Politics and Governance (ISSN: 2183-2463)
Year, Volume, Issue, Pages X–X
https://doi.org/10.17645/pag.vXiX.XXX

Emissions lock-in, capacity, and public opinion: How insights from political science can inform climate modeling efforts

Supplementary Material

Replication Package

The replication package of the paper is available at the following link:
https://github.com/silviapianta/polsci-climate-modelling

Table S1. Details on the sources of data underlying the descriptive statistics presented in the paper.

Dimensions	Indicators	Sources
Emissions lock-in	***Carbon lock-in / Fossil fuels***	***Carbon lock-in / Fossil fuels***
	(1) Share of fossil fuels in electricity generation (%)	(1) World Bank World Development Indicators (WDI). Variables: eg.elc.coal.zs, EG.ELC.NGAS.ZS, eg.elc.petr.zs. Year: 2019
	(2) Sum of coal rent, gas rent and oil rent as % of GDP (as defined by the World Bank)	(2) World Bank World Development Indicators (WDI). Variables: NY.GDP.COAL.RT.ZS, NY.GDP.NGAS.RT.ZS, NY.GDP.PETR.RT.ZS Year: 2019
	Methane lock-in / Agriculture	***Methane lock-in / Agriculture***
	(1) Per capita CH4 emissions from the AFOLU sector	(1) Jan C. Minx, William F. Lamb, Robbie M. Andrew, Josep G. Canadell, Monica Crippa, Niklas Döbbeling, Piers Forster, Diego Guizzardi, Jos Olivier, Julia Pongratz, Andy Reisinger, Matthew Rigby, Glen Peters,

		Marielle Saunois, Steven J. Smith, Efisio Solazzo, & Hanqin Tian. (2021). A comprehensive dataset for global, regional and national greenhouse gas emissions by sector 1970-2019 [Data set]. Zenodo. https://doi.org/10.5281/zenodo.5053056 (2) Only AFOLU emissions are selected and CO_2e values are calculated based on IPCC AR6. (population data from the World Bank) Year: 2019
	(2) Agriculture, forestry, and fishing, value added (% of GDP) "*The estimates of natural resources rents are calculated as the difference between the price of a commodity and the average cost of producing it. This is done by estimating the price of units of specific commodities and subtracting estimates of average unit costs of extraction or harvesting costs. These unit rents are then multiplied by the physical quantities countries extract or harvest to determine the rents for each commodity as a share of gross domestic product (GDP).*"[1]	(2) World Bank World Development Indicators (WDI). Variable: NV.AGR.TOTL.ZS Year: 2019
Capacity	***Governance*** (1) Government effectiveness standardized from 0 to 100 (2) Rule of Law standardized from 0 to 100	***Governance*** (1) World Bank Worldwide Governance Indicators (WGI). Variable: gee (2) World Bank Worldwide Governance Indicators (WGI). Variable: rle Kaufmann et al. (2021)[2]

[1] Coal rents (% of GDP) | Data (worldbank.org).

[2] https://info.worldbank.org/governance/wgi/.

		Year: 2019
	Economic	***Economic***
	(1) GDP per capita PPP constant international US$2017	(1) World Bank World Development Indicators (WDI). Variable: NY.GDP.PCAP.PP.KD
	(2) Ease of doing business standardized from 0 to 100	(2) World Bank World Development Indicators (WDI). Variable: IC.BUS.DFRN.XQ
		Year: 2019
	Technological	***Technological***
	(1) R&D expenditures as % of GDP	(1) World Bank World Development Indicators (WDI). Variable: GB.XPD.RSDV.GD.ZS
	(2) Share of science and engineering graduates in total graduates	(2) Global Innovation Index (Global Innovation Index (GII) (wipo.int))
		Year: 2019
Public support	(1) Economic growth versus environmental protection	(1) Integrated Values Survey, 8th wave (2017-2020): Weighted country-level average of the variable measuring a possible tradeoff between economic growth and environmental protection, which ranges from 0, indicating that "Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent", to 1, indicating that "Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs".
	(2) Postmaterialism index	(2) Integrated Values Survey, 8th wave (2017-2020): Weighted country-level average of the Postmaterialism Index variable, which ranges from 1, indicating the prevalence of materialist values, to 3, indicating the prevalence of postmaterialist values.
		Sources: • EVS/WVS (2021). European Values Study and World Values Survey: Joint EVS/WVS 2017-2021 Dataset (Joint EVS/WVS). JD Systems Institute & WVSA. Dataset Version 2.0.0, doi:10.14281/18241.14. • Haerpfer, C., Inglehart, R., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano J., M. Lagos, P. Norris, E. Ponarin & B. Puranen et al. (eds.).

		2021. World Values Survey Time-Series (1981-2020) Cross-National Data-Set. Madrid, Spain & Vienna, Austria: JD Systems Institute & WVSA Secretariat. Version 2.0.0, doi:10.14281/18241.15. • https://europeanvaluesstudy.eu/methodology-data-documentation/integrated-values-surveys-ivs-1981-2021/data-and-documentation-ivs-1981-2021/ Years: 2017-2020 (last available wave).

Note: We employ data from 2019 because it is the last year for which data are available for all the indicators (with the partial exception of the survey data, whose last wave was collected between 2017 and 2020). We also considered 2019 preferable to 2020 as it was the last pre-pandemic year.

Table S2. Details on the Post-materialism index measured in the Integrated Values Survey (IVS).

4-Item Post-Materialist index
Q154 Aims of respondent: first choice
If you had to choose, which one of the things on this card would you say is most important? 1.- Maintaining order in the nation 2.- Giving people more say in important government decisions 3.- Fighting rising prices 4.- Protecting freedom of speech
Q155 Aims of respondent: second choice
And which would be the next most important? 1.- Maintaining order in the nation 2.- Giving people more say in important government decisions 3.- Fighting rising prices 4.- Protecting freedom of speech
Coding: IF ((Q154=1 and Q155=3) or (Q154=3 and Q155=1)) then 1 IF ((Q154=2 and Q155=4) or (Q154=4 and Q155=2)) then 3 ELSE 2

27

28 **Table S3**. IAM regional classification (IPCC 2014)

R5OECD90+ EU	OECD90 and EU (and EU candidate) countries
	Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, Canada, United States of America, Australia, Fiji, French Polynesia, Guam, Japan, New Caledonia, New Zealand, Romania, Samoa, Serbia, Slovakia, Slovenia, Solomon Islands, Vanuatu
R5REF	Countries from the Reforming Ecomonies of the Former Soviet Union
	Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan
R5ASIA	Asian countries except Japan
	China, China Hong Kong SAR, China Macao SAR, Mongolia, Taiwan, Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka, Brunei Darussalam, Cambodia, Democratic People's Republic of Korea, East Timor, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Papua New Guinea, Philippines, Republic of Korea, Singapore, Thailand, Viet Nam
R5MAF	Countries of the Middle East and Africa
	Bahrain, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen, Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cote d'Ivoire, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Western Sahara, Zambia, Zimbabwe
R5LAM	Latin American countries
	Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guadeloupe, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Mexico, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Suriname, Trinidad and Tobago, Uruguay, Venezuela
R5ROWO	Rest of the World - to be used only if decent match with the 5 SSP regions can otherwise not be achieved

29 Source: https://secure.iiasa.ac.at/web-apps/ene/SspDb/dsd?Action=htmlpage&page=about#regiondefs

30

31