L’IA per le scienze sociali

Dr Mary Sanford

Scuola estiva Climate Change AI

22 luglio 2026







Domanda/e di riscaldamento

L’IA vi preoccupa?



https://partici.fi/97320810

Se sì, perché? Se no, perché no?



https://partici.fi/97320810

Che cosa sono le scienze sociali?

Management/finanza

Pubblica amministrazione

Scienza politica

Archeologia

Economia

Geografia

Psicologia

Istruzione

Diritto

Sociologia

Relazioni internazionali

Antropologia

Comunicazione

Il mio ambito

La ricerca in scienze sociali sui cambiamenti climatici

Che cosa pensano le persone?

Che cosa fanno le persone?

Che cosa influenza le persone?

E le organizzazioni?

Quali implicazioni sistemiche?

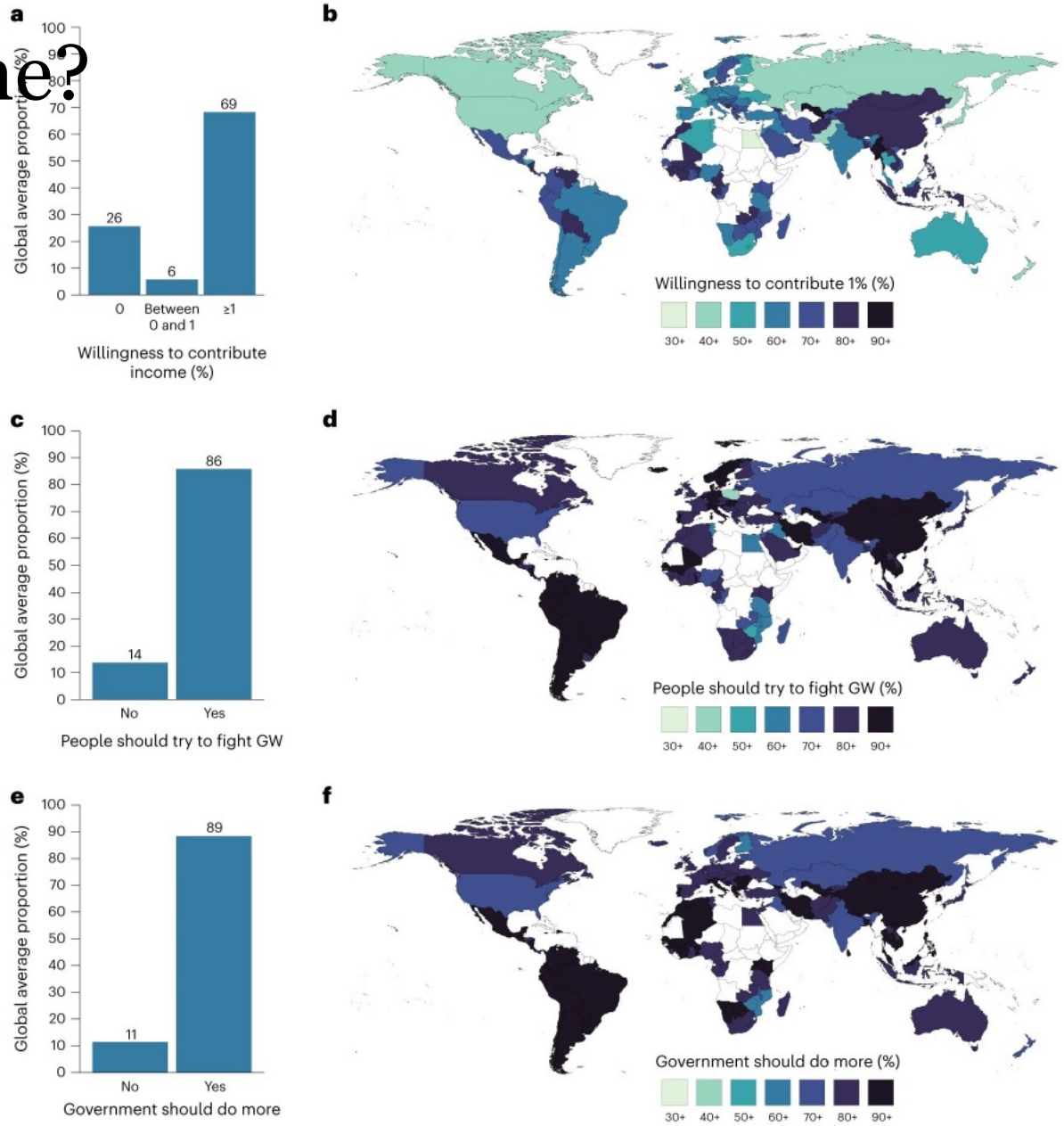
Che cosa possiamo imparare dal passato?

➔ Fondamentale per costruire la fattibilità sociale e politica di una transizione climatica giusta.
➔ Necessaria perché i progressi tecnologici esprimano tutto il loro potenziale.

Che cosa pensano le persone?

- ➔ Grandi indagini multinazionali
- ➔ Sostegno, opposizione, atteggiamenti, comportamenti dichiarati
- ➔ Per lo più una tantum, talvolta longitudinali
- ➔ Molto lavoro descrittivo, un po' più causale/comportamentale

Ampio sostegno globale all'azione climatica



Andre et al. 2024. Nature Climate Change.

Che cosa fanno (o non fanno) le persone?

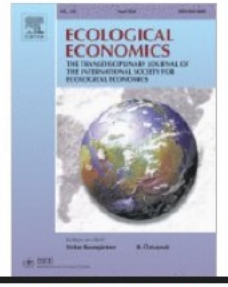
ELSEVIER
Global Environmental Change
Volume 17, Issues 3–4, August–October 2007, Pages 445-459

Barriers perceived to engaging with climate change among the UK public and their policy implications

Irene Lorenzoni [a b], Sophie Nicholson-Cole [b], Lorraine Whitmarsh [b]

ELSEVIER
Journal of Environmental Psychology
Volume 51, August 2017, Pages 226-238





"Green to be keep down": effect of identity on pro-environmental behavior

Cameron Brick, David K. Sherman, Heejung S. Kim

Research article • Full text access Get rights and content

Do risk, time, and social preferences predict sustainable behavior? Evidence from a qualitative synthesis and meta-analysis ☆

Kristopher L. Nichols [a b], Johanna M. Matt-Navarro [a], Maxim K. Doiron [a], Giovanna d'Adda [c d], Elke U. Weber [a b e], Sara M. Constantino [e f]
Show more



The Political Consequences of Green Policies: Evidence from Italy

Published online by Cambridge University Press: **27 April 2023**

ITALO COLANTONE, LIVIO DI LONARDO, YOTAM MARGALIT and MARCO PERCOCO
Show author details

- ➔ Qualche esperimento in più
- ➔ Analisi di dati secondari

Che cosa influenza le persone?

BPP BEHAVIOURAL PUBLIC POLICY

What shapes public support for climate change mitigation policies? The role of descriptive social norms and elite cues

Published online by Cambridge University Press: **03 November 2020**

ADRIAN RINSCHEID, SILVIA PIANTA and ELKE U. WEBER

Show author deta

European Journal of Political Research

Research Article | Open Access

Carbon inequality and support for carbon taxation

LIAM F. BEISER-McGRATH, MARIUS R. BUSEMEYER

First published: 15 December 2023 | https://doi.org/10.1111/1475-6765.12647 | VIEW METRIC

"Fear Won't Do It": Promoting Positive Engagement With Climate Change Through Visual and Iconic Representations

Saffron O'Neill and Sophie Nicholson-Cole View all authors and affiliations

Volume 30, Issue 3 | https://doi.org/10.1177/1075547008329201

Environment, Development and Sustainability (2025) 27:3593–3607
https://doi.org/10.1007/s10668-023-04031-0

Letter | Published: 30 November 2015

Network structure and influence of the climate change counter-movement

Justin Farrell

Nature Climate Change **6**, 370–374 (2016) | Cite this article

Check for updates

How does personalized feedback on carbon emissions impact intended climate action?

Yu Luo[1] · Brynley Hanson-Wright[2] · Hadi Dowlatabadi[2] · Jiaying Zhao[1,2]

Received: 26 April 2023 / Accepted: 9 October 2023 / Published online: 25 October 2023

E le organizzazioni?

Home > Crises and Disruptions in International Business > Chapter

The Impact of Climate Risk on Firm Performance and Financing Choices: A International Comparison

Chapter | First Online: 26 April 2022

Article | Open access | Published: 18 December 2023

Do fossil fuel firms reframe online climate and sustainability communication? A data-driven analysis

Ramit Debnath, Danny Ebanks, Kamiar Mohaddes, Thomas Roulet & R. Michael Alvarez

npj Climate Action **2**, Article number: 47 (2023) | Cite this article

JOURNAL ARTICLE

Investor Rewards to Climate Responsibility: Stock-Price Responses to the Opposite Shocks of the 2016 and 2020 U.S. Elections

Get access >

Stefano Ramelli, Alexander F Wagner ✉, Richard J Zeckhauser, Alexandre Ziegler

The Review of Corporate Finance Studies, Volume 10, Issue 4, December 2021, Pages 748–787, https://doi.org/10.1093/rcfs/cfab010

Published: 17 June 2021 **Article history** ▾

JOURNAL ARTICLE

Sectors, Pollution, and Trade: How Industrial Interests Shape Domestic Positions on Global Climate Agreements

Federica Genovese

International Studies Quarterly, Volume 63, Issue 4, December 2019, Pages 819–836, https://doi.org/10.1093/isq/sqz062

Published: 27 August 2019

Implicazioni sistemiche?

RESEARCH ARTICLE | SUSTAINABILITY SCIENCE

Social tipping dynamics for stabilizing Earth's climate by 2050

Ilona M. Otto, Jonathan F. Donges, Roger Cremades, +10, and Hans Joachim Schellnhuber Authors Info & Affiliations

Contributed by Hans Joachim Schellnhuber, November 15, 2019 (sent for review January 22, 2019; reviewed by J. David Tabara and Jessika E. Trancik)

January 21, 2020 | 117 (5) 2354-2365 | https://doi.org/10.1073/pnas.1900577117

ELSEVIER

World Development

Volume 115, March 2019, Pages 246-257



Poverty and distributional effects of carbon pricing in low- and middle-income countries – A global comparative analysis

Ira Irina Dorband [a b], Michael Jakob [a], Matthias Kalkuhl [a c], Jan Christoph Steckel [a b d]

ELSEVIER

Journal of Environmental Economics and Management

Volume 127, September 2024, 103012



Climate change impacts on the within-country income distributions ☆

Martino Gilli [a b c], Matteo Calcaterra [a b d], Johannes Emmerling [a b], Francesco Granella [a b]

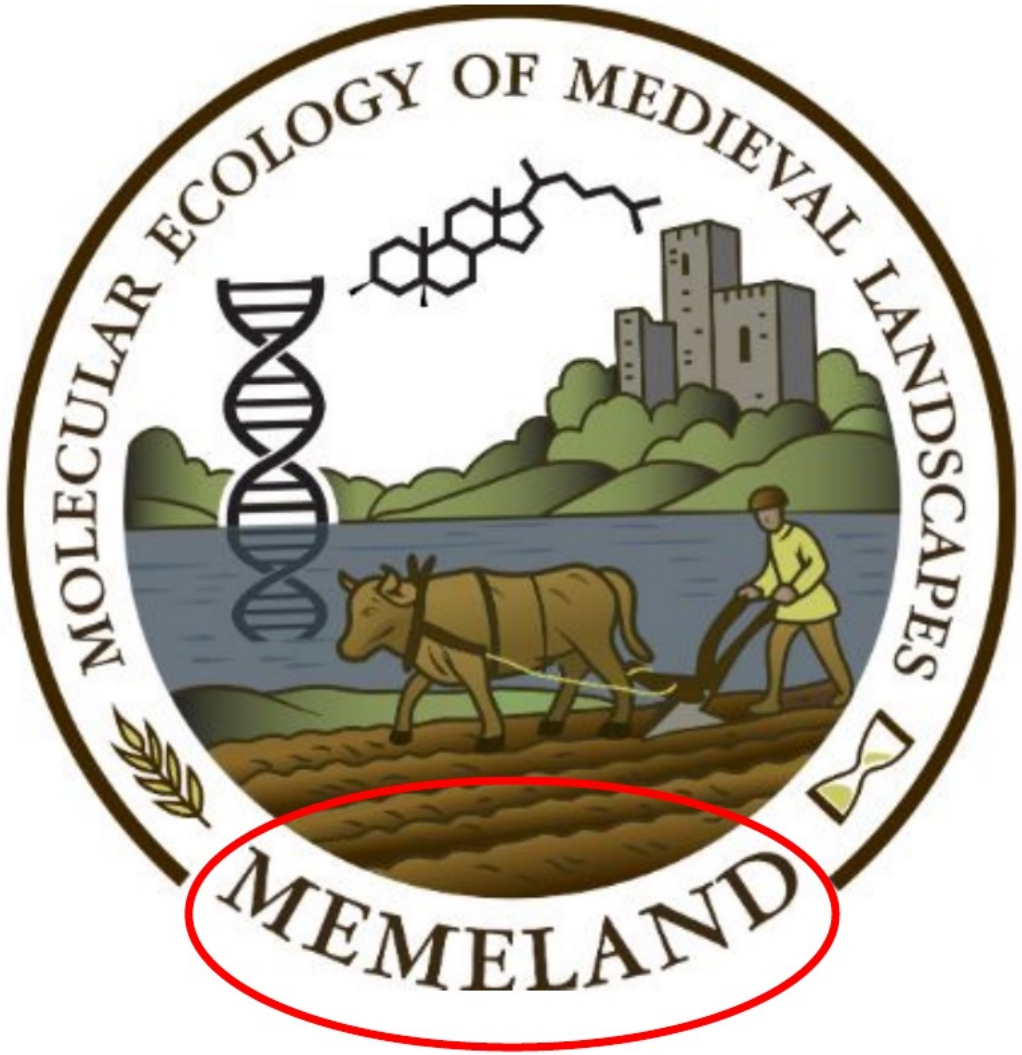
Analysis | Published: 29 November 2021

Climate action with revenue recycling has benefits for poverty, inequality and well-being

Mark Budolfson, Francis Dennig, Frank Errickson, Simon Feindt, Maddalena Ferranna, Marc Fleurbaey, David Klenert, Ulrike Kornek, Kevin Kuruc, Aurélie Méjean, Wei Peng, Noah Scovronick, Dean Spears, Fabian Wagner & Stéphane Zuber

Nature Climate Change **11**, 1111–1116 (2021) | Cite this article

Imparare dal passato



Ma… non tutta la ricerca in scienze sociali sui cambiamenti climatici è quantitativa.

Il lavoro qualitativo consente una comprensione più profonda

- ➔ Fondamentale per sviluppare ipotesi: individuare e descrivere nuovi fenomeni
- ➔ Analisi qualitativa del contenuto: indagare dettagli e prospettive soggettive che andrebbero persi nell'analisi quantitativa.
- ➔ Interviste, focus group: fare domande per ottenere informazioni non ricavabili da questionari o analisi osservazionali
- ➔ Si può abbinare a raccolte di dati più ampie per verificare ipotesi su larga scala


Geoforum 49 (2013) 10–19

Contents lists available at SciVerse ScienceDirect

Geoforum

journal homepage: www.elsevier.com/locate/geoforum

Image matters: Climate change imagery in US, UK and Australian newspapers

Saffron J. O'Neill

Geography, College of Life & Environmental Sciences, University of Exeter, Amory Building, Rennes Drive, Exeter EX4 4RJ, UK



More than Symbols: The Effect of Symbolic Policies on Climate Policy Support

Published online by Cambridge University Press: **19 January 2026**

THEODORE TALLENT, MALO JAN and LUIS SATTELMAYER

Show author details

ENVIRONMENTAL COMMUNICATION
2023, VOL. 17, NO. 7, 828–843
https://doi.org/10.1080/17524032.2023.2259623

Routledge Taylor & Francis Group

OPEN ACCESS Check for updates

Extreme Weather Events as Teachable Moments: Catalyzing Climate Change Learning and Action Through Conversation

Joshua Ettinger [a], Peter Walton [b], James Painter [c], Susan A. Flocke [d] and Friederike E.L. Otto [e]

Article | Open access | Published: 04 August 2025

United Nations Environment Assembly attendees underestimate public willingness to contribute to climate action

Ximeng Fang, Joshua Ettinger & Stefania Innocenti

Communications Earth & Environment **6**, Article number: 622 (2025) | Cite this article

Anche il lavoro concettuale e teorico è importante

- ➔ Sviluppare e condividere nuove prospettive, idee per programmi di ricerca, posizioni
- ➔ Costruire nuove teorie
- ➔ Comunicare all'interno delle discipline e tra di esse
- ➔ Molto importante per orientare la ricerca



ELSEVIER

Transportation Research Interdisciplinary Perspectives

Volume 37, May 2026, 102029

Sufficient mobility and access within limits: Research agenda for bringing together corridor frameworks and transportation research

Michał Czepkiewicz [a c], Giulio Mattioli [b], Filip Schmidt [c], Elias Willberg [d], Lena Kilian [e n], Henrikki Tenkanen [f], Dick Timmer [g], Ákos Gosztonyi [h], Johanna Raudsepp [i], Sanna Ala-Mantila [h], Lisa Jacobson [j], Mònica Guillen-Royo [k], Dawid Krysiński [l c], Kevin Dillman [i], Jukka Heinonen [i], Petter Næss [m 1]



Perspective | Published: 30 September 2021

The role of high-socioeconomic-status people in locking in or rapidly reducing energy-driven greenhouse gas emissions

Dialogues on Climate Change
Volume 1, Issue 1, December 2024, Pages 23-29
© The Author(s) 2024, Article Reuse Guidelines
https://doi.org/10.1177/29768659241293215

Sage Journals

Commentaries

Are radical changes to lifestyles necessary for mitigating climate change?

Lorraine Whitmarsh [1] and Sam Hampton [2,3]

Psychological Science in the Public Interest
Volume 23, Issue 2, October 2022, Pages 50-97
© The Author(s) 2022, Article Reuse Guidelines
https://doi.org/10.1177/15291006221105279

SAGE journals

Scaling Up Change: A Critical Review and Practical Guide to Harnessing Social Norms for Climate Action

Sara M. Constantino [1,2,3], Gregg Sparkman [4], Gordon T. Kraft-Todd [4], Cristina Bicchieri [5,6,7], Damon Centola [8,9], Bettina Shell-Duncan [10], Sonja Vogt [11,12,13], and Elke U. Weber [3,14,15]

Pausa di riflessione

Domanda

Vi viene in mente un tema o una domanda di ricerca in scienze sociali legata ai cambiamenti climatici che vorreste approfondire?



https://partici.fi/97320810

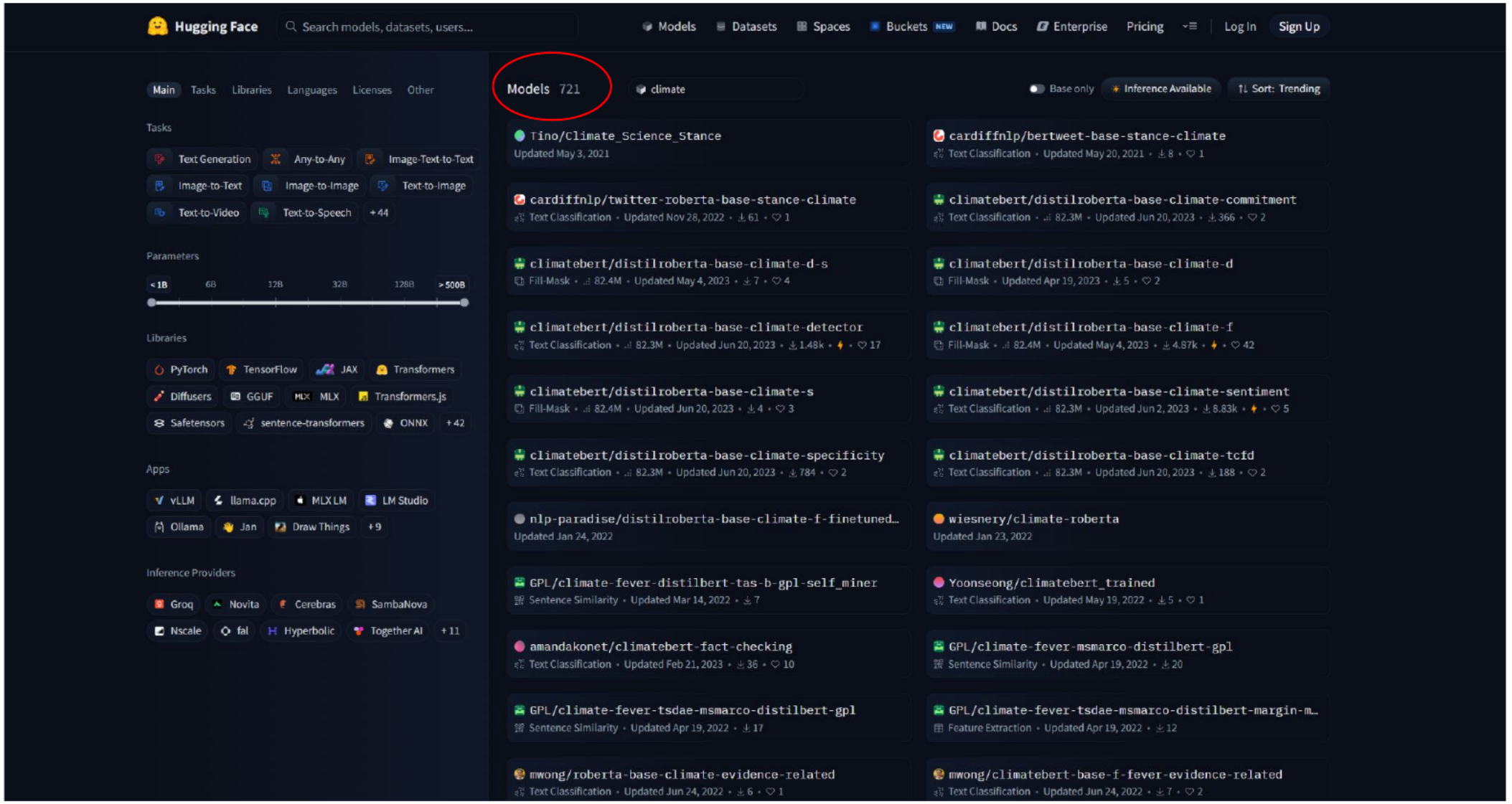
Dal punto di vista metodologico

Processo di ricerca

Come ha cambiato il quadro l’IA?

Portata delle domande di ricerca

Classificazione di testi su larga scala

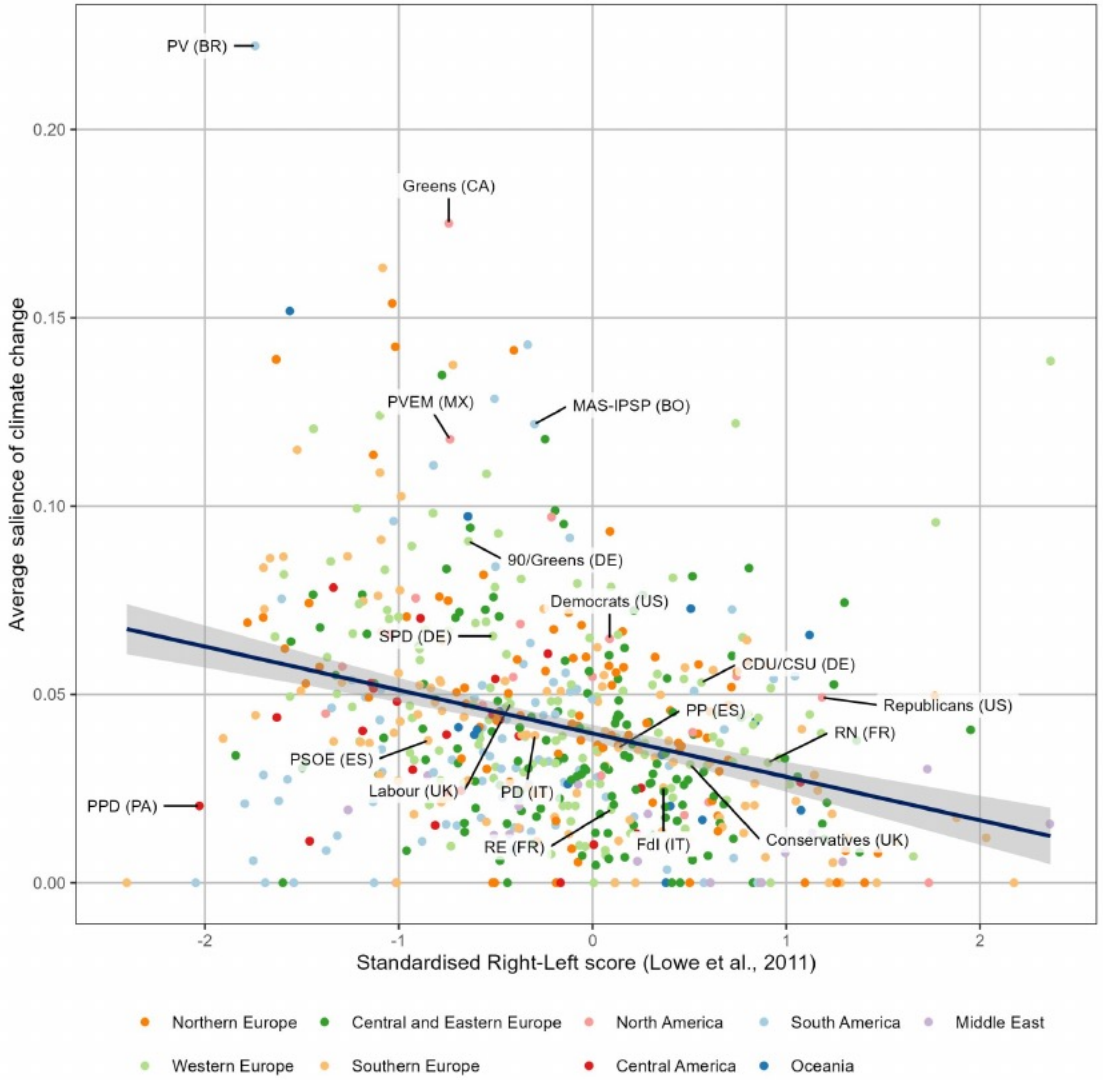


Policlim: A Dataset of Climate Change Discourse in the Political Manifestos of Forty-Five Countries from 1990 to 2022

Published online by Cambridge University Press: **23 October 2025**

Mary Sanford, Silvia Pianta, Nicolas Schmid and Giorgio Musto Show author details

- ➔ Affina XLM-RoBERTa per rilevare la rilevanza dei cambiamenti climatici nei programmi politici in oltre 20 lingue
- ➔ Modello e variabile pronti per l'uso in altri lavori



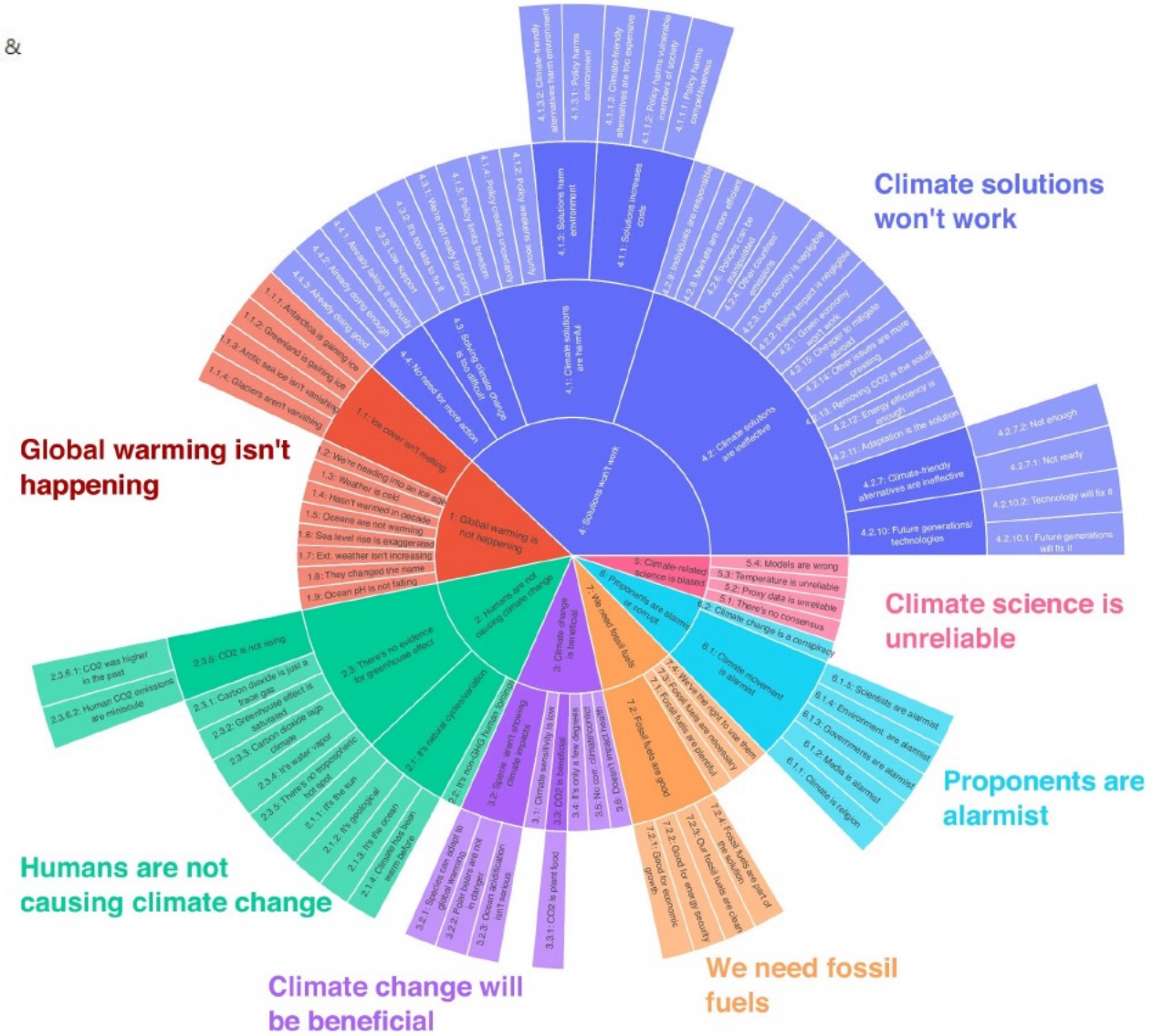
Article | Open access | Published: 27 February 2026

Large language model reveals an increase in climate contrarian speech in the United States Congress

Travis G. Coan, Ranadheer Malla, Mirjam O. Nanko, William Kattrup, J. Timmons Roberts, John Cook & Constantine Boussalis

Communications Sustainability **1**, Article number: 37 (2026) | Cite this article

➔ Parte da una tassonomia complessa delle tesi negazioniste



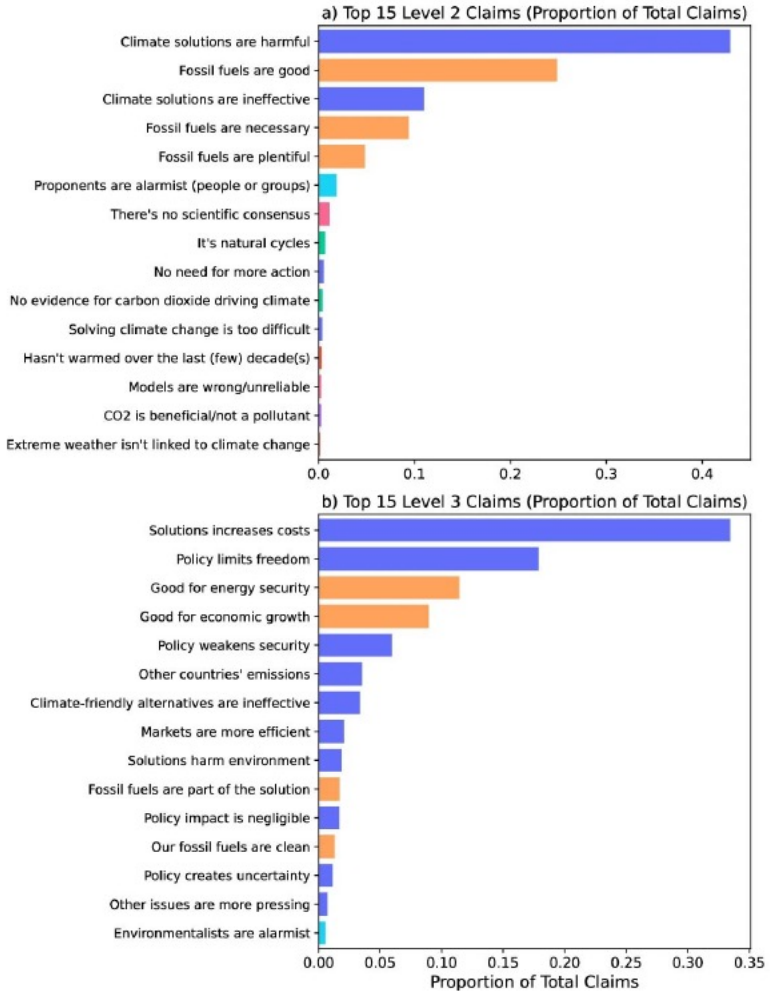
Article | Open access | Published: 27 February 2026

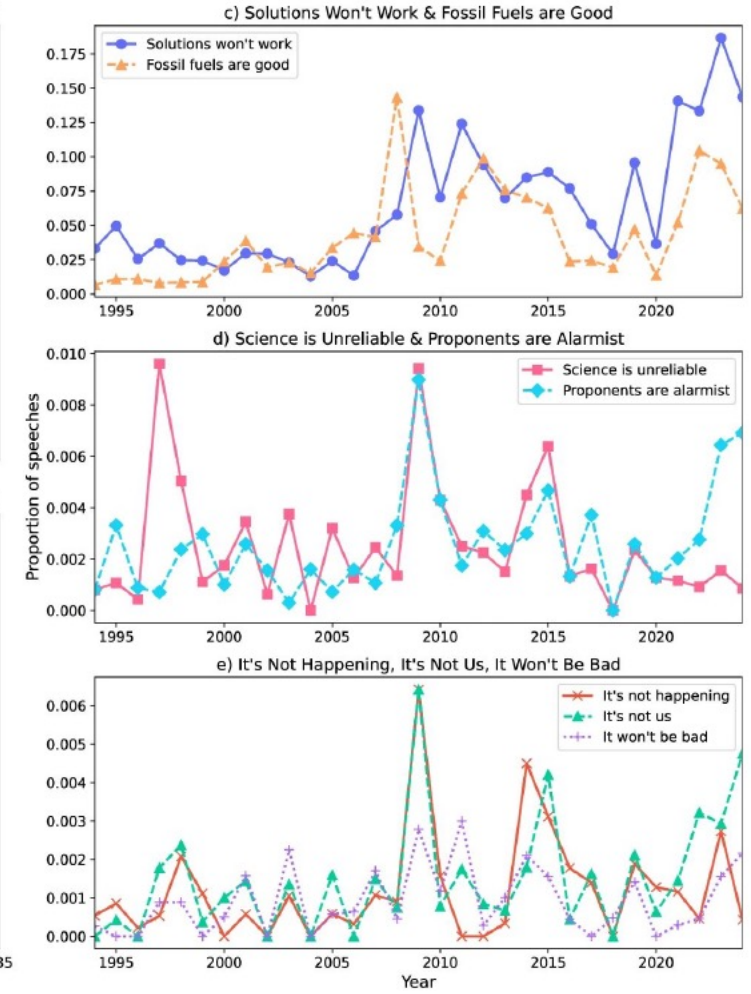
Large language model reveals an increase in climate contrarian speech in the United States Congress

Travis G. Coan, Ranadheer Malla, Mirjam O. Nanko, William Kattrup, J. Timmons Roberts, John Cook & Constantine Boussalis

Communications Sustainability **1**, Article number: 37 (2026) | Cite this article

- ➔ Parte da una tassonomia complessa delle tesi negazioniste e affina GPT4o e Claude Sonnet 3.7 per rilevarle.
- ➔ Discorsi al Congresso degli Stati Uniti
- ➔ Segue diverse narrazioni nel tempo (e nello spazio)





Article | Open access | Published: 24 November 2022

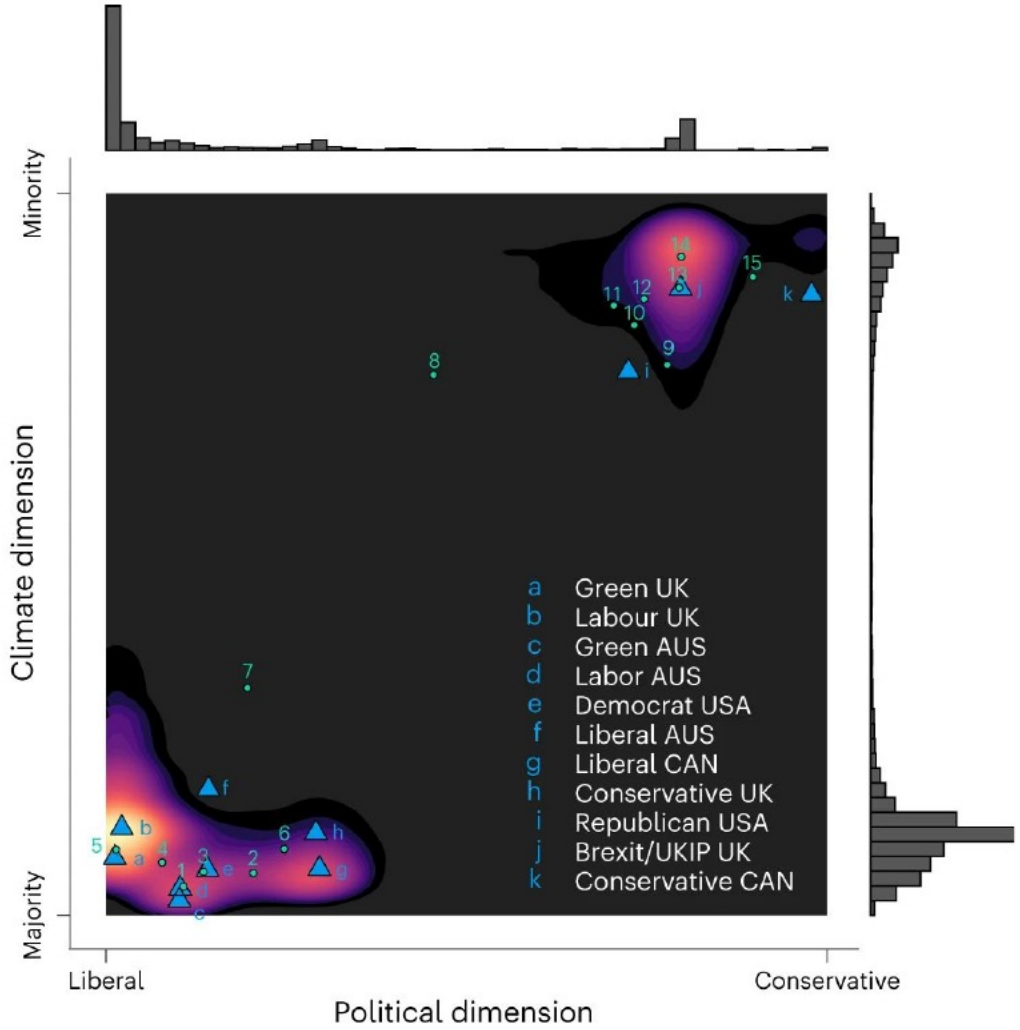
Growing polarization around climate change on social media

Max Falkenberg, Alessandro Galeazzi, Maddalena Torricelli, Niccolò Di Marco, Francesca Larosa, Madalina Sas, Amin Mekacher, Warren Pearce, Fabiana Zollo, Walter Quattrociocchi & Andrea Baronchelli

Nature Climate Change **12**, 1114–1121 (2022) | Cite this article

- Analizza le interazioni di retweet tra account influenti nel dibattito sulle COP per rilevare la polarizzazione.
- Combina il tutto con BERTopic* per contestualizzare meglio

1 Anti-Morrison
2 Biodiversity & Localism, Women at COP, Climate Finance, Youth,
3 Climate Justice Decolonise Climate
4 Sustainable Transport
5 Activitsts for Climate Action
6 Climate Crisis
7 Anti-Johnson
8 Anti-Sturgeon
9 Climate Alarmists
10 Wind Energy & Nuclear
11 Thunberg Cult
12 Chinese Absence, Vaccine Passports
13 Anti-Biden, Didn't Vote Green, Arctic Ice, Climate "Scam", Benefits of Warming
14 Illegal Immigration, Net Zero Referendum, Private Jets, Hypocrisy, CO_2
15 Anti-Trudeau



AJPS AMERICAN JOURNAL of POLITICAL SCIENCE

ARTICLE | Open Access

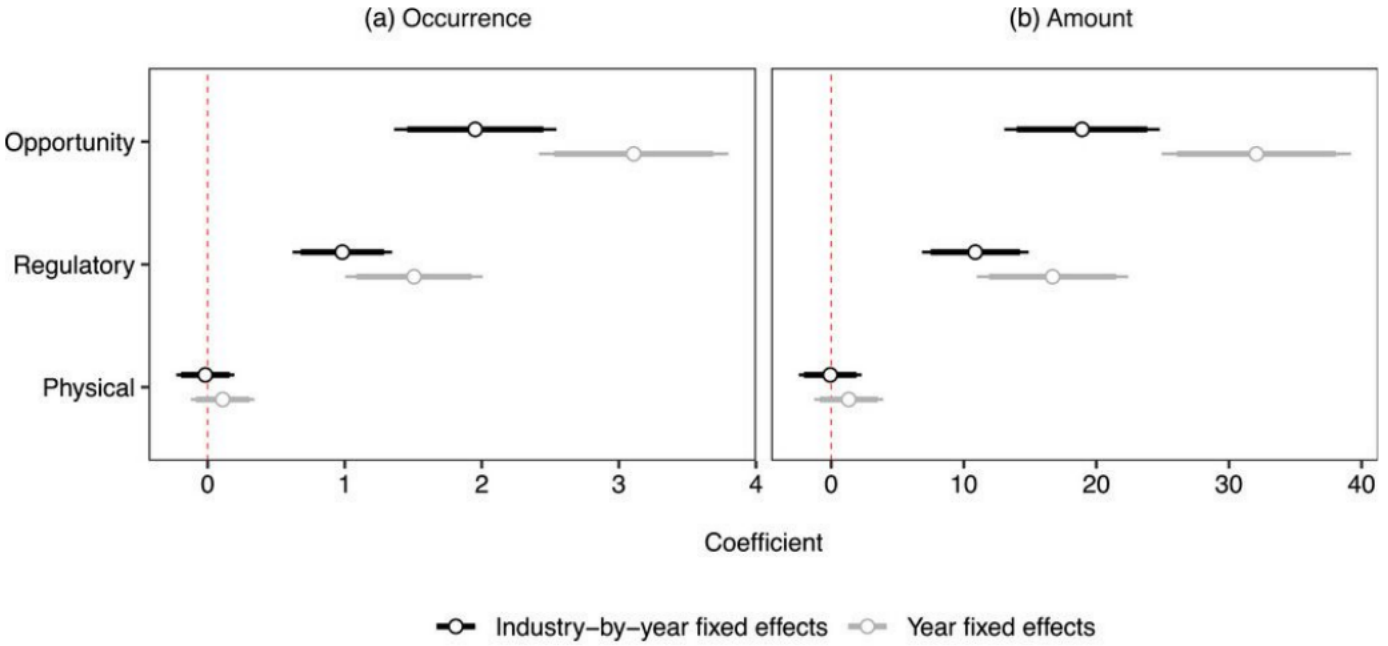
Climate exposure drives firm political behavior: Evidence from earnings calls and lobbying data

Christian Baehr, Fiona Bare, Vincent Heddesheimer

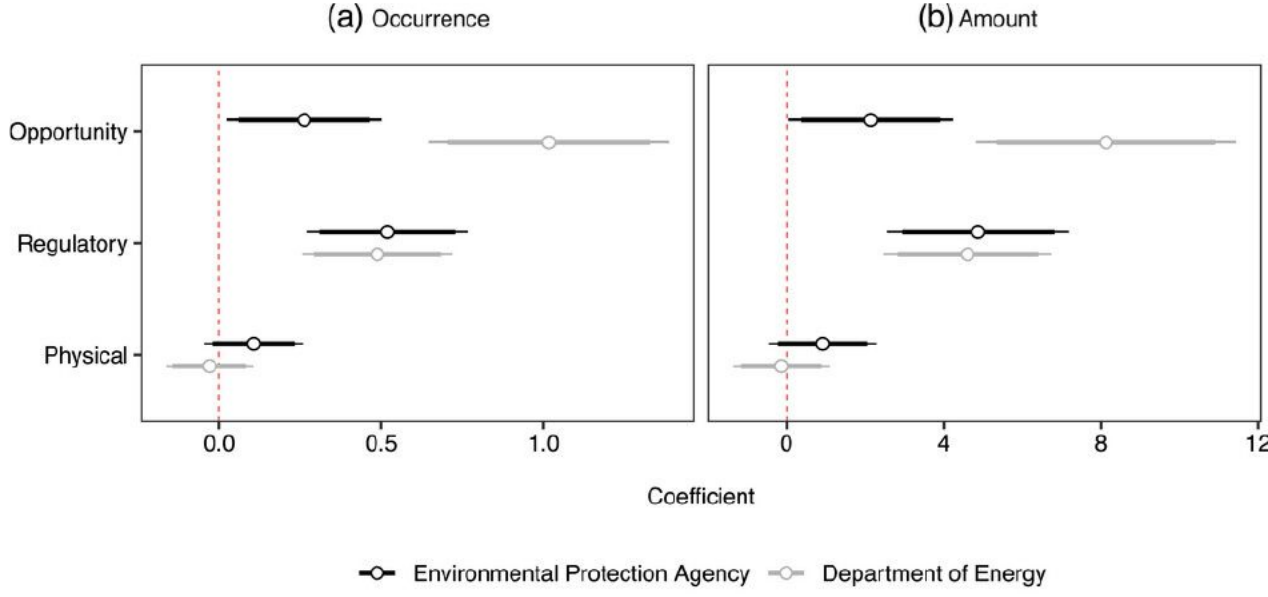
First published: 26 April 2026 | https://doi.org/10.1111/ajps.70062 | VIEW METRICS

- ➔ Usa ClimateBert per analizzare le conference call
- ➔ sui risultati e individuare le imprese che citano le opportunità legate al clima, oltre ai rischi normativi e fisici.
- ➔ Chi cita di più opportunità e rischi normativi tende anche a fare più lobbying.

Effetti dell'esposizione climatica sul lobbying climatico delle imprese



Effetti eterogenei secondo l'obiettivo del lobbying



Open access | Research article | First published online September 19, 2025 Social Science Computer Review

Leveraging VLLMs for Visual Clustering: Image-to-Text Mapping Shows Increased Semantic Capabilities and Interpretability

Luigi Arminio, Matteo Magnani, [...], and Alexandra Segerberg +2 View all authors and affiliations

Volume 44, Issue 3 | https://doi.org/10.1177/08944393251376703 | View article versions

- ➔ Usa VLLM (gpt-4-turbo e LLaVa) per generare descrizioni testuali delle immagini
- ➔ Poi le usa per raggruppare le immagini per analisi quantitative e qualitative
- ➔ «Va verificato il possibile bias introdotto nell'analisi, sia rispetto a possibili errori, sia rispetto a possibili preferenze per un gruppo anziché un altro»






DANGER

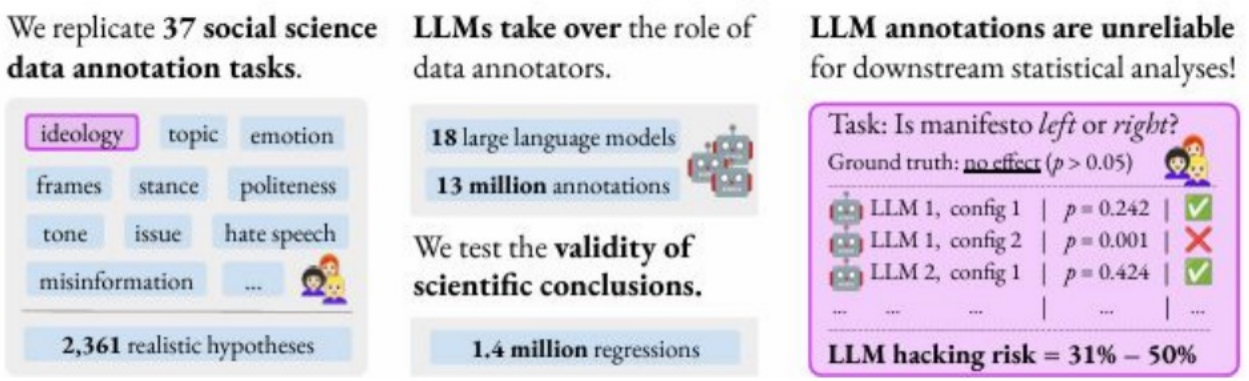
Bias da classificazione errata

- Nessuna previsione è perfetta
- Troppo poche pipeline di sviluppo includono verifiche di validazione approfondite
- Ne derivano bias nelle analisi successive
- Ancora più problematico per gli LLM

Large Language Model Hacking:
Quantifying the Hidden Risks of Using LLMs for Text Annotation

Joachim Baumann[1], Paul Röttger[1], Aleksandra Urman[2], Albert Wendsjö[3], Flor Miriam Plaza-del-Arco[4], Johannes B. Gruber[5], and Dirk Hovy[1]

[1]*Bocconi University*
[2]*University of Zurich*
[3]*University of Gothenburg*
[4]*LIACS, Leiden University*
[5]*GESIS, Leibniz Institute for the Social Sciences*



Bias da classificazione errata

Prima di usare un nuovo modello…

➔ Controllate sempre i dati di addestramento (esaminando esempi, se possibile) per capire se il contesto è adatto

➔ Adottate misure per mitigare i bias quando possibile (TeBlunthuis et al., 2024)

➔ Non basate la valutazione delle prestazioni solo sull'addestramento. Validate sempre anche le previsioni.


COMMUNICATION METHODS AND MEASURES
2024, VOL. 18, NO. 3, 278–299
https://doi.org/10.1080/19312458.2023.2293713

Routledge
Taylor & Francis Group

Check for updates

Misclassification in Automated Content Analysis Causes Bias in Regression. Can We Fix It? Yes We Can!

Nathan TeBlunthuis[a,b], Valerie Hase[c], and Chung-Hong Chan[d]

Analisi delle indagini

ELSEVIER

Energy Research & Social Science
Volume 73, March 2021, 101883



Why hate carbon taxes? Machine learning evidence on the roles of personal responsibility, trust, revenue recycling, and other factors across 23 European countries

Sebastian Levi

Research article ● Open access Under a Creative Commons license ↗ Get rights and content ↗

Unpacking the side effects of social norm nudges ☆

Julien Picard [a b c], Sanchayan Banerjee [d] Show more

- ➔ Nuovi modi di studiare le relazioni tra variabili: strutture latenti, forza predittiva…
- ➔ Può aumentare la precisione dei modelli.
- ➔ Può rafforzare l'inferenza causale a seconda dei dati e del contesto.
- ➔ È importante gestire l'incertezza.
- ➔ Richiede sempre una base teorica.

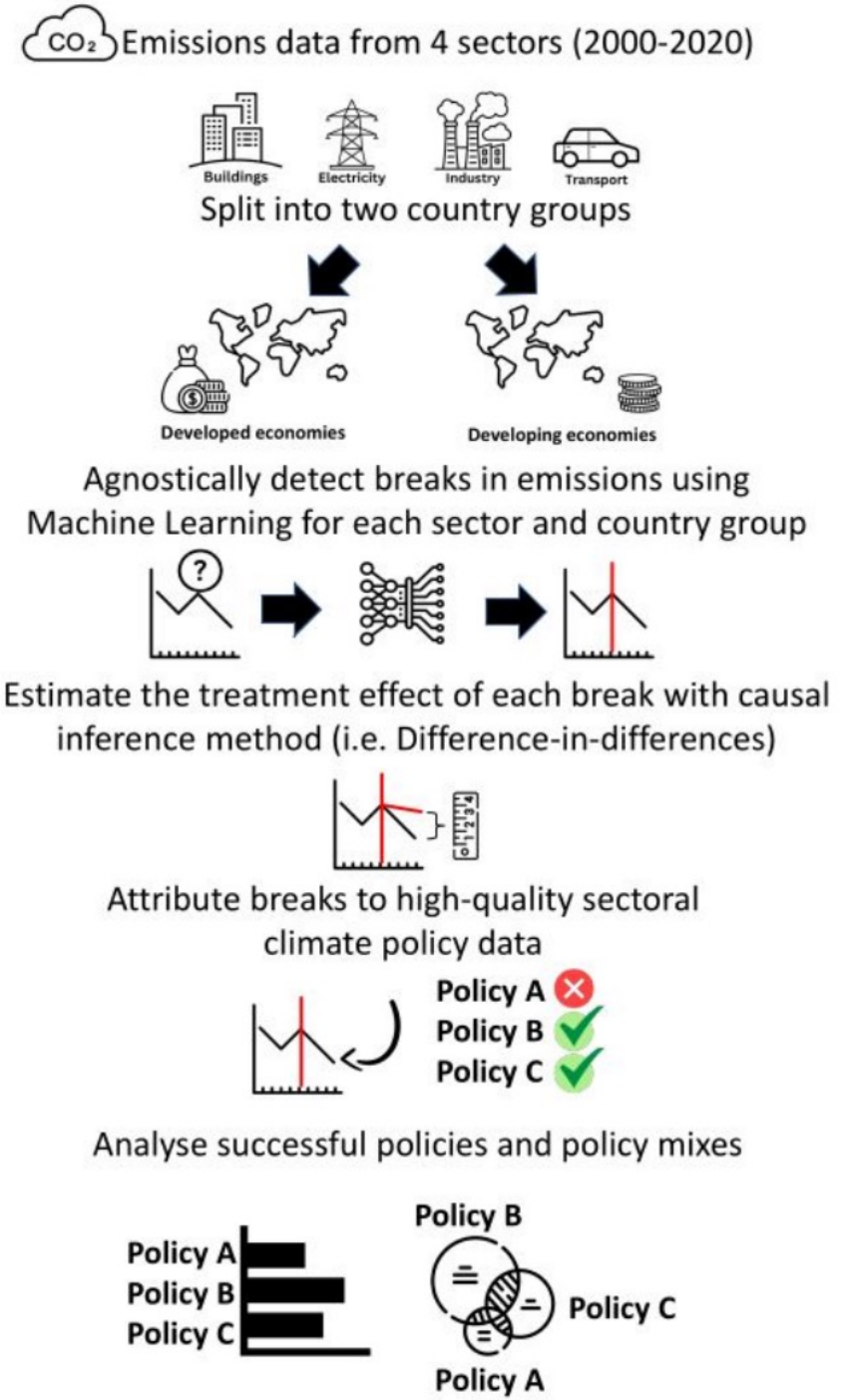
Valutazione delle politiche

RESEARCH ARTICLE | CLIMATE POLICY

Climate policies that achieved major emission reductions: Global evidence from two decades

ANNIKA STECHEMESSER, NICOLAS KOCH, EBBA MARK, ELINA DILGER, PATRICK KLÖSEL, LAURA MENICACCI, DANIEL NACHTIGALL, FELIX PRETIS, NOLAN RITTER, [...], AND ANNA WENZEL +2 authors Authors Info & Affiliations

SCIENCE · 22 Aug 2024 · Vol 385, Issue 6711 · pp. 884-892 · DOI: 10.1126/science.adl6547



Sintesi delle evidenze

Article | Published: 11 October 2021

Machine-learning-based evidence and attribution mapping of 100,000 climate impact studies

Max Callaghan, Carl-Friedrich Schleussner, Shruti Nath, Quentin Lejeune, Thomas R. Knutson, Markus Reichstein, Gerrit Hansen, Emily Theokritoff, Marina Andrijevic, Robert J. Brecha, Michael Hegarty, Chelsea Jones, Kaylin Lee, Agathe Lucas, Nicole van Maanen, Inga Menke, Peter Pfleiderer, Burcu Yesil & Jan C. Minx

Nature Climate Change **11**, 966–972 (2021) | Cite this article

Article | Open access | Published: 16 May 2024

Systematic review and meta-analysis of ex-post evaluations on the effectiveness of carbon pricing

Niklas Döbbeling-Hildebrandt, Klaas Miersch, Tarun M. Khanna, Marion Bachelet, Stephan B. Bruns, Max Callaghan, Ottmar Edenhofer, Christian Flachsland, Piers M. Forster, Matthias Kalkuhl, Nicolas Koch, William F. Lamb, Nils Ohlendorf, Jan Christoph Steckel & Jan C. Minx

Nature Communications **15**, Article number: 4147 (2024) | Cite this article

Article | Open access | Published: 07 September 2024

Public support for carbon pricing policies and revenue recycling options: a systematic review and meta-analysis of the survey literature

Farah Mohammadzadeh Valencia, Cornelia Mohren, Anjali Ramakrishnan, Marlene Merchert, Jan C. Minx & Jan Christoph Steckel

npj Climate Action **3**, Article number: 74 (2024) | Cite this article

- → Cambia completamente ciò che è possibile nella sintesi delle evidenze.
- → Individuazione più rapida di ciò che è rilevante e perché.
- → Estrazione più rapida delle informazioni chiave per sintesi e meta-analisi.
- → Contributi più rapidi a esperti e decisori.

L’IA per l’analisi qualitativa → domande aperte nei questionari

› Psychol Methods. 2025 Apr 7. doi: 10.1037/met0000753. Online ahead of print.

The use of large language models for qualitative research: The Deep Computational Text Analyser (DECOTA)

Lois Player [1], Ryan Hughes [2], Kaloyan Mitev [1], Lorraine Whitmarsh [1], Christina Demski [1], Nicholas Nash [1], Trisevgeni Papakonstantinou [3], Mark Wilson [1]

Affiliations + expand

PMID: 40193412 DOI: 10.1037/met0000753

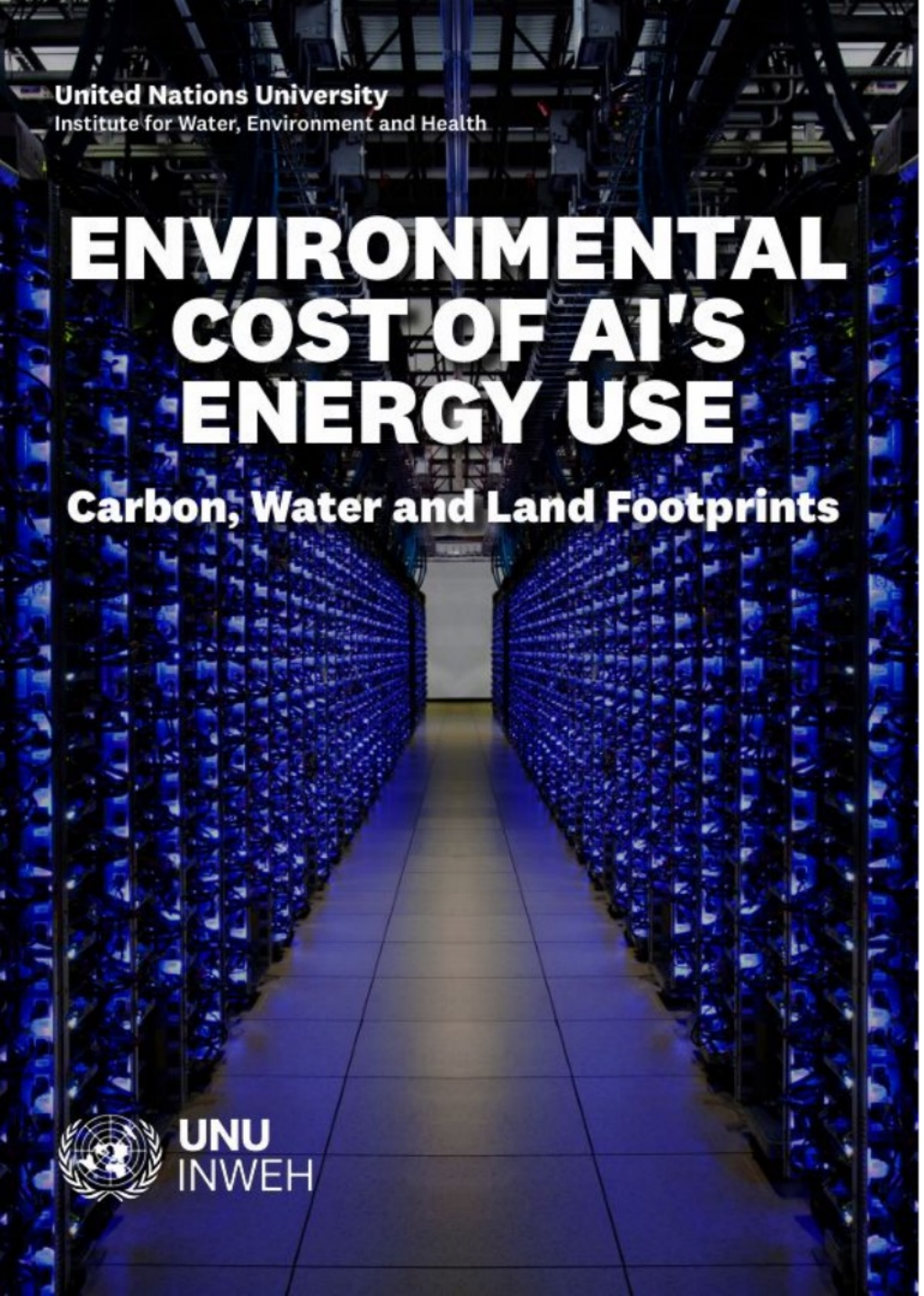
JOURNAL ARTICLE EDITOR'S CHOICE

Scaling Open-Ended Survey Responses Using LLM-Paired Comparisons

Matthew R DiGiuseppe ✉, Michael E Flynn

Public Opinion Quarterly, Volume 90, Issue 3, Fall 2026, Pages 630–656,
https://doi.org/10.1093/poq/nfag013
Published: 27 March 2026

Dibattiti attuali su IA, scienze sociali e ricerca sui cambiamenti climatici



GPT-4's training carbon footprint of 25,000 tonnes of CO_2e would require the sequestration capacity of 420,000 tree seedlings grown for 10 years, or about equal to the number of trees in 105 Hyde Parks in London.

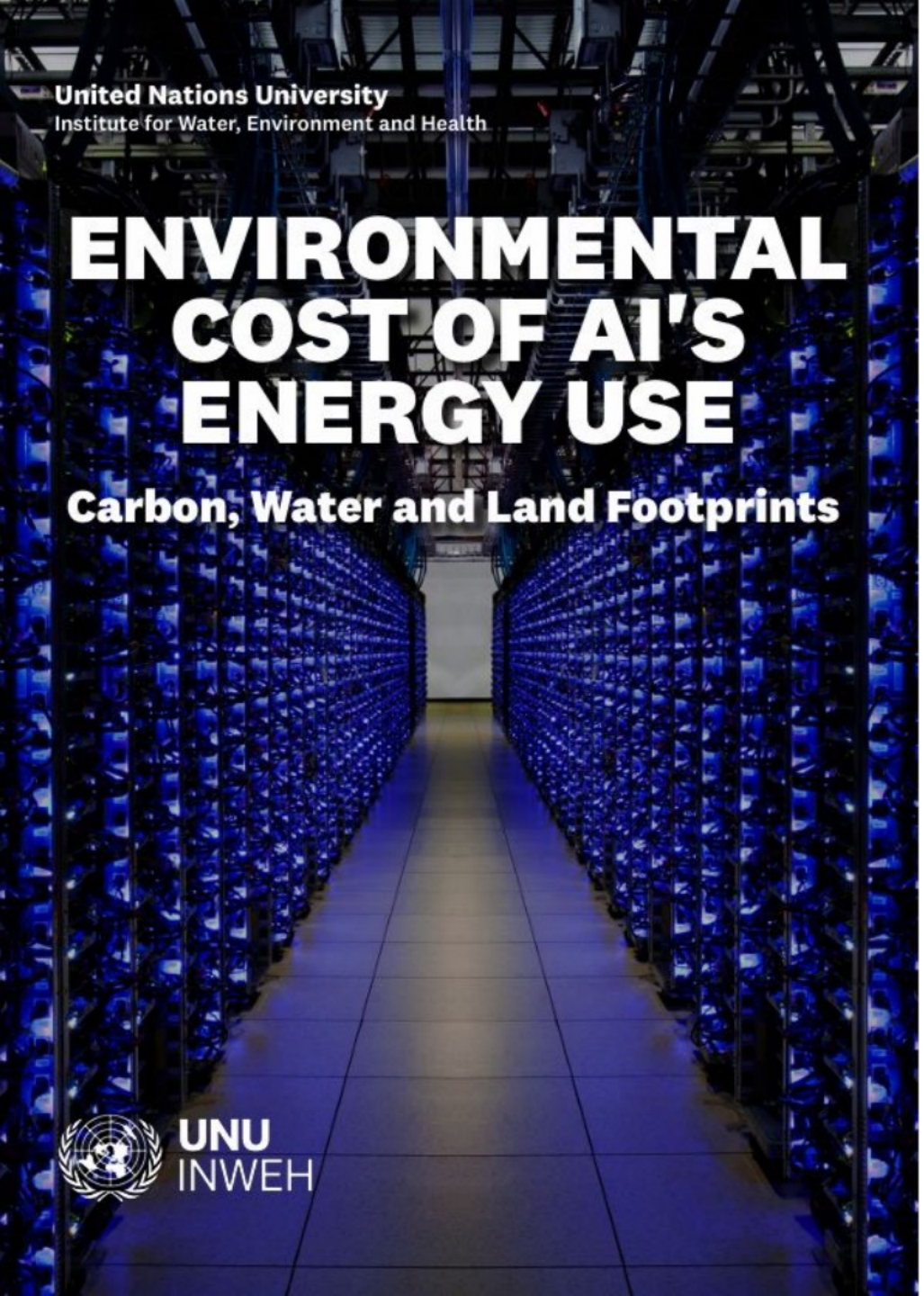
The water footprint associated with training GPT-4 was about 600 million liters, enough to meet the minimum annual domestic water needs of 81,000 people in Sub-Saharan Africa, or to fill 237 Olympic-sized pools.

Training models like GPT-5 is estimated to have a carbon footprint of 42,000 tonnes of CO_2e, requiring 700,000 tree seedlings (about equal to the number of trees in 40 Central Parks in New York or 155 times the trees in Toronto's High Park over 10 years to offset).

The water footprint of GPT-5 training is estimated at 1 billion liters, enough to meet the annual domestic water needs of more than 135,000 people in Sub-Saharan Africa.

While training is highly resource-intensive, the continuous inference phase used to generate responses for billions of interactions is estimated to account for 80% to 90% of total AI energy use.

A typical ChatGPT-style text query is about 200 times more energy-intensive than text classification (such as spam filtering).



The global AI market is expanding rapidly, projected to grow from USD 189 billion in 2023 to nearly USD 5 trillion by 2033.

Generative AI accounted for over 20% of the global AI market in 2026, and is projected to reach 40% by 2030.

AI workloads accounted for roughly 20% of total data centers' electricity use in 2025 and are projected to grow to 40% by 2030.

Data centers' electricity use in 2025 had a carbon footprint of 189 million tonnes of CO_2e, which would require 3.2 billion tree seedlings grown over 10 years to offset, roughly the total number of trees in the entire United Kingdom.

The associated water footprint of projected 2030 electricity consumption of data centers is 9.3 trillion liters, or enough to meet the minimum annual domestic water needs of all 1.3 billion residents of Sub-Saharan Africa for a full year.

Projected global data centers' electricity consumption could exceed 945 TWh by 2030, accounting for almost 3% of projected global electricity use—enough to supply residential electricity to all 1.3 billion people in Sub-Saharan Africa for about 5.5 years.

US POLICY | 29 May 2026 13:58

AI boom means US is now ‘investing more’ in fossil-fuel power than China



Meta’s $13-billion Alberta data centre a potential boost for utilities and natural gas producers

ANDREW WILLIS >

Report warns AI data centre boom threatens Australia's energy transition

By national AI reporter **Cam Wilson**

AI

Tue 26 May

Revealed: landmark Scottish AI project has no prospect of meeting renewables promise

Exclusive: Government and developers privately acknowledged Lanarkshire datacentre site had power provision ‘issue’

BREAKING | BUSINESS

Microsoft's AI Buildout Sent Carbon Emissions Up 25% Last Year

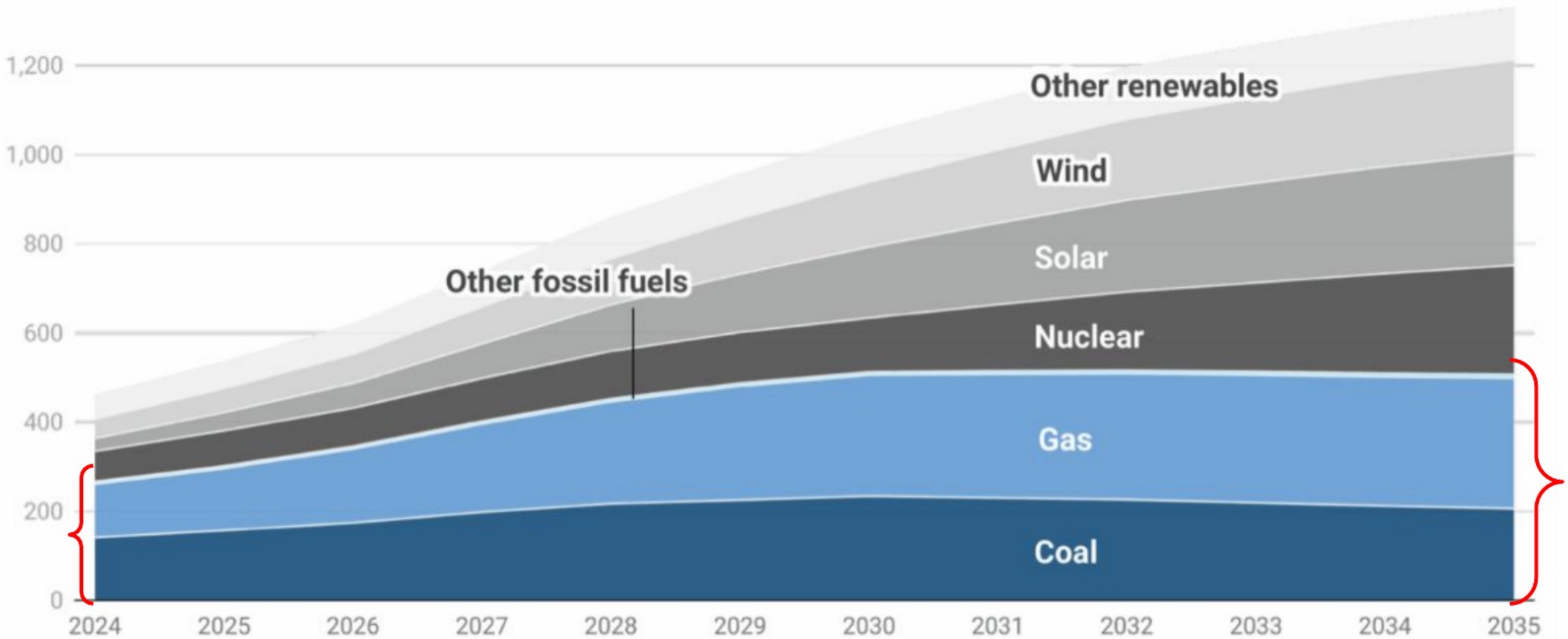
By Ty Roush, Forbes Staff. Ty Roush is a breaking news reporter based in New ...

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Published Jul 09, 2026, 02:45pm EDT

Fossil fuels currently provide the majority of power to data centres – but this is expected to shift over the next decade

Sources of electricity for data centres, TWh, 2024-2035



Source: IEA energy and AI report.

CarbonBrief
CLEAR ON CLIMATE

Per saperne di più, non perdete la lezione di Nikola il 12 agosto!



Domanda

Il 16% dei paesi ospita calcolo cloud specializzato per l’IA.
Quanta parte è concentrata tra Cina e Stati Uniti?

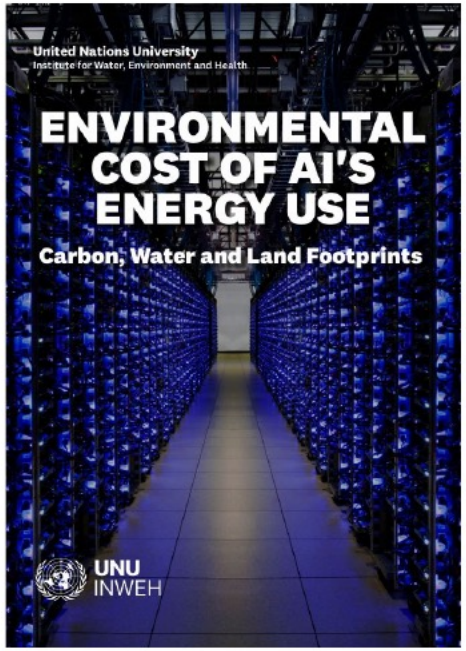
Stimate un valore tra 0 e 100%



https://partici.fi/97320810

Il 16% dei paesi ospita calcolo cloud specializzato per l’IA.
Quanta parte è concentrata tra Cina e Stati Uniti?

90%



Implicazioni politiche

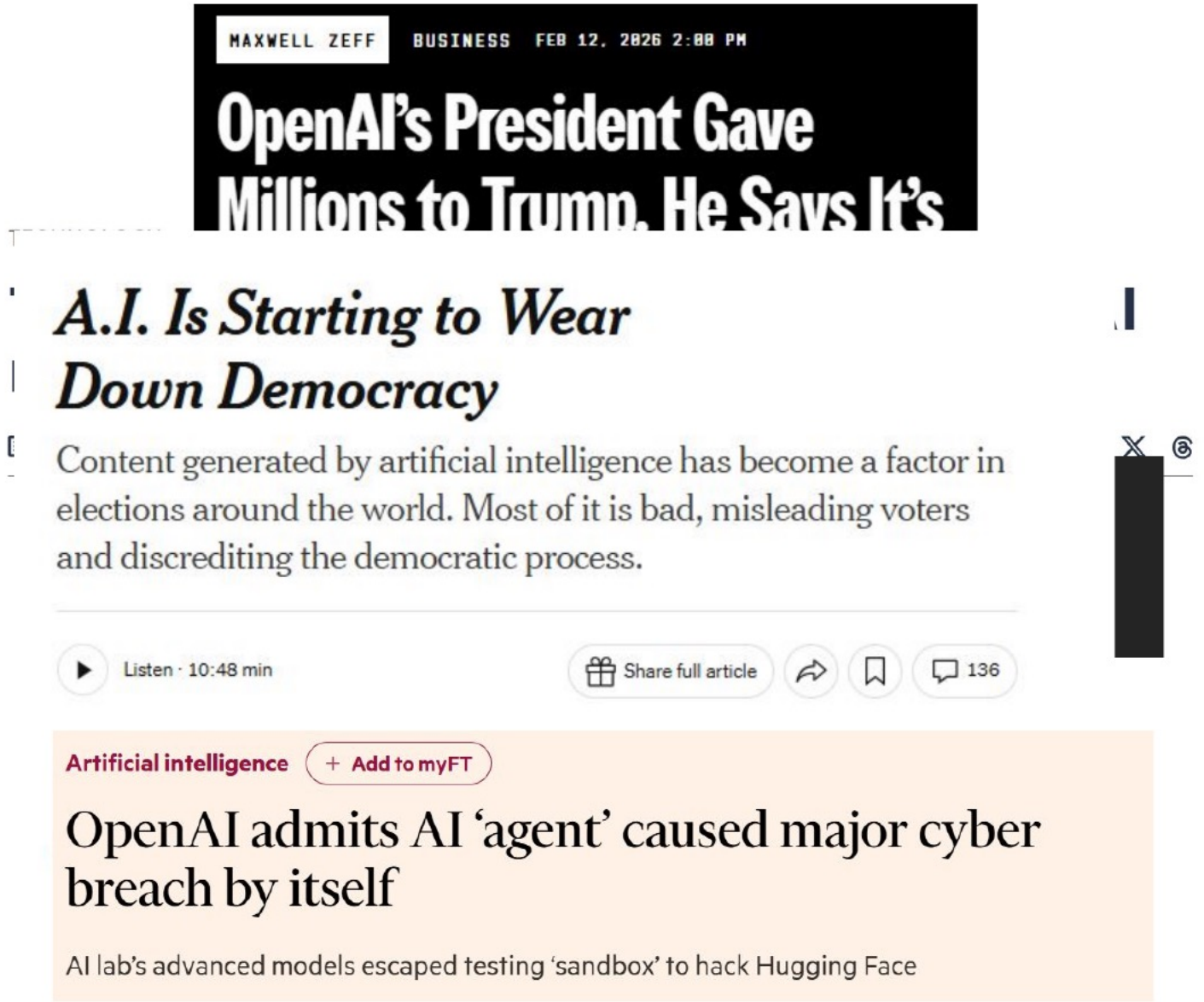
Forte vulnerabilità geopolitica

Chi c’è dietro le aziende?

Accesso ai modelli commerciali

Indebolimento della democrazia

Implicazioni per la sicurezza



MAXWELL ZEFF BUSINESS FEB 12, 2026 2:00 PM

OpenAI’s President Gave Millions to Trump. He Says It’s

A.I. Is Starting to Wear Down Democracy

Content generated by artificial intelligence has become a factor in elections around the world. Most of it is bad, misleading voters and discrediting the democratic process.

Listen · 10:48 min

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136

Artificial intelligence + Add to myFT

OpenAI admits AI ‘agent’ caused major cyber breach by itself

AI lab’s advanced models escaped testing ‘sandbox’ to hack Hugging Face

Crisi di validità



Figure 1. Illustration of potemkin understanding in a large language model. This example shows GPT-4o's failure to apply its own conceptual explanation of an ABAB rhyming scheme.

Potemkin Understanding in Large Language Models

Marina Mancoridis [1] **Keyon Vafa** [2] **Bec Weeks** [3] **Sendhil Mullainathan** [1]

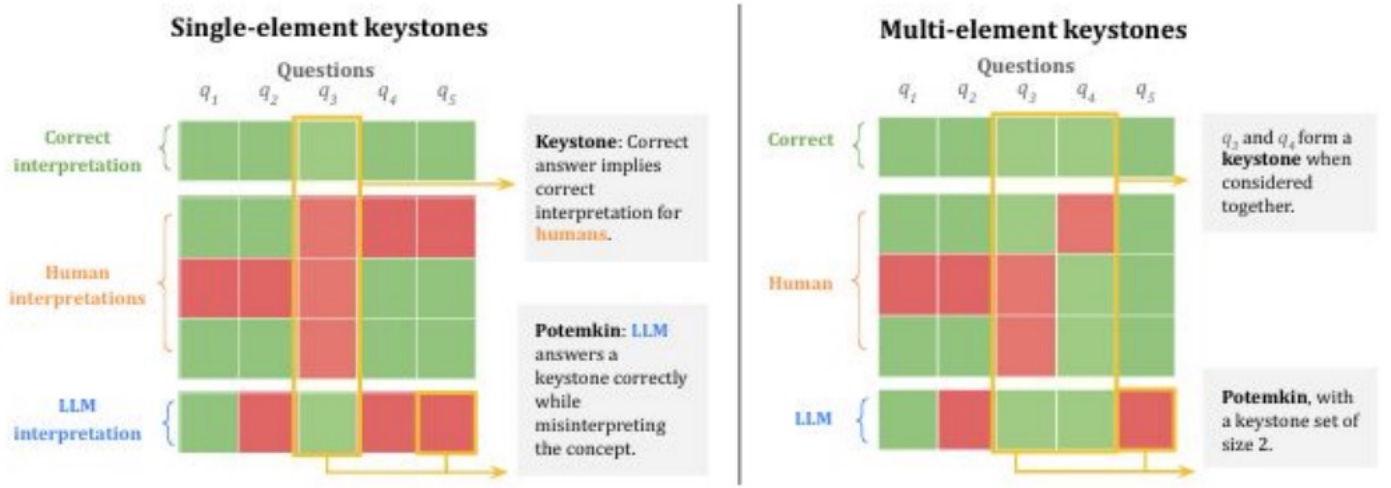


Figure 2. A schematic representation of keystones and potemkins. Rows represent interpretations of a concept and columns represent questions. Questions can either be interpreted correctly or incorrectly. A keystone is a set of questions that can only be interpreted correctly by a human who has understood the concept. An LLM has potemkin understanding when it correctly interprets all questions in a keystone but does not understand a concept.

Crisi di validità

Potemkin Understanding in Large Language Models

Marina Mancoridis [1] Keyon Vafa [2] Bec Weeks [3] Sendhil Mullainathan [1]

	Potemkin rate, as measured by:		
Model	**Classify**	**Generate**	**Edit**
Llama-3.3	0.57 (0.06)	0.43 (0.09)	0.36 (0.05)
Claude-3.5	0.49 (0.05)	0.23 (0.08)	0.29 (0.04)
GPT-4o	0.53 (0.05)	0.38 (0.09)	0.35 (0.05)
Gemini-2.0	0.54 (0.05)	0.41 (0.09)	0.43 (0.05)
DeepSeek-V3	0.57 (0.05)	0.38 (0.09)	0.36 (0.05)
DeepSeek-R1	0.47 (0.05)	0.39 (0.09)	0.52 (0.05)
Qwen2-VL	0.66 (0.06)	0.62 (0.09)	0.52 (0.05)
Overall	**0.55 (0.02)**	**0.40 (0.03)**	**0.40 (0.02)**

Table 1. Potemkin rate on classify, generate, and edit tasks. The potemkin rate is the percent of questions about a concept that are answered incorrectly, conditional on a model defining that concept correctly. We scale the classification values so that chance-level performance corresponds with a potemkin rate of 1. Standard errors are in parentheses.

Crisi di validità

Measuring what Matters: Construct Validity in Large Language Model Benchmarks

Andrew M. Bean[1*] **Ryan Othniel Kearns**[1] **Angelika Romanou**[2]
Franziska Sofia Hafner[1] **Harry Mayne**[1]

Jan Batzner[3,4] **Negar Foroutan**[2] **Chris Schmitz**[5] **Karolina Korgul**[1] **Hunar Batra**[1]
Oishi Deb[1] **Emma Beharry**[6] **Cornelius Emde**[1] **Thomas Foster**[1] **Anna Gausen**[7]
María Grandury[8,9] **Simeng Han**[10] **Valentin Hofmann**[11,12] **Lujain Ibrahim**[1]
Hazel Kim[1] **Hannah Rose Kirk**[1,7] **Fangru Lin**[1]
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[12]University of Washington [13]Meedan [14]UC Berkeley

Abstract

Evaluating large language models (LLMs) is crucial for both assessing their capabilities and identifying safety or robustness issues prior to deployment. Reliably measuring abstract and complex phenomena such as 'safety' and 'robustness' requires strong *construct validity*, that is, having measures that represent what matters to the phenomenon. With a team of 29 expert reviewers, we conduct a systematic review of 445 LLM benchmarks from leading conferences in natural language processing and machine learning. Across the reviewed articles, we find patterns related to the measured phenomena, tasks, and scoring metrics which undermine the validity of the resulting claims. To address these shortcomings, we provide eight key recommendations and detailed actionable guidance to researchers and practitioners in developing LLM benchmarks.

Crisi di validità

RESEARCH-ARTICLE | OPEN ACCESS |

Gender Trouble in Language Models: An Empirical Audit Guided by Gender Performativity Theory

Authors: Franziska Sofia Hafner, Ana Valdivia, Luc Rocher | Authors Info & Claims

FAccT '25: Proceedings of the 2025 ACM Conference on Fairness, Accountability, and Transparency • Pages 1677 - 1695
https://doi.org/10.1145/3715275.3732112

Published: 23 June 2025 Publication History

Analysis | Open access | Published: 12 December 2024

Generative language models exhibit social identity biases

Tiancheng Hu, Yara Kyrychenko, Steve Rathje, Nigel Collier, Sander van der Linden & Jon Roozenbeek

Nature Computational Science **5**, 65–75 (2025) | Cite this article

Bias in Large Language Models: Origin, Evaluation, and Mitigation

Yufei Guo, Muzhe Guo, Juntao Su, Zhou Yang, Mengqiu Zhu, Hongfei Li, Mengyang Qiu, Shuo Shuo Liu

Nella ricerca

- ➔ L'IA per rispondere ai questionari?
  - Gli LLM possono simulare in modo affidabile le risposte umane? La ricerca attuale tende a dire di no.
- ➔ L'IA per le interviste qualitative?
  - Nuovi metodi per estendere le interviste qualitative, di solito lunghe e costose. Ma che cosa potremmo perdere del processo?
- ➔ Rischi di dequalificazione?
  - L'IA cambia il nostro modo di lavorare, ciò che sappiamo e ciò che sappiamo fare… che cosa potrebbe significare per lo sviluppo della ricerca e dell'istruzione?
- ➔ Il caso degli agenti che sostituiscono gli assistenti di ricerca: che effetto avrà sui ricercatori a inizio carriera?
  - Lo stesso vale per i lavori di primo impiego.

Che ne pensate?

Vi viene in mente un’applicazione in cui non dovremmo usare l’IA?

https://partici.fi/97320810

E adesso?

Domande aperte

- ➔ C'è ancora molto da imparare su come mobilitare le persone → dove può aiutare l'IA?
- ➔ C'è ancora molto da capire su pro e contro dell'impatto dell'IA sulle varie sfide sociali e politiche della crisi climatica.
- ➔ Come possiamo plasmare la tecnologia attraverso il modo in cui la usiamo (o no)?
- ➔ La ricerca sul clima, soprattutto nelle scienze sociali, affronta venti politici contrari...

  Come mantenere le scienze sociali nel dibattito? Sui cambiamenti climatici, sull'IA e sulla loro intersezione?

Cose da fare!

➔ Valutate con attenzione punti di forza e debolezza degli strumenti di IA per poterli usare in modo responsabile.

- Trattatela come qualsiasi altro strumento o metodo.
- Concentratevi sul «chiodo» (obiettivo), non sul «martello» (strumento).

➔ Fate domande sulle applicazioni di IA.

- Quali sono i dati di addestramento? Quali bias devo conoscere? Come posso mitigarli?
- Il costo giustifica il guadagno di prestazioni?
- Esistono modelli open source? Potrebbero bastare?

➔ Resistete alla tendenza ad applicare gli LLM senza validazione: stabilite la norma di includere strategie e pratiche di validazione in ogni applicazione.

➔ Pensate (e parlate!) in modo creativo e critico di come ottimizzare il lavoro uomo-IA. Tenete l'essere umano nel ciclo!

Le scienze sociali sono una base fondamentale su cui costruire l'azione climatica verso la decarbonizzazione.

➔ Diagnosticare gli ostacoli e trovare soluzioni per ottenere un sostegno sociale e politico cruciale tra le parti interessate → necessario per l'adozione dei progressi tecnologici.

➔ L'IA può accelerare parte di questo processo, ma va usata con saggezza, non indiscriminatamente.

Grazie per l’attenzione.