Artificial intelligence facilitates better control of global development aid

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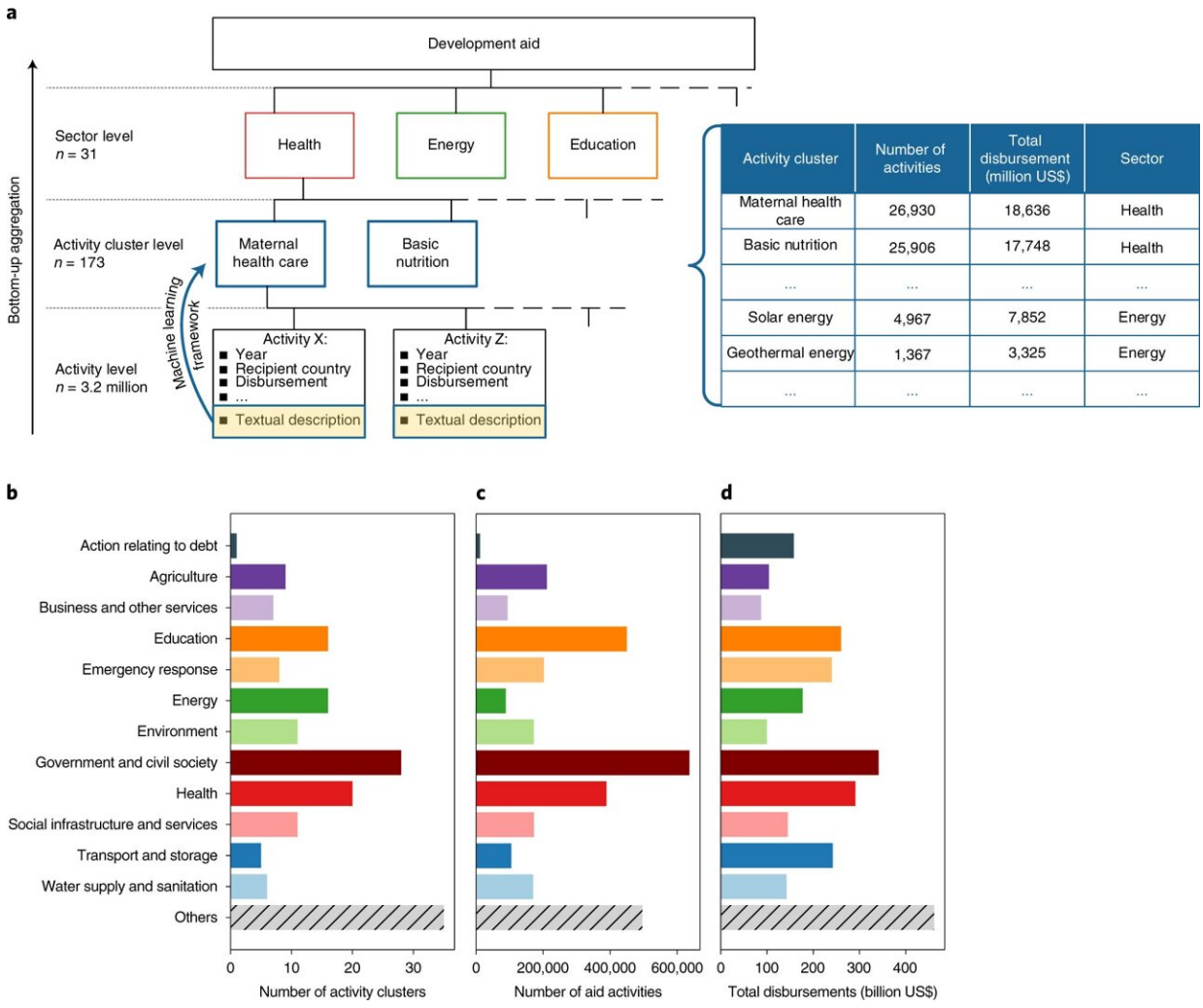

Overview of activity clusters generated by the machine learning framework. a, Schematic illustration of bottom-up aggregation mapping aid activities onto activity clusters based on textual activity descriptions. To reduce complexity, only examples of sectors, activity clusters, and activity attributes are shown in

the illustration. This simplification is highlighted by dashed lines and ellipses. b, Number of activity clusters by sector of aid. The category 'Others' includes 19 additional aid sectors of smaller sizes such as fishing. c, Number of global aid activities conducted between 2000 and 2019 by sector of aid. d, Total aid disbursements in billions of US$ spent on aid activities from 2000 to 2019 by sector of aid. Credit: *Nature Sustainability* (2022). DOI: 10.1038/s41893-022-00874-z

A team of AI experts led by Stefan Feuerriegel, Head of LMU's Institute of Artificial Intelligence in Management, is injecting transparency into global development aid. The researchers have developed an artificial intelligence system that categorizes aid projects more comprehensively than it was possible up to now and facilitates better monitoring of these projects. The findings are published in the journal *Nature Sustainability*.

"Using our framework, it is now possible to monitor global development aid projects based on a variety of criteria—such as climate change mitigation—and including criteria that have never previously been taken into account. In this way, we can identify regional and temporal differences and point out any gaps," Stefan Feuerriegel says. "Our approach can help policy institutions make evidence-based decisions in line with the UN's Sustainable Development Goals (SDGs)."

Milestones: AI brings transparency

Applying its AI approach, the LMU team clustered 3.2 million aid projects conducted between 2000 and 2019. A total of 2.8 trillion US dollars has been invested as part of these projects. Artificial intelligence was used to assign the projects to different thematic clusters. "For the first time, this granular categorization reveals the significant need for research into greenhouse gas emissions and maternal health care, for

example," Feuerriegel notes. At the same time, it is now also possible to pinpoint geographic regions where certain aspects have so far been neglected.

Development aid covers widely differing activities funded by many different organizations. It can, for example, take the form of material supplies, financial donations, training and even technological support. Funding is provided by international organizations and smaller national supporters alike. "Given the volume of money that is distributed for development aid, it is important to keep track of where and in what fields it is deployed globally. This is the only way to coordinate projects sensibly at global level," Feuerriegel states. "The systems used in the past to record projects in this way were seriously inadequate, subject to time lags and linked to heavy bureaucratic overheads."

The LMU researchers are therefore using a machine learning framework to capture and analyze global development aid activities as comprehensively as possible. Millions of individual project descriptions were used to train this system. Based on these textual descriptions, the algorithm developed a comprehensive and granular categorization of 173 global aid activity clusters such as education and nutrition, but also biodiversity. The researchers at LMU have thus made a major breakthrough in optimizing data-based analytics to support sustainable development.

More information: Malte Toetzke et al, Monitoring global development aid with machine learning, *Nature Sustainability* (2022). DOI: 10.1038/s41893-022-00874-z

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