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OSDG Community Platform: a citizen science initiative towards the development goals

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Introduction

Considering that we live in complex socio-environmental systems, which are better understood from the integration of different perspectives and forms of knowledge, science is moving to new participatory ways of generating knowledge (Monzón-Alvarado et al., 2020). The term citizen science (CS hereafter) was firstly coined by Irwin (1995) and is referred to the public engagement in scientific research activities, where citizens actively contribute to science either with their intellectual effort, surrounding knowledge, or their tools and resources. Several studies have shown that society can meaningfully engage in discussions about science and technology and that this win-win interaction can contribute to strengthening democracies and decision-making (Marzuki, 2015). As a result, citizen science has actually become positioned inside European policy priorities (e.g. under the WIDERA programme in Horizon Europe) (Lamy et al., 2017) and a way to tackle the current global changes (e.g. climate change).

Sustainable Development Goals (SDGs) have become the international framework for sustainability policy and the current roadmap for 2030. Although this framework has a concrete formulation based on indicators and targets (developed by and for countries), their implementation at the micro-level remains open and weak (i.e., how an organization or a citizen could adopt the indicators to their own ecosystem). Indeed, their (miss)interpretation could produce narratives and shape thinking for communication, having potential perverse actions and altering power relations, among others (Fisher & Fukuda-Parr, 2019). As an example, Armitage et al., (2020) shows results on the research landscape with different methods (e.g. different search queries) towards the SDGs could lead to different interpretations.

This struggle leaves room for CS as a non-traditional data source to make a contribution (Fritz et al., 2019) in multiple ways, e.g. defining and monitoring indicators, data production, etc. Althoug some of these initiatives has been launched (e.g. crea.blender SDG), the Agenda 2030 was overseen as a transversal issue (e.g. to determine their contribution and impact with the different goals). None of them has focused into the different understanding and concretization of the development goals from a bottom-up perspective (e.g. how a citizen has an understanding of the SDGs), a gap this study covers. In this Research in Progress (STI), we present the

preliminary results of one CS initiative called OSDG Community Platform[1], a citizen science initiative launched in 2020 to increase the awareness of the SDGs, as well as determine the different understandings of the goals[2]. The main objective of this exploratory study is to measure the degree of agreement and disagreement between the volunteers (e.g. in which goals there are more consensus?) and determine the alignment towards the goals by analising the results from this CS exercise.

Methods

OSDG community Dataset (OSDG-CD) is a public dataset created from the OSDG Community, a CS initiative. The exercise consisted on a tagging exercise in a platform, in which more than 1,000 volunteers from over 110 countries participated. The dataset has 18,924 extracts from text from 2,684 unique documents that were validated (by asking yes/no on the relatedness of the text to the goal) by the Community volunteers with respect to each goal (see Figure 1). This exercise did not include texts for SDG16 and SDG17 (as are more general and unclear goals). Although their participation is at the Level 2 Distributed Intelligence (*Citizen as interpreters*) of the Haklay (2013) scale (due to the COVID pandemic), it is envisaged a higher engagement afterwards.

Figure 1. Screenshot of the CS exercise
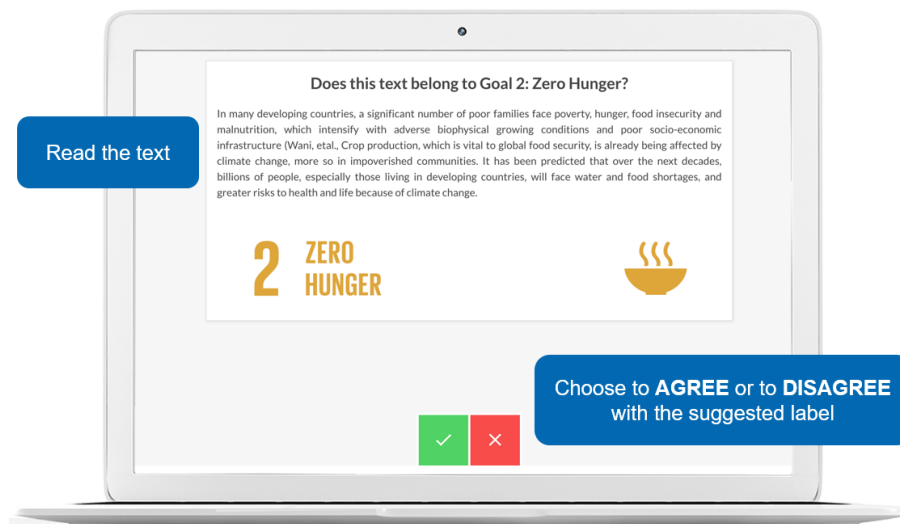
The following indicators are analysed:

a) Agreement and disagreement by each goal. This indicator measures the heterogeneity of the assignments of an SDG tag to a text fragment by volunteers. It is an indicator of the degree of the level of agreement. If it is equal to 1, it is understood that there is absolute agreement while 0 would indicate that there is a tie in the assignment, which is a maximum level of disagreement.

b) Polarity measure indicates whether the volunteers considered that the assignment of the ODS label to the text was appropriate or not (negative or positive).

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[1] https://osdg.ai/community

[2] One of the authors is part of the OSDG team

Findings

From the excerts of text analysed in this study, in 17,355 (91,71%) volunteers found a total consensus on the acceptance or rejection of the suggested label, whereas in 1,569 (8,29%) there is disagreement, which means that regardless of the result (positive or negative) the volunteers did not find a total consensus. This denotes the volunteers are more inclined in the exercise to accept or reject the label proposed without discrepancies.

Table 1 shows dichotomy between agreeing and disagreeing by goal. The agreement (common understanding) is higher in some SDGs (above 95% in goals such as SDG9 'Industry' with 96.81%, SDG14 'Life Below water' with 96.62% and SDG3 'Good Health' with 95.93%) This might be presumably related to their expertise (e.g. participants could select SDGs that are more familiar with) or a common perception. On the opposite, there is more disagreement in other goals (e.g. SDG2 'Zero Hunger' with 16.96%, SDG1 'No poverty' with 15.69%, SDG13 'Climate action' with 10.68% and SDG12 'Sustainable Consumption' with 10.19%).

Table 1. Disagreement vs agreement by goal (and % in brackets)

Goal	Disagreement	Agreement
SDG1 'No poverty'	248 (15.69%)	1333 (84.31%)
SDG2 'Zero hunger'	225 (16.96%)	1105 (83.04%)
SDG3 'Good health and well-being'	62 (4.07%)	1461 (95.93%)
SDG4 'Quality education'	194 (7.19%)	2504 (92.81%)
SDG5 'Gender equality'	217 (7.66%)	2615 (92.34%)
SDG6 'Clean water and sanitation'	54 (5.22%)	981 (94.78%)
SDG7 'Affordable and clean energy'	150 (6.93%)	2013 (93.07%)
SDG8 'Decent work and economic growth'	36 (5.38%)	633 (94.62%)
SDG9 'Industry, Innovation and Infrastructure'	19 (3.19%)	577 (96.81%)
SDG10 'Reduced inequality'	37 (8.01%)	425 (91.99%)
SDG11 'Sustainable cities and communities'	89 (8.08%)	1012 (91.92%)
SDG12 'Responsible consumption and production'	27 (10.19%)	238 (89.81%)
SDG13 'Climate action'	163 (10.68%)	1363 (89.32%)
SDG14 'Life below water'	24 (3.38%)	687 (96.62%)
SDG15 'Life on land'	24 (5.52%)	411 (94.48%)

Although slight differences in polarity levels were found depending on the SDGs, a marked positive polarity was evident in all SDGs (Table 2). The range of positivity (between 71.52-91.48%) and negativity (28.48%-5.20%) has a very small oscillation. This evidences that the general tendency of the volunteers is to accept the exercise. Although this behaviour is general, in some SDGs the tendency is much higher (e.g. SDG3 'Good health and well-being' with 91.48%).

Table 2. Polarity by SDG number of documents (and %)

SDG	Polarity	
	Negative	Positive
1	464 25,37%	1.365 74,63%
2	442 28,48%	1.110 71,52%
3	135 8,52%	1.450 91,48%
4	468 16,18%	2.424 83,82%
5	726 23,81%	2.323 76,19%
6	199 18,27%	890 81,73%
7	333 14,40%	1.980 85,60%
8	55 7,80%	650 92,20%
9	32 5,20%	583 94,80%
10	69 13,83%	430 86,17%
11	144 12,10%	1.046 87,90%
12	42 14,38%	250 85,62%
13	291 17,23%	1.398 82,77%
14	92 12,52%	643 87,48%
15	48 10,46%	411 89,54%
Total general	3.540 17,27%	16.953 82,73%

Conclusions

The results obtained in this exploratory work evidence that some goals (e.g. industry or water) have a common understanding by the volunteers, having a positive polarity among all the goals. Future studies on the topic might be complemented by means of qualitative research methods to uncover the underlined motivations (and previous knowledge) on the goals by the participants. Thus, the combination of this data with results from classifications from databasets (e.g. SDGs in Scopus) should also be considered. Such combination of methods will enable more advanced insights on the relationship between the understanding from a bottom approach (as done in this study) and other focus (e.g. research, more top-down), thus providing a more

holistic perspective on how research can complement and support the consecution of Agenda 2030.

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