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A new index of environmental policy using newspapers

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We introduce a novel index measuring the salience of US environmental policy over the 1981-2019 period on a monthly basis and on various sub-topics. The index captures the evolution of the relative share of news articles discussing environmental and climate regulations over the last four decades. Our analysis finds a meaningful empirical association between more news on environmental policy and growing opportunities for clean investments. The index is available on our website: www.financingcleantech.com/envp-index.

Stabilizing global warming and achieving net zero emission targets requires implementing a wide array of climate and environmental regulations. Such policies are essential to shift incentives of economic actors towards investments in clean products, technologies or firms. Especially when markets for these products do not yet exist, policies play a vital role as market makers, e.g. by providing the highly risky initial funding or by strengthening demand for their products.

Yet, the salience of environmental policy on the political agenda tends to fluctuate over time, not least because economic policies relating to the environment tend to be highly partisan. The recent election of President Joe Biden in the US illustrates how environmental and climate policy can gain renewed prominence over the course of a few months.

Being able to quantify the importance of environmental policies for clean investments has been a long-standing challenge because such fluctuations in policy support are notoriously difficult to measure. This is where newspaper articles come in handy. On a daily basis, journalists throughout the United States provide information to their readers about current policy discussions, providing both information and a contextualization in the contemporary public opinion landscape.

Making use of articles from ten leading US newspapers (New York Times, Washington Post, Wall Street Journal, Houston Chronicle, Dallas Morning News, San Francisco Chronicle, Boston Herald, Tampa Bay Times, San Jose Mercury News and San Diego Union Tribune) as well as novel text mining techniques, we are able to identify the share of newspaper articles about environmental policy. Text mining techniques consist in extracting text features (e.g. word frequencies) from documents and offer an exciting toolbox to analyze previously unquantifiable data sources such as text. Numeric algorithms for text classification allow combing through a vast and geographically representative web of articles, which would take humans years to get through. We follow a standard approach that requires the manual annotation of a small sample of articles to inform and teach the algorithm which articles are about environmental policy and which are not. Using this training set, the algorithm then identifies which words are especially useful to distinguish a relevant from an irrelevant article and, once duly calibrated, can be used to classify the whole body of articles. A detailed explanation of the methodology is available in Noailly et al. (2021).

Figure 1. The EnvP index, monthly 1981-2019

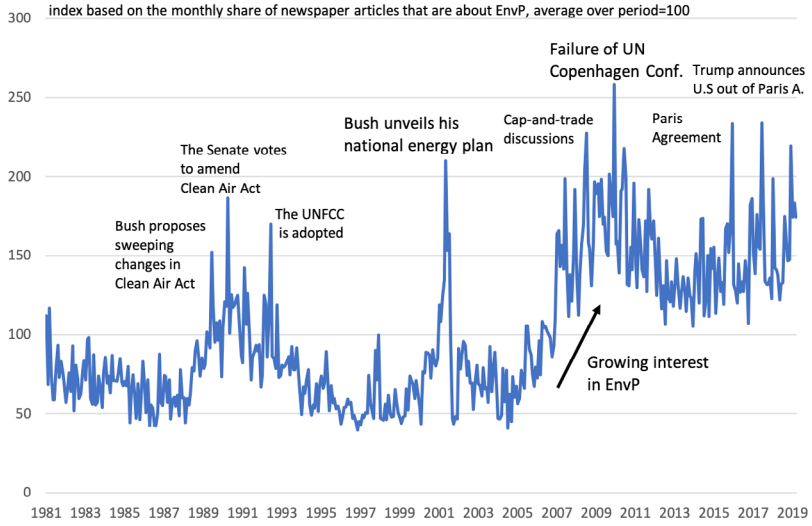
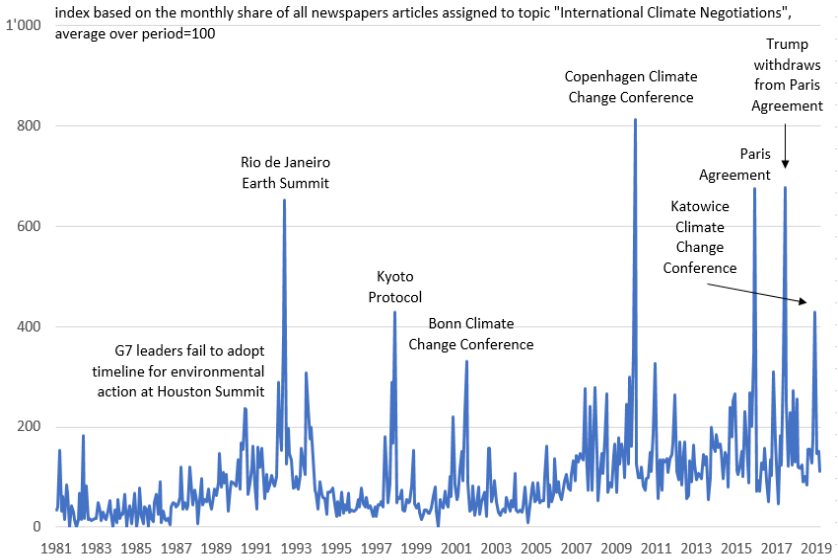


Figure 1 plots our new EnvP index predicted by our algorithms and scaled by the total monthly volume of news articles in our ten newspapers. The index is normalized such that its average value over the 1981-2019 period is equal to 100. The index peaks during major US environmental policy events and increases after 2006, reflecting growing awareness and discussion on environmental policy. We also provide two topic-specific sub-indices on 'Renewable Energy Policy' and 'International Climate Negotiations' (Figure 2). All series of monthly indices are available on our website: www.financingcleantech.com/envp-index.

Figure 2. Sub-index - International climate negotiations, monthly 1981-2019



The novelty of these indices, beyond using text-mining techniques, is that they reflect environmental policy debates and not merely generic media attention on the environment and climate change. In addition, in the same way as we expect environmental policy to promote clean markets, we find that our index is positively associated with clean investments, indicating that newspaper articles provides meaningful information on environmental regulations for investors.

Due to the risky nature of their business, startups command favorable policies to grow. Our analysis shows that a doubling of our environmental policy index is associated with about 25% increase in the likelihood for a cleantech startup to receive funding from venture capitalists. Another central question is to what extent environmental policies facilitate a shift away from dirty firms. Here, our analysis shows that an increase in our EnvP index relates to lower stock market returns for the most polluting publicly listed firms in the US, as we would expect.

We believe that our EnvP index can help assist the policy and finance community to better understand which type of policy signals may be most effective in affecting investor beliefs. News on environmental policy appear to contain a lot of relevant information for investors and policymakers could leverage their capacity to coordinate investor beliefs by communicating about their environmental policy agenda in a clear and credible manner.

In this respect, our study offers many avenues for future research. We hope in particular that our index can help researchers to progress towards quantifying causal impacts of specific features of environmental regulations, for instance by combining our index with event studies or quasi-natural experiments. In a more macro setting, our index may provide an improved quantification of transition risks in the context of climate change and the low-carbon transition.

References

Noailly, J., L. Nowzohour, and M. van den Heuvel. 2021. *Heard the news? Environmental policy and clean investments*. CIES Research Paper No. 70, Graduate Institute Geneva. https://repository.graduateinstitute.ch/record/299407?ln=en.

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73 NRP **Sustainable Economy**
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The centre addresses complex problems such as climate change, biodiversity, food security, energy, natural resources and development. CIES's mission is to conduct high level academic research to improve the quality of decision making in public and private spheres. This goal is achieved by creating a platform for researchers to conduct interdisciplinary research on the environment, by providing training to PhD students in specialized areas of research and by disseminating research results through outreach activities targeted to academic experts and policymakers.
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