Item number	Title/reference *(academic style) name initials (year) title, publisher, volume, pages*	Name of reviewer
1	Fritz, S., See, L., Carlson, T., Haklay, M., Oliver, J.L., Fraisl, D., Mondardini, R., Brocklehurst, M., Shanley, L.A., Schade, S. and Wehn, U., 2019. Citizen science and the United Nations sustainable development goals. Nature Sustainability, 2(10), pp.922-930.	Žemartas Budrys, XWHY

Review of findings / main outcomes

This article argues that traditional data sources are not sufficient for measuring the United Nations (UN) Sustainable Development Goals (SDGs). They are also costly. Thus, citizen science is suggested to address the shortcomings of traditional data gathering methods. CS data can provide data that is temporal, but also has duration. It could also enable to have more precise data geographically since national surveys usually report the situation in the whole country without taking into consideration differences in regions.

Authors suggest that these supplementary methods could inform on SDGs indicators on all three levels:

*"**Tier I:** Indicator is conceptually clear, has an internationally established methodology and standards are available. Data are regularly produced by countries for at least 50 percent of countries and of the population in every region where the indicator is relevant.*

***Tier II:** Indicator is conceptually clear, has an internationally established methodology and standards are available, but data are not regularly produced by countries.*

***Tier III:** No internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested."*

The article offers many successful examples of CS that already exist and could be used for indicators Tiers I and II. However, authors argues that CS can be extremely useful for Tier III indicators.

The article also notes barriers for the application of CS, such as uncertainty regarding the quality of the data, however, the possible gain is huge, especially at Tier III level. Thus, authors propose a certain roadmap how CS should be integrated and promoted in local, national and global levels.

Roadmap consists of several activities:

- Compiling an inventory of examples of good practice;
- building on existing policy frameworks that advocate citizen science for decision making;
- promoting dialogue on data quality,
- raising awareness of the SDGs among citizen science projects, encouraging them to align their goals to SDG monitoring where relevant.
-

Quotes / very useful statements

"SDG indicators are largely fed by traditional data from NSOs, other government ministries/official agencies, and international organizations. Yet we are now in the midst of a data revolution, with the emergence of new sources of non-traditional data that can fill the increasing demand for high- resolution spatial and temporal data."

Other useful points:

Citizen science data, like traditional data, can be characterized according to five main dimensions:

Fritz, S., et al., 2019. Citizen science and the UN SDGs

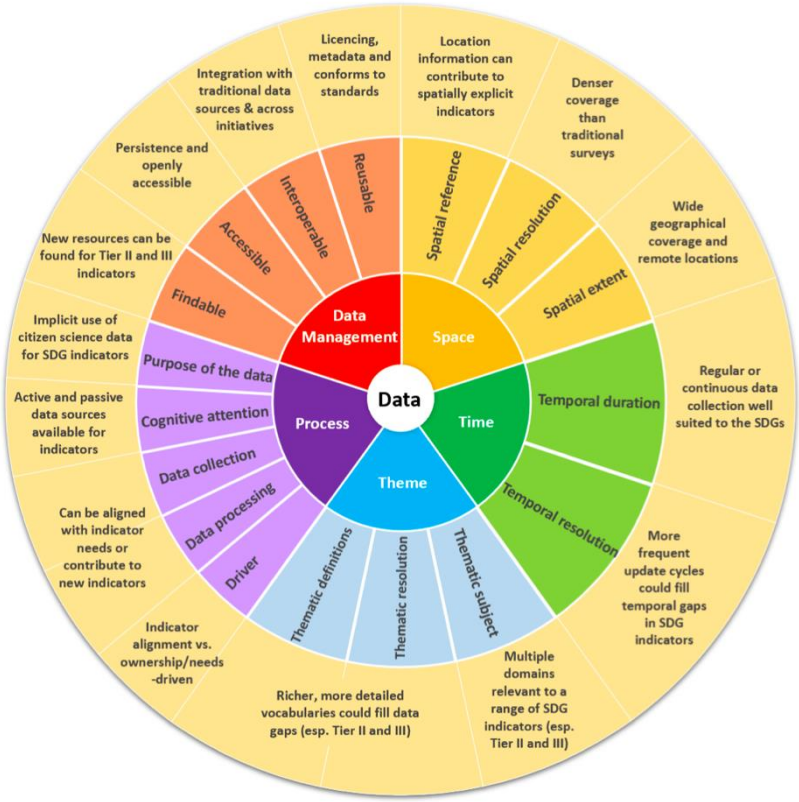

Figure 3: The five dimensions of citizen science data, their features and their value for the SDGs. Source: the authors.