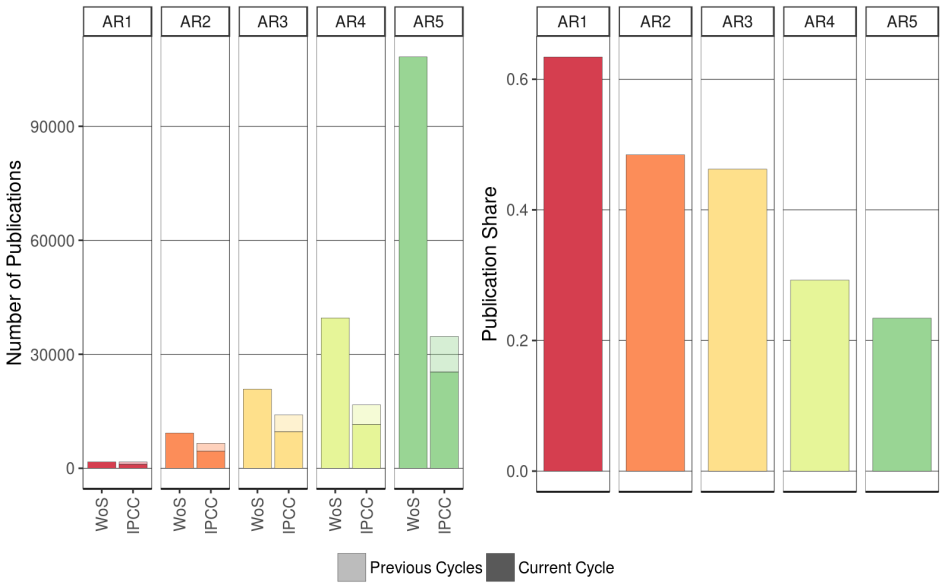
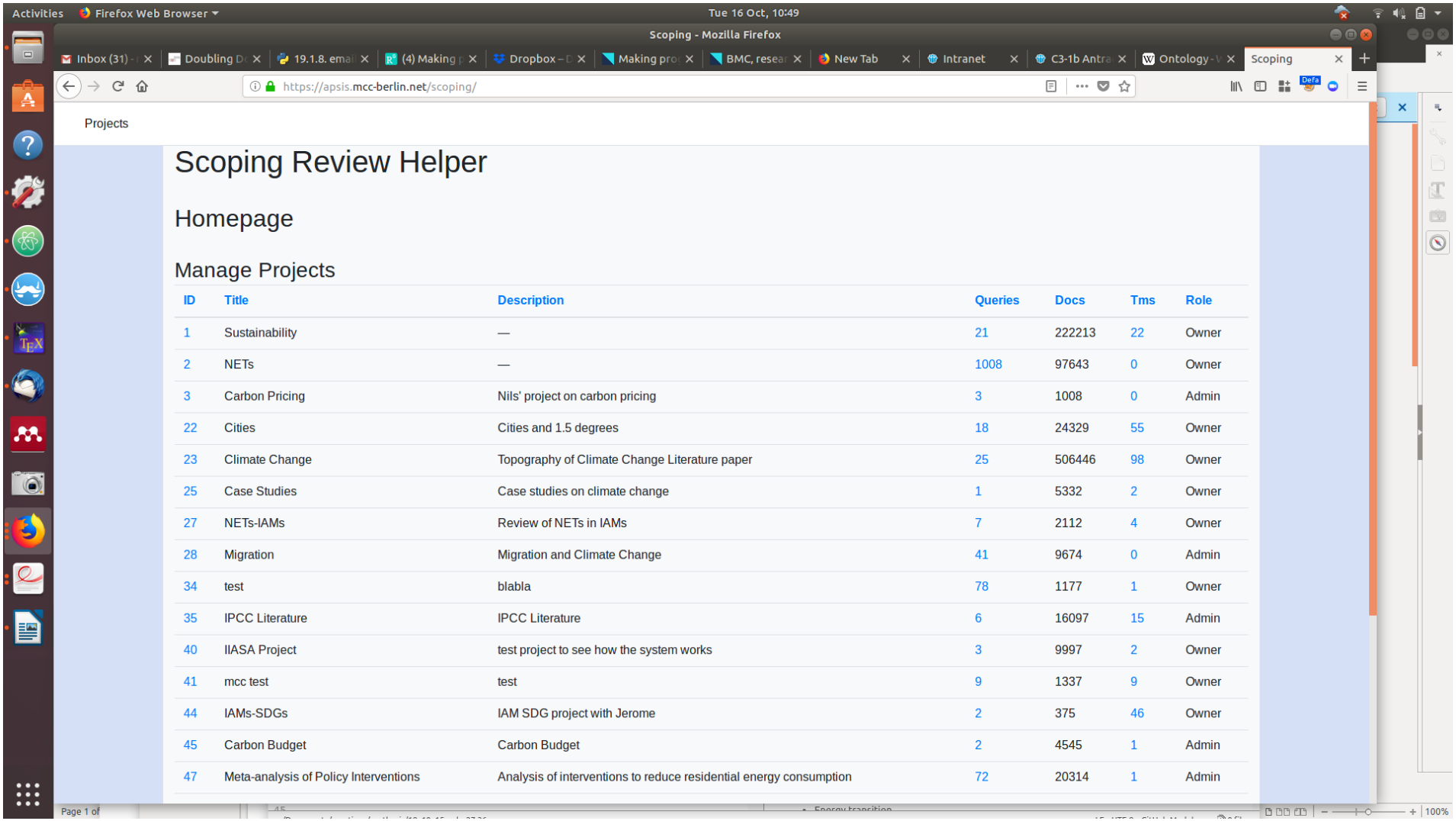


Figure: (Minx et al., 2017)

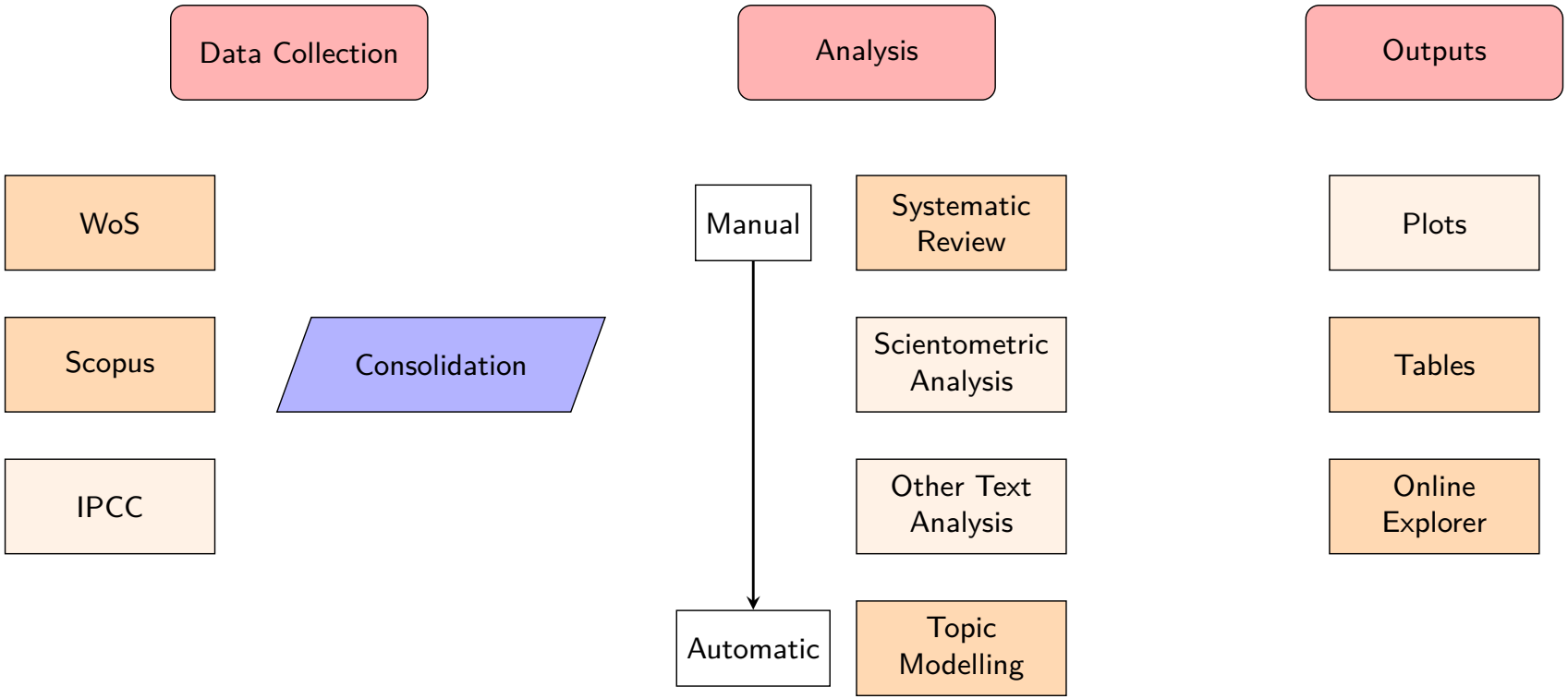
- We need to develop ways of being more systematic in engaging with the literature
- We need more research on research results
- We need ways of engaging with large amounts of text

Background



ID	Title	Description	Queries	Docs	Tms	Role
1	Sustainability	—	21	222213	22	Owner
2	NETs	—	1008	97643	0	Owner
3	Carbon Pricing	Nils' project on carbon pricing	3	1008	0	Admin
22	Cities	Cities and 1.5 degrees	18	24329	55	Owner
23	Climate Change	Topography of Climate Change Literature paper	25	506446	98	Owner
25	Case Studies	Case studies on climate change	1	5332	2	Owner
27	NETs-IAMs	Review of NETs in IAMs	7	2112	4	Owner
28	Migration	Migration and Climate Change	41	9674	0	Admin
34	test	blabla	78	1177	1	Owner
35	IPCC Literature	IPCC Literature	6	16097	15	Admin
40	IIASA Project	test project to see how the system works	3	9997	2	Owner
41	mcc test	test	9	1337	9	Owner
44	IAMs-SDGs	IAM SDG project with Jerome	2	375	46	Owner
45	Carbon Budget	Carbon Budget	2	4545	1	Admin
47	Meta-analysis of Policy Interventions	Analysis of interventions to reduce residential energy consumption	72	20314	1	Admin

Infrastructure Overview



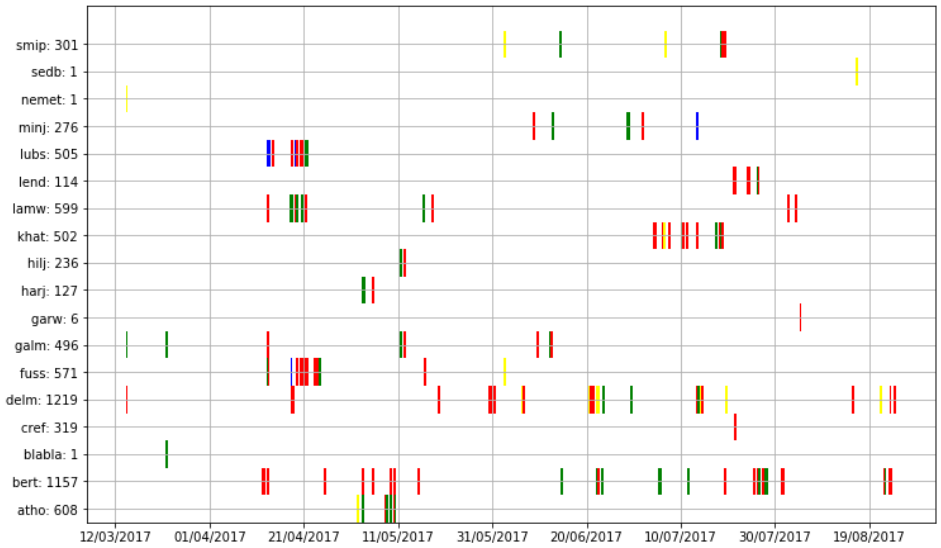
Systematic Review - NETs

For our systematic review of NETs, we wanted to be as systematic in our search, selection and treatment of literature as possible. We developed a system to help us

- To search and download (bulk) metadata from Web of Science (WoS) and Scopus
- To combine, compare and manage these queries and the documents associated with them
- To manage (centrally) the screening of documents by internal and external collaborators
- To run analysis based on user-entered tagging of documents and metadata from the WoS/Scopus

Systematic Review - NETs

We downloaded over 400 queries, and a team of 18 users reviewed hundreds of documents each.



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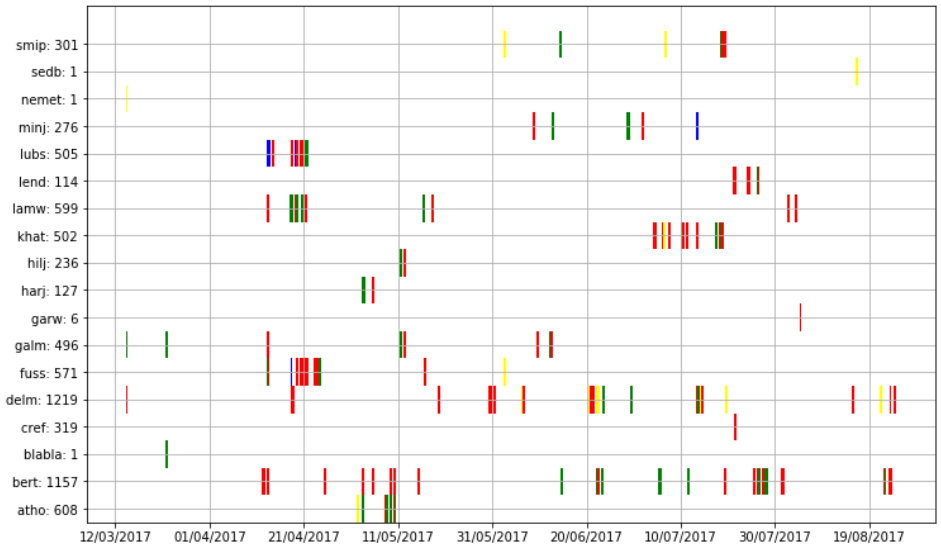
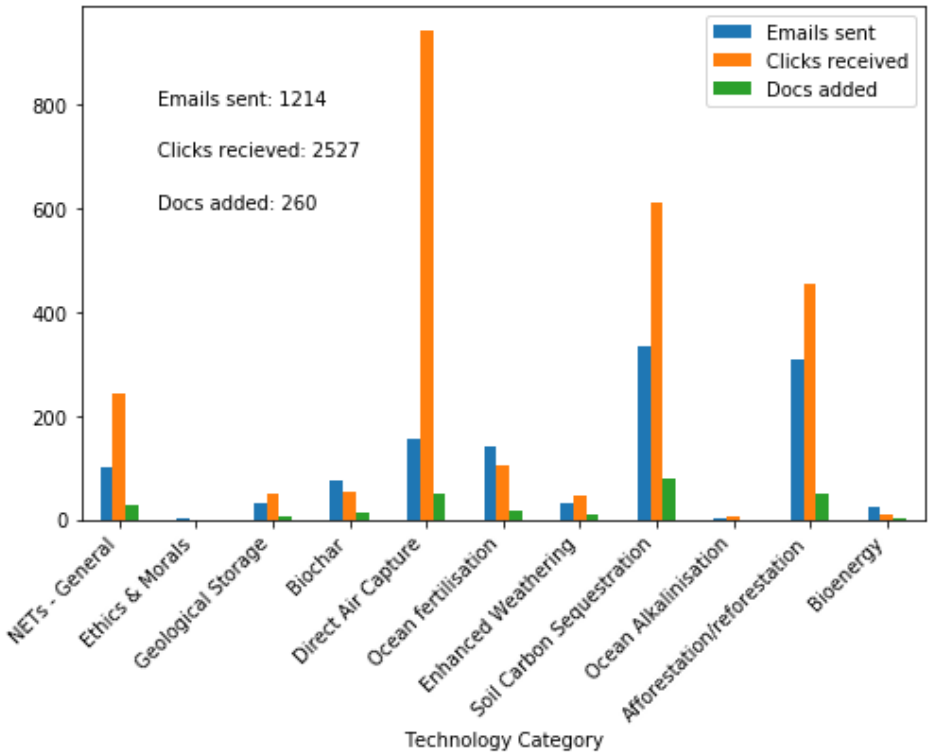
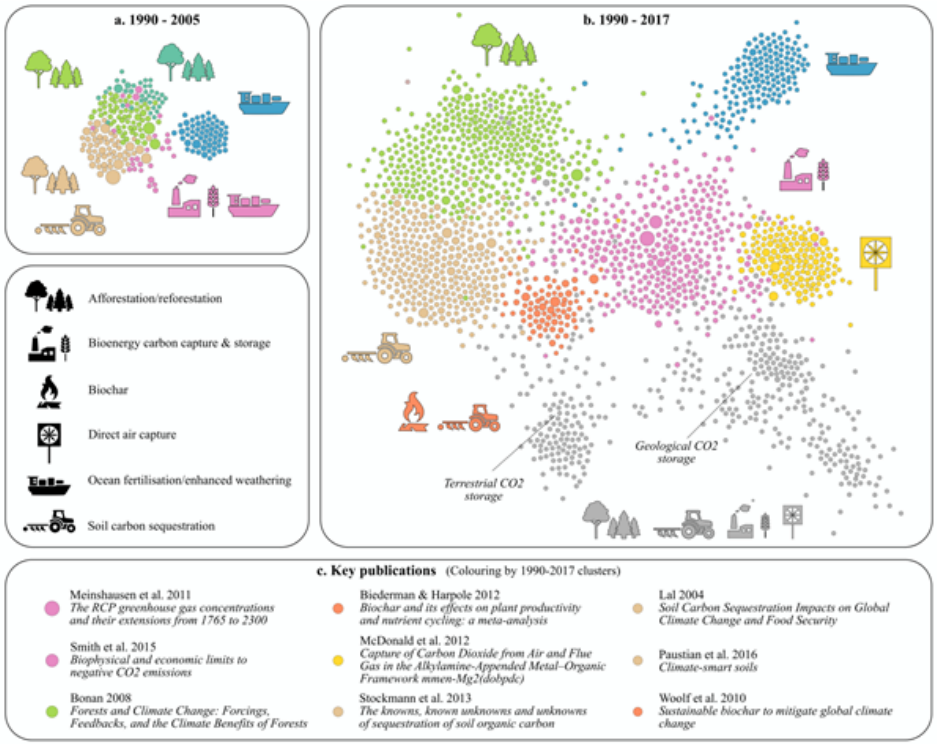


We used the results to automatically email all authors of relevant documents



Systematic Review - NETs

Based on the labels, we could efficiently characterise this bibliographic coupling network



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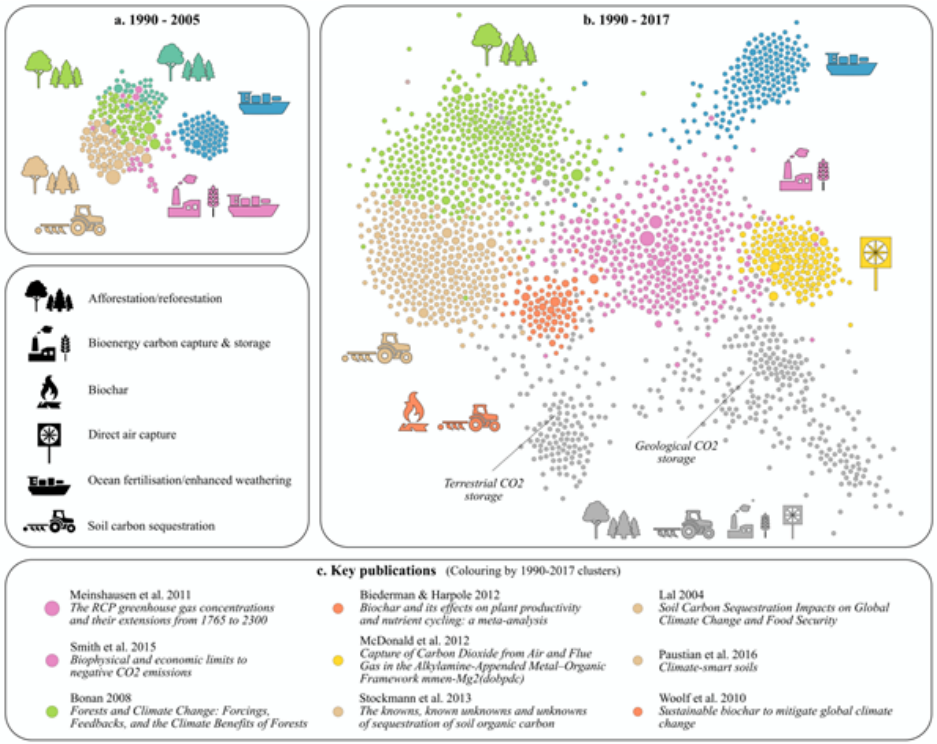

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And after collecting further information, we could characterise the documents

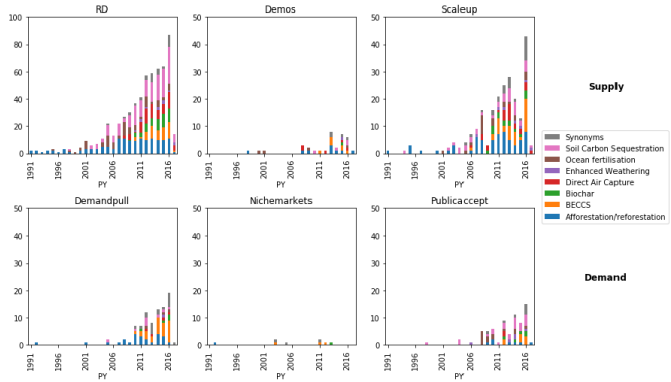

Figure: (Nemet et al., 2018)

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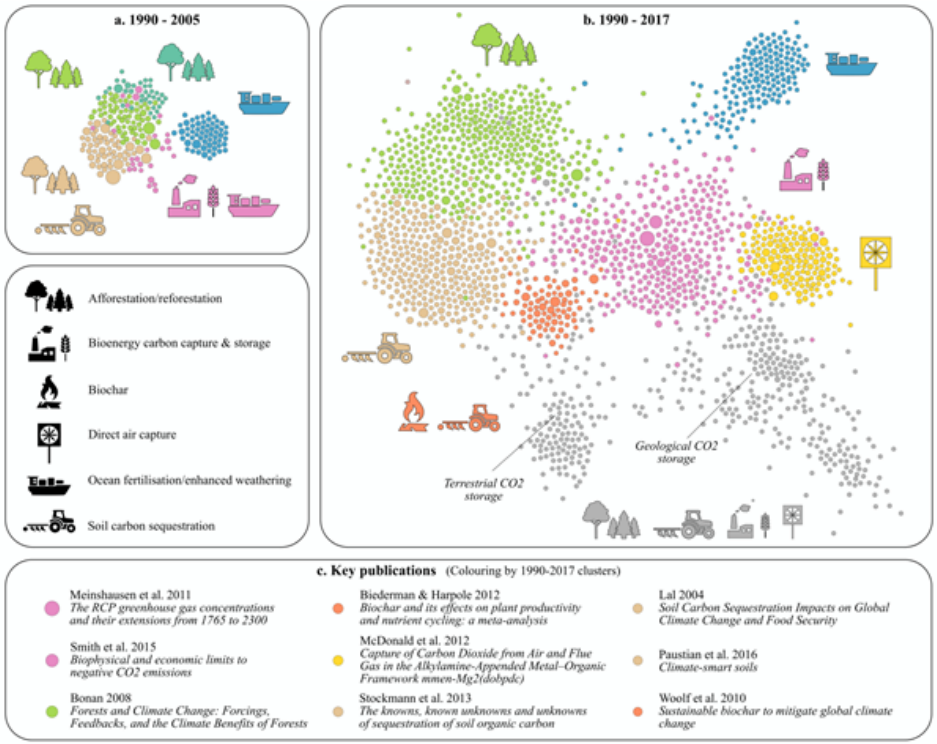

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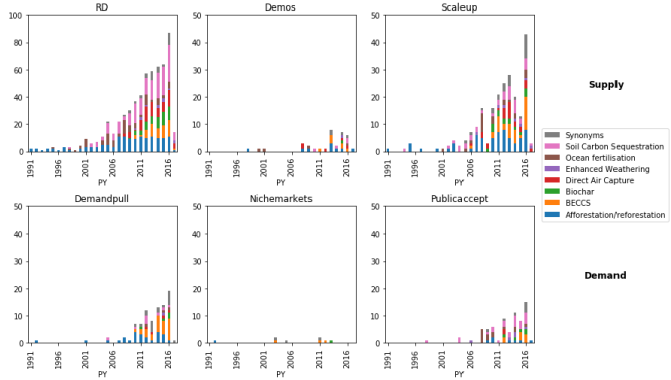


Figure: (Nemet et al., 2018)

And summarise information from them

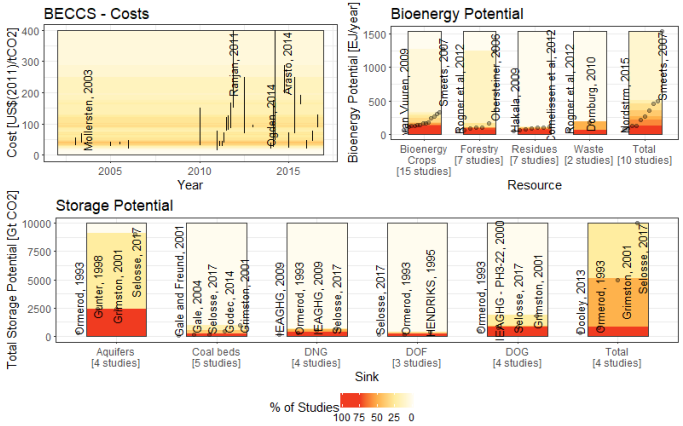
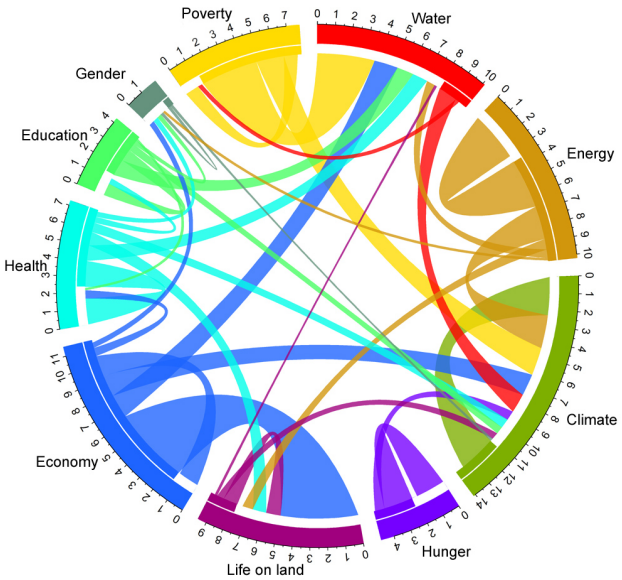


Figure: (Fuss et al., 2018)

Other projects

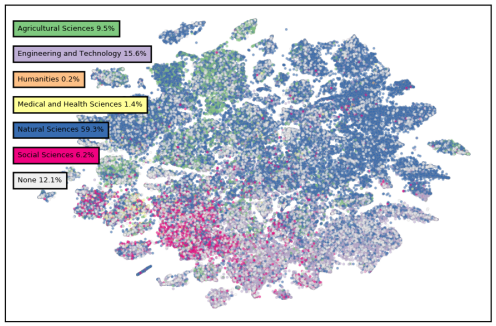
IAMs & SDGs with IIASA



- colleagues from IIASA now trialling tool

My PhD work

+ additional APSIS projects



Other MCC projects

- Various systematic review / meta-analysis / topic modelling projects at MCC
- Discourse analysis with *Governance* group + parsing of parliamentary archives

Website

https://apsis.mcc-berlin.net/scoping

Caveats

Data Collection

We have a system for downloading queries from databases using our institutional credentials
For external (to MCC) users, you will have to do this step, which includes repetitive clicking, yourself. You can download the appropriate file(s) and upload to our system

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In development

This is lots of pieces of work tied together, written as a side-project to my PhD. I like improving it, and adding more features, but it sometimes breaks or changes

Features

- Managing queries
- Screening/tagging documents across author teams
- Comparison of coder ratings
- Topic modelling

Structure

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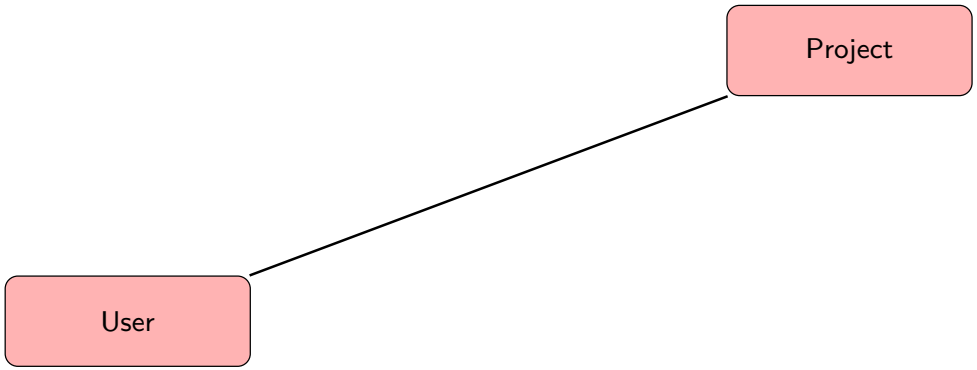

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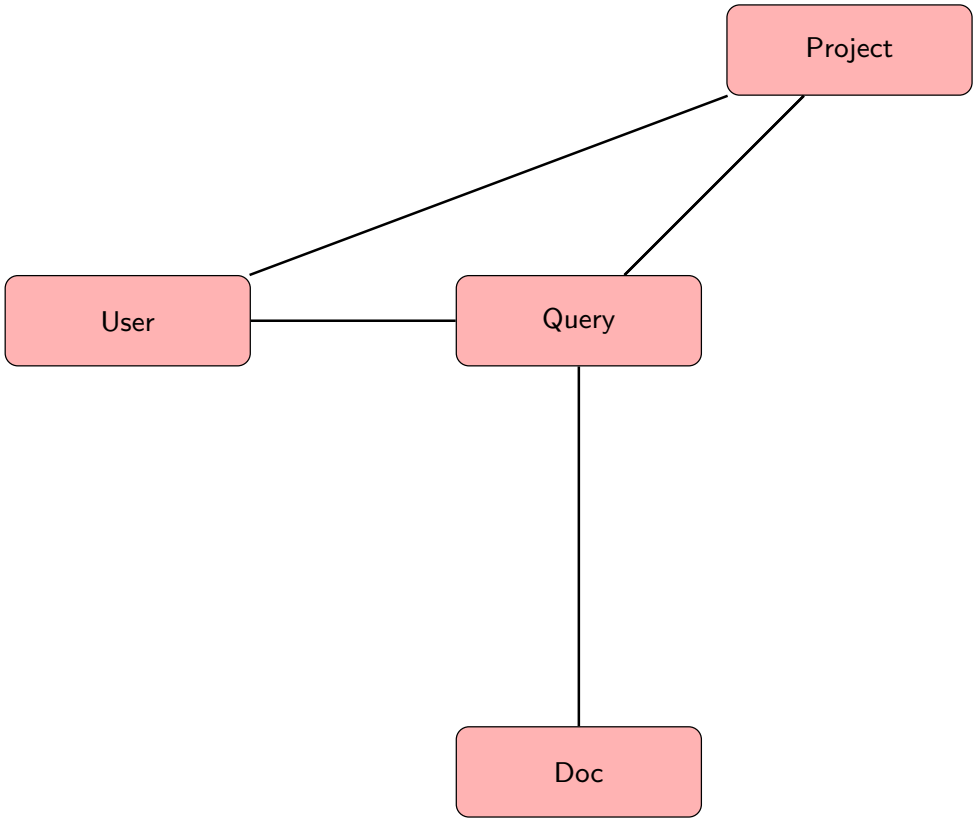

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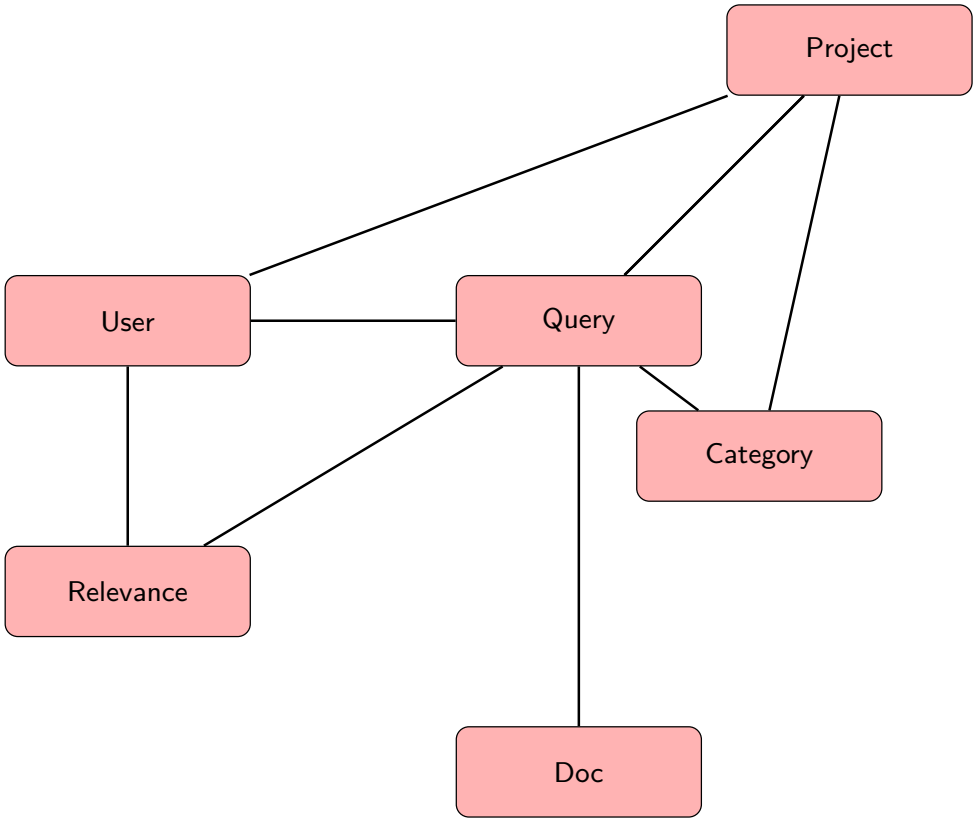

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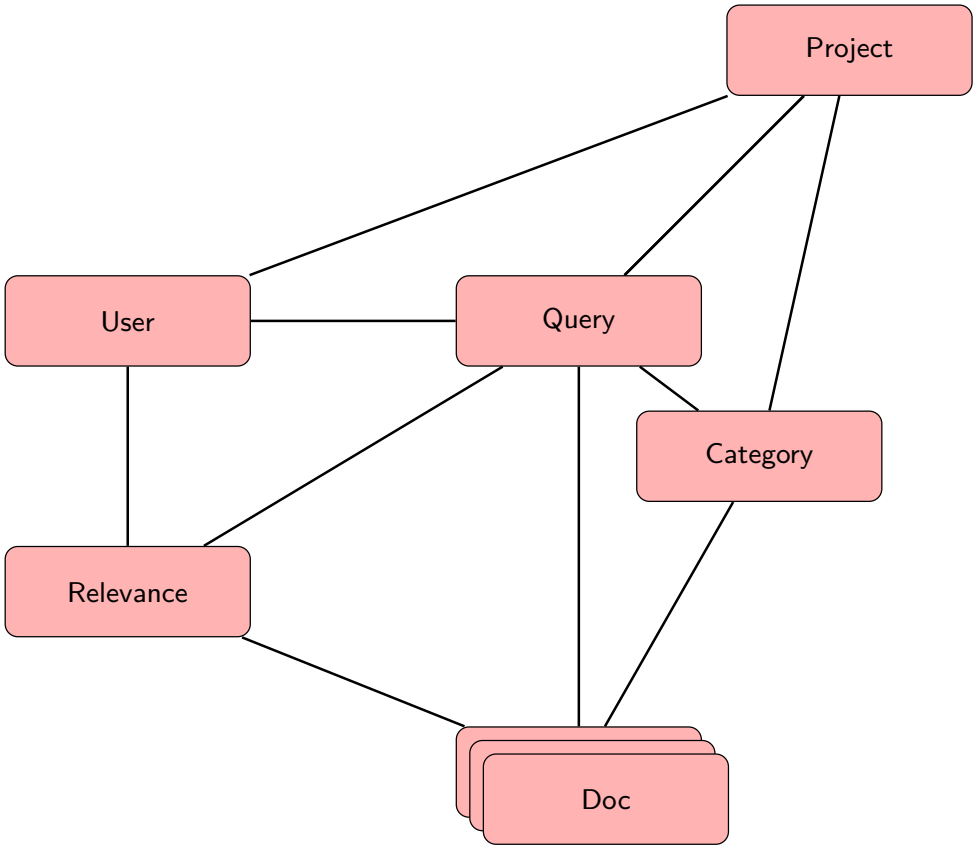

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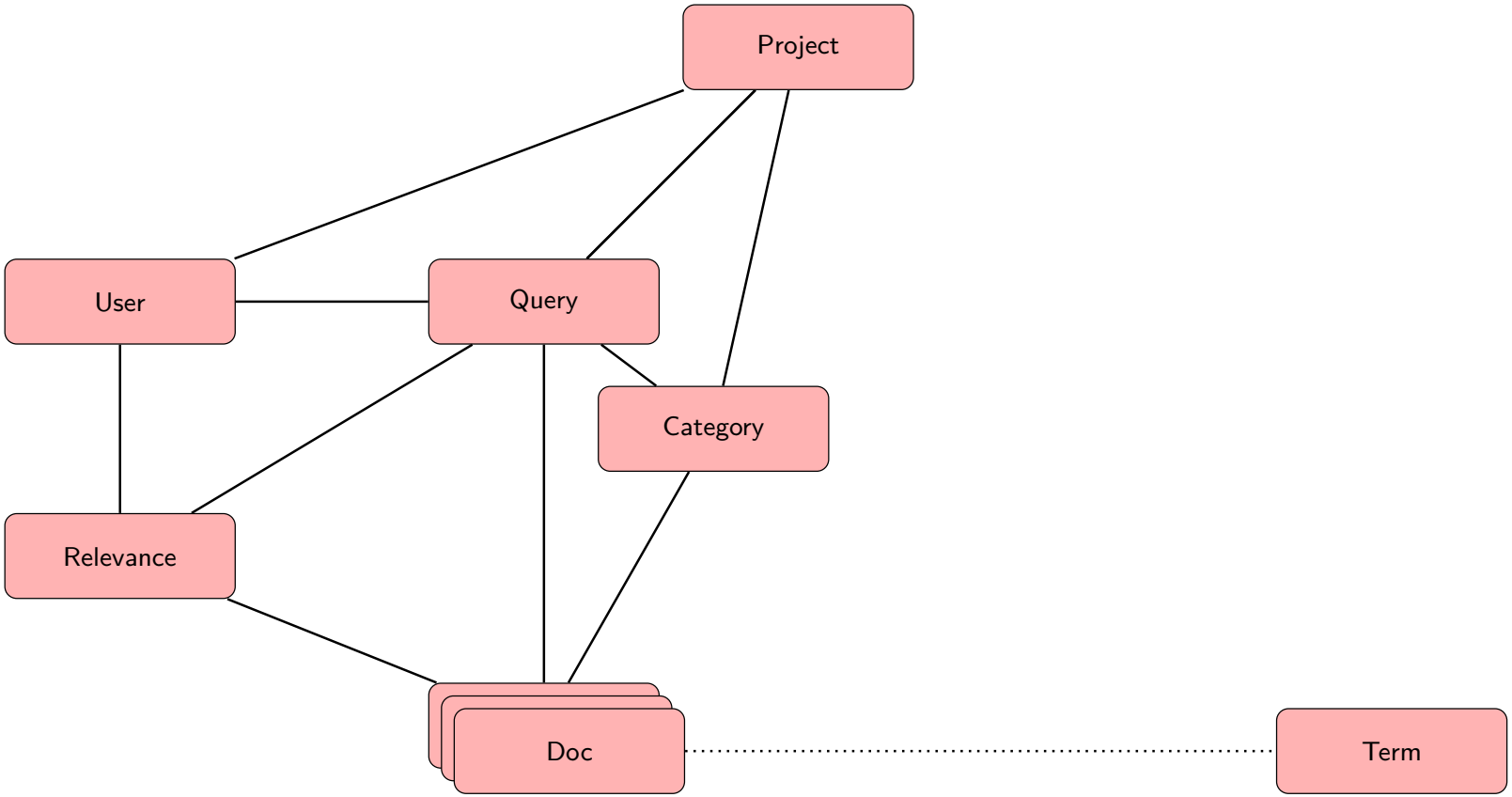

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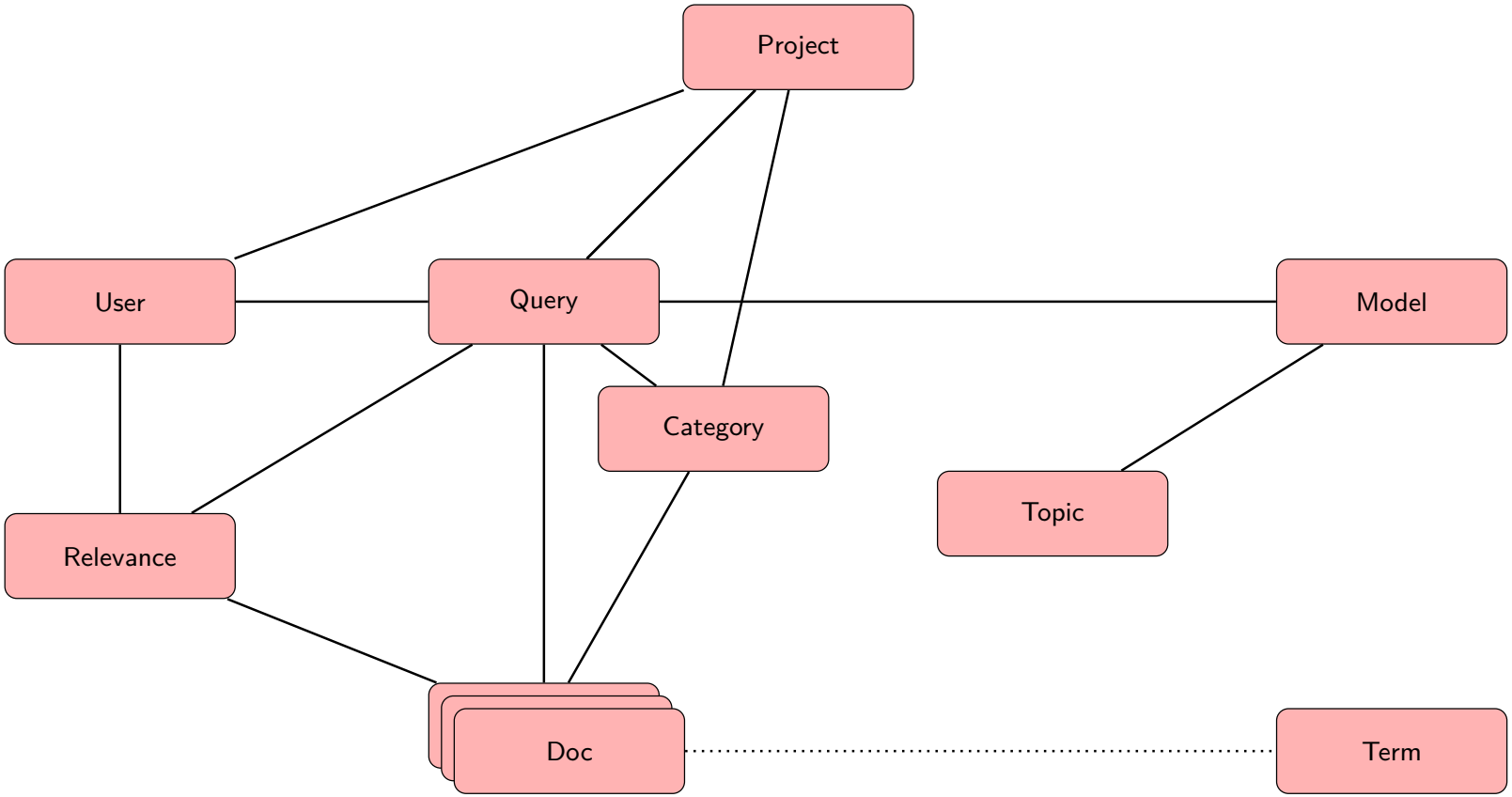
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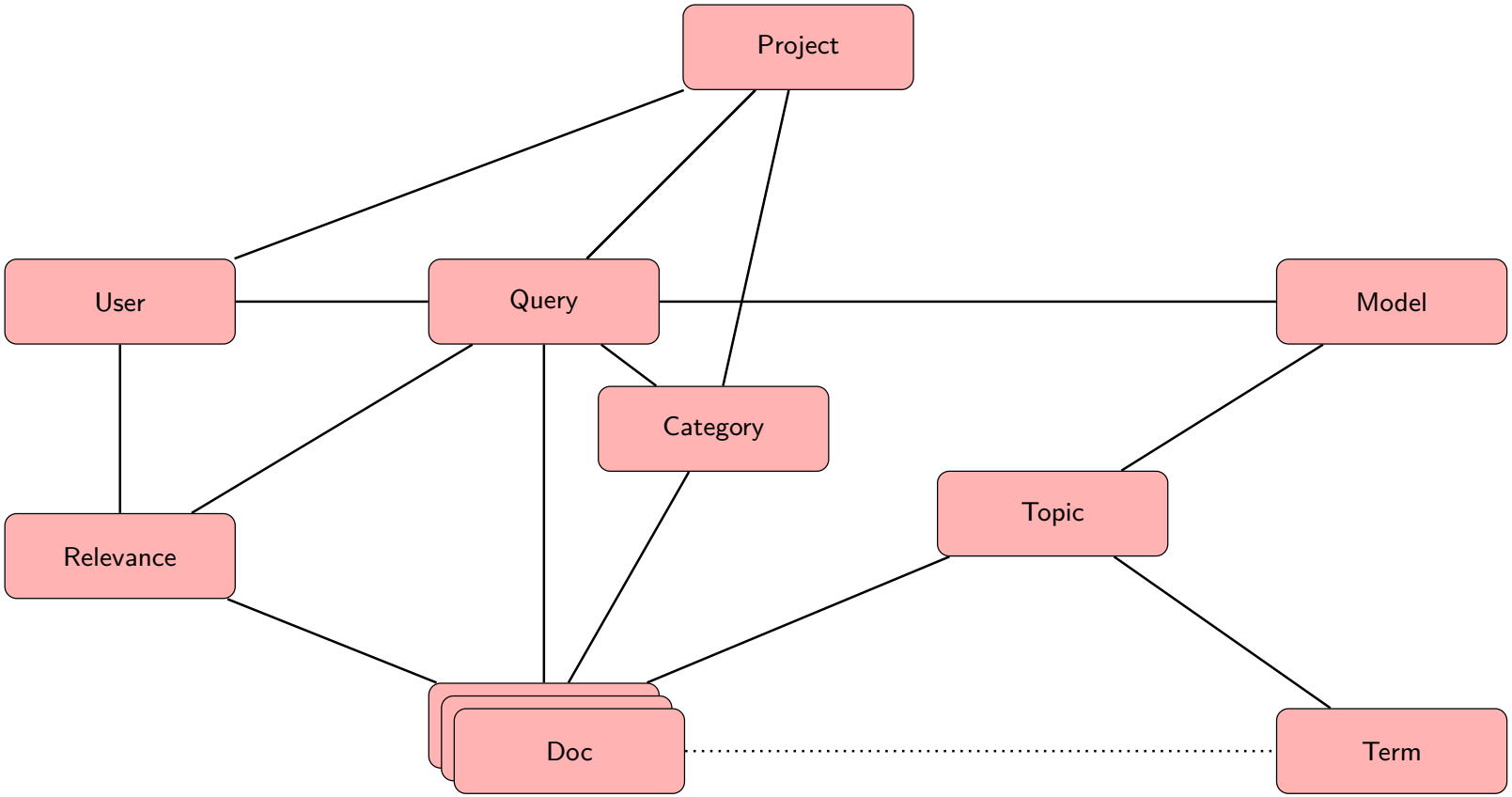
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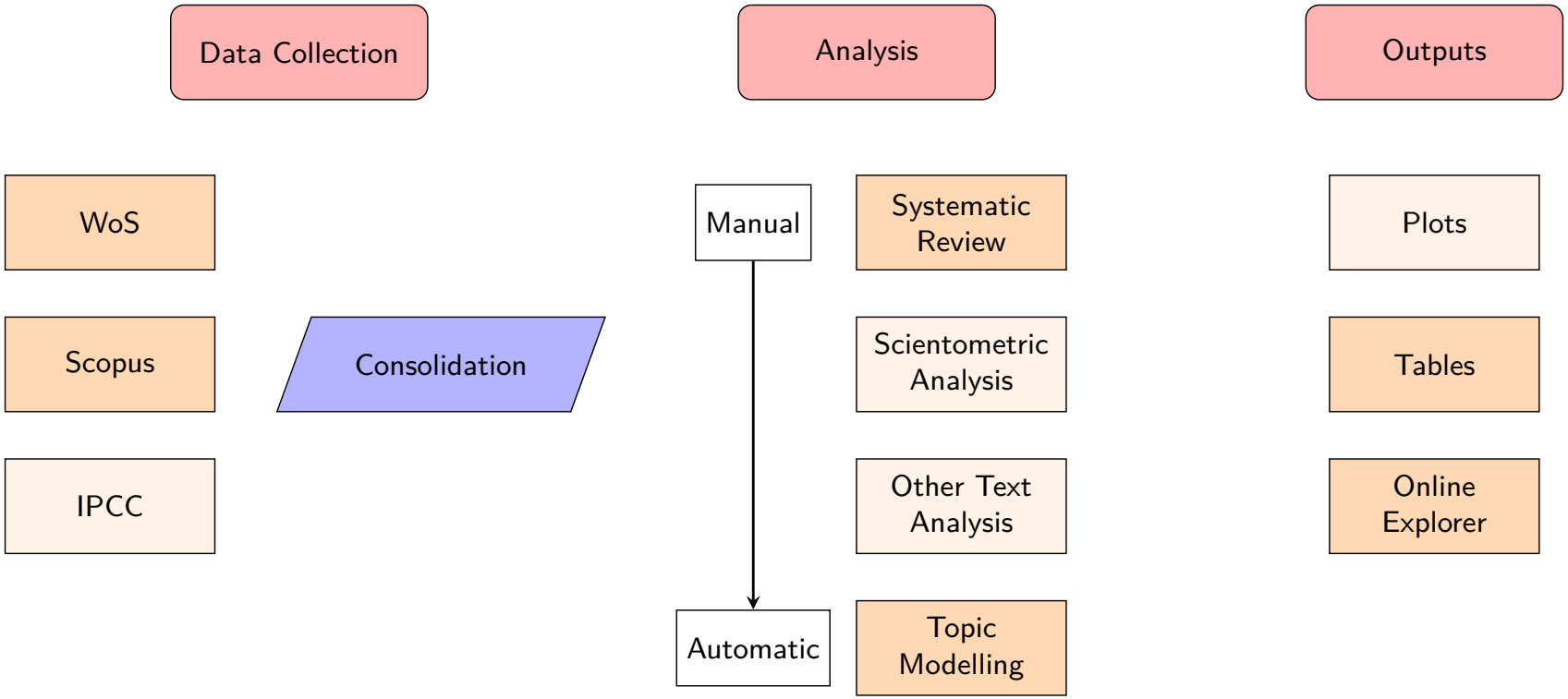
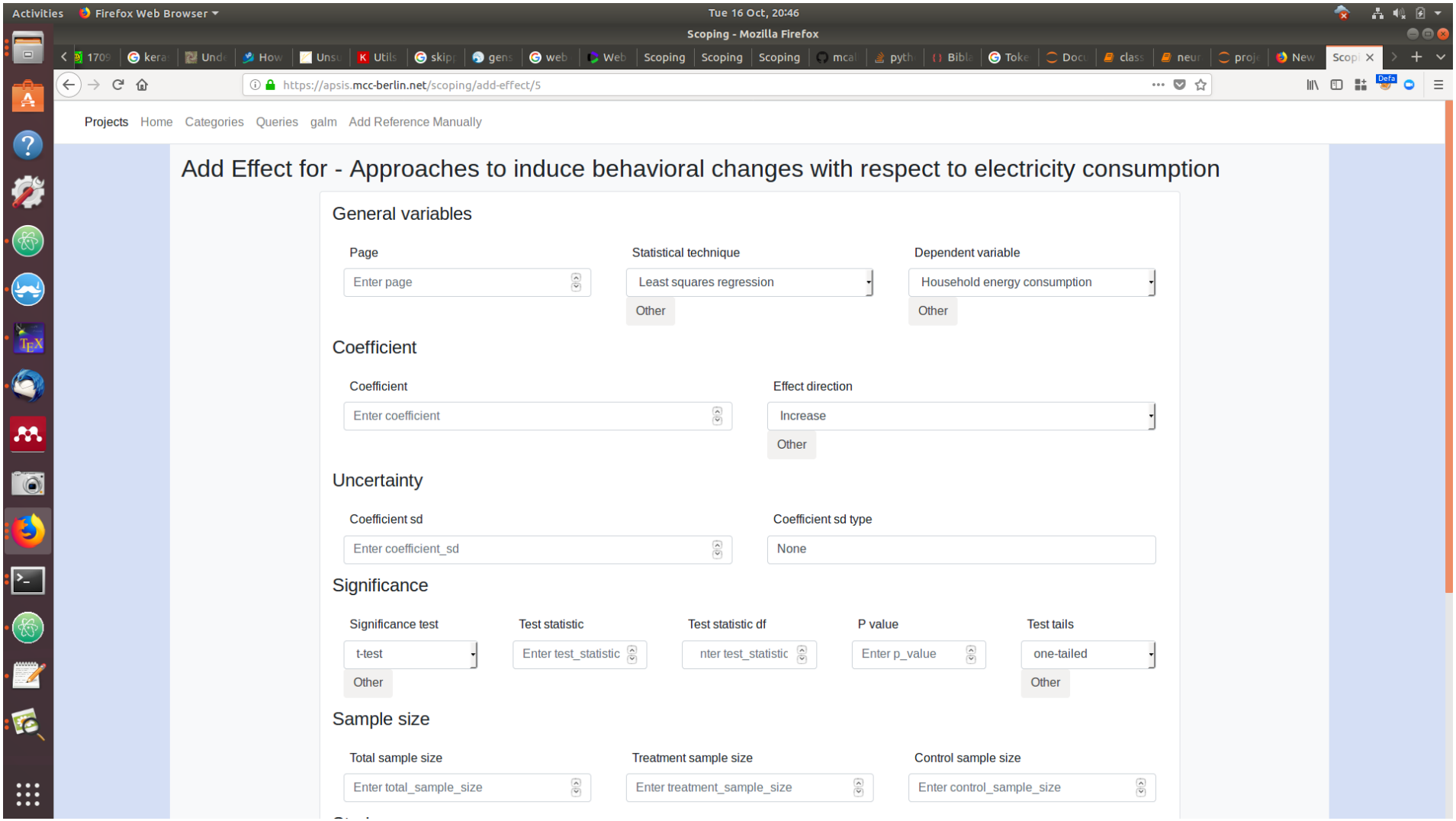
Summary



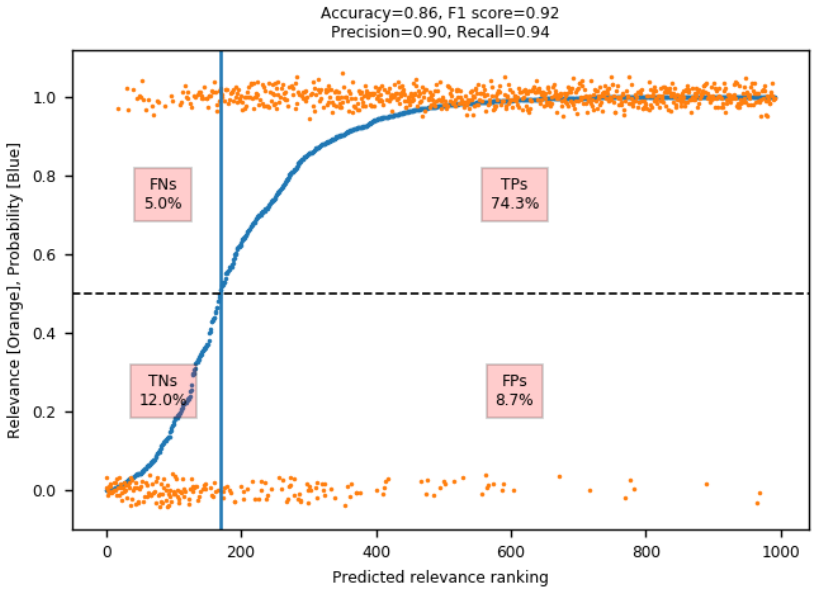
Future plans:

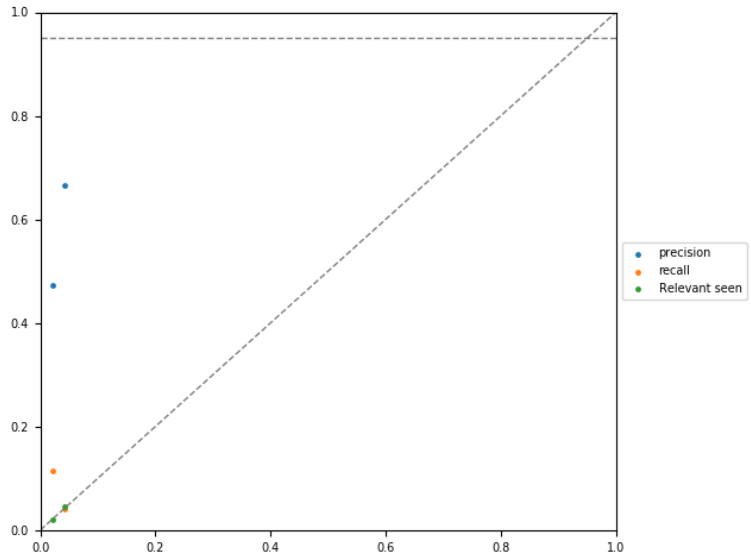
- collecting and synthesizing data within the platform
- using machine learning to predict relevance
- packaging and publishing tool for wider use

Data extraction - meta-analysis



Machine learning





References

Email: callaghan@mcc-berlin.net
Code: https://github.com/mcallaghan/tmv (You can raise "issues" there)

Documentation: https://github.com/mcallaghan/tmv/wiki/Scoping-Documentation (fairly comprehensive but out of date in October 16, 2018)

Fuss, S., Lamb, W. F., Callaghan, M. W., Hilaire, J., Creutzig, F., Amann, T., Beringer, T., de Oliveira Garcia, W., Hartmann, J., Khanna, T., Luderer, G., Nemet, G. F., Rogelj, J., Smith, P., Vicente, J. L. V., Wilcox, J., del Mar Zamora Dominguez, M., and Minx, J. C. (2018). Negative emissionsPart 2: Costs, potentials and side effects. *Environmental Research Letters*, 13(6):063002.

Lamb, W. F., Callaghan, M. W., Creutzig, F., Khosla, R., and Minx, J. C. (2018). The literature landscape on 1.5[deg]C climate change and cities. *Current Opinion in Environmental Sustainability*, 30:26–34.

Minx, J. C., Callaghan, M., Lamb, W. F., Garard, J., and Edenhofer, O. (2017). Learning about climate change solutions in the IPCC and beyond. *Environmental Science & Policy*.

Minx, J. C., Lamb, W. F., Callaghan, M. W., Fuss, S., Hilaire, J., Creutzig, F., Amann, T., Beringer, T., de Oliveira Garcia, W., Hartmann, J., Khanna, T., Lenzi, D., Luderer, G., Nemet, G. F., Rogelj, J., Smith, P., Vicente Vicente, J. L., Wilcox, J., and del Mar Zamora Dominguez, M. (2018). Negative emissionsPart 1: Research landscape and synthesis. *Environmental Research Letters*, 13(6):063001.

Nemet, G. F., Callaghan, M. W., Creutzig, F., Fuss, S., Hartmann, J., Hilaire, J., Lamb, W. F., Minx, J. C., Rogers, S., and Smith, P. (2018). Negative emissionsPart 3: Innovation and upscaling. *Environmental Research Letters*, 13(6):063003.