

Crowdsourcing data to monitor progress on sustainable development goals

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Monitoring progress on our way to successfully achieving the Sustainable Development Goals (SDGs) is key to their achievement, but there are significant data gaps that make this crucial exercise difficult. A new IIASA-led study explored the use of a citizen science tool known as Picture Pile to see how it could contribute to SDG monitoring.

The 17 goals, 169 targets, and 231 indicators of the Sustainable Development Goals (SDGs) adopted by UN member states are a blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality,

climate change, environmental degradation, peace, and justice. Monitoring our progress as we work towards their achievement, will be key to their success, but official statistics alone will not be capable of producing information on the scale needed to measure progress and populate the SDG indicator framework, which suffers from significant data gaps. To fill this gap, new approaches to [data collection](#) and production are needed. Gathering the needed data through citizen science tools and approaches is one way to complement and enhance official statistics.

Past research undertaken on using citizen science data in SDG [monitoring](#) has mainly focused on its potential to bridge data gaps in information needed by countries, [international organizations](#), and data- and statistics communities for informed policymaking. In their study, published in *Environmental Science and Policy*, the authors therefore aimed to highlight how individual citizen science tools can more concretely contribute to SDG processes. The study specifically looked at the use of a mobile and [web application](#) called Picture Pile to see how it could contribute to SDG monitoring and where its potential lies in the SDG framework.

Picture Pile is a web-based and mobile application designed for rapid image classification from, among others, satellite images, geo-tagged photographs, and drone imagery. The initial idea behind the application was to provide large amounts of reference data needed for the training and validation of remotely sensed map products such as land cover maps and maps of deforestation. The images are assembled into a pile and provided to the Picture Pile application for classification by volunteers. The sorting works by showing users an image and then asking them a question like "Do you see damaged buildings?" which the player answers by swiping the image to the right to indicate "yes" or left for "no." If the answer is not clear, there is also an option to swipe the image down to reply "maybe."

"Our analysis revealed that Picture Pile could directly contribute to the monitoring of eight indicators, and support seven indicators by providing supplementary information. As an individual tool, Picture Pile could contribute to the monitoring of fifteen indicators under SDGs 1 (ending poverty), 2 (zero hunger), 11 (sustainable cities and communities), 13 (climate action), 14 (life below water), and 15 (life on land), where there are huge data gaps," explains Dilek Fraisl, lead author of the study and a researcher in the IIASA Novel Data Ecosystems for Sustainability Research Group.

"Picture Pile can also provide reference data, for instance, to produce new remote sensing products that could be used in SDG indicators. The data could also be used to validate and correct existing products," adds study coauthor Linda See, a researcher in the same program.

The researchers found that the application could help close the data gaps in the SDG framework, and make the SDGs and other national goals local, thus encouraging citizens to get involved in monitoring and reporting efforts. In addition, Picture Pile data can inform policies by providing accurate and timely data, and help raise awareness among the public on societal issues. It can also address societal issues directly, for example, when it is used to identify and document damage after a disaster occurs to support timely interventions and get help to those who need it.

The researchers note that to leverage this particular tool for SDG monitoring, its potential must be showcased through the development of use cases in collaboration with governments, non-governmental organizations (NGOs), and relevant custodian agencies. In addition, mutual trust needs to be built among key stakeholders to agree on common goals that would facilitate the use of Picture Pile or other citizen science tools and data for SDG monitoring and impact.

"While Picture Pile has great potential for complementing official statistics for SDG monitoring and reporting in a time- and resource-efficient way, its uptake for SDG purposes is a process that will require time, capacity, and a change in business-as-usual mindsets and approaches. Building partnerships that include NGOs, governments, custodian agencies, academia, Civil Society Organizations, and other stakeholders will almost certainly be at the heart of developing future national statistical systems," Fraisl concludes.

More information: D. Fraisl et al, Demonstrating the potential of Picture Pile as a citizen science tool for SDG monitoring, *Environmental Science & Policy* (2021). [DOI: 10.1016/j.envsci.2021.10.034](https://doi.org/10.1016/j.envsci.2021.10.034)

Picture Pile: [iiasa.ac.at/web/models/picture ... le/Picture_Pile.html](https://iiasa.ac.at/web/models/picture_pile/Picture_Pile.html)

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