ARGENTINA

THE IMPACT OF CITIZEN-GENERATED DATA INITIATIVES IN ARGENTINA

Mariano Fressoli
Valeria Arza
with Martín del Castillo

DATASHIFT
cenit
centro de investigaciones para la transformación
CONICET
STEPS centre

This report is **one of a three-part series** in which researchers from **DataShift**'s pilot locations – **Argentina**, East Africa (**Tanzania** and **Kenya**) and **Nepal** – examine the impact of citizen-generated data initiatives in their own countries.

Read the other reports at thedatashift.org/learning-zone/research/.

DataShift is an initiative that is building the capacity and confidence of civil society organisations to produce and use citizen-generated data. We are supporting civil society organisations that produce and use citizen-generated data in our initial pilot locations: **Argentina**, **Nepal**, **Kenya** and **Tanzania**. The project is sharing experiences to build capacity on citizen-generated data across the world, and is seeking to inform and influence global policy processes on the SDGs and the data revolution for sustainable development.

This work is the product of a collaboration with **DataShift**, an initiative of **CIVICUS**, in partnership with **the engine room** and **Wingu**. For more information, visit www.thedatashift.org or contact datashift@civicus.org.

Content by Mariano Fressoli and Valeria Arza with Martín del Castillo. Graphic design by Federico Pinci. First published in April 2016.

ARGENTINA

THE IMPACT OF CITIZEN-GENERATED DATA INITIATIVES IN ARGENTINA

Mariano Fressoli
Valeria Arza
with Martín del Castillo

CONTENTS

INTRODUCTION

Mariano Fressoli and Valeria Arza

In the age of big data government agencies, civil society and social movements are all looking to technologies and strategies to generate data and information that can better monitor a range of environmental,social and development issues. The potential exists to empower citizens and communities to track the impact and progress of issues that directly affecting them to press for greater accountability from governments and to create alternative solutions.

It this empowering potential that informs the DataShift project's vision: a world in which citizen-generated data enables people-powered accountability to drive progress on sustainable developmentAs each of the case studies in this report show it is increased collaboration and cooperation between many different social actors that powers this powerful new way of working.

In the wake of the establishment in 2015 of the United Nations Sustainable Development Goals (SDGs), citizen-generated data provides a unique opportunity for small organisations to contribute in concrete ways to the monitoring process. It can make visible hidden problems and processes and generate reliable information to help in the response to the challenges of climate change and inclusive development. The SDGs are complex to address fairly: to enable both accuracy and feasibility, any solutions should promote the commitment of a large and diverse group of stakeholders.

Since citizen-generated data usually relies on cheap and flexible tools, it has the potential to be replicated and adapted by small organisations at little cost. This is especially important for developing countries and for isolated areas where government support and/or public infrastructure is lacking. At the same time, if combined with social networks,online learning tools and open repositories, these tools can foster a process of continuous improvement and learning that can help us face the challenges and dilemmas of development.

As the DataShift initiative points out, use of these kind of technologies is extremely powerful since it enables the provision of multiple sources of information, empowers people at the grassroots to create their own information and builds a bridge between local action and global visibility.

Combined with government support, citizen-generated data can create new alliances and forms of accountability and new methods of participation, contributing to the democratisation of knowledge.

At the same time, citizen-generated data can also lead to interesting dilemmas and challenges. For instance, incumbent actors who reject informal channels of participation can easily discredit information produced by the grassroots. Big companies might capture the data and use it for unwanted uses. Questions here relate to who produces the information, how it is curated, what kind of data is published, etc. Overall, there is a need to understand how citizen-generated data is produced and how and by whom it is appropriated.

These challenges and dilemmas are caught in a cultural process of change that defies traditional frames of knowledge about social agency, the relationship between civil society organisations and new technologies and forms of collaboration and production.

In this sense, we see citizen-generated data as part of a much bigger process of structural change in the way knowledge and technologies are created, shared and appropriated.

We regard this process as a real change of paradigm in knowledge production, one that includes citizen-generated data initiatives but also open science experiences and projects, open government infrastructure and practices, open software and hardware and also new networks of collaboration and experimentation, such as the maker movement, fablabs and hackerspaces. Without this environment of technology experimentation, new forms of participation and collaborative production, citizen-generated data projects probably would not exist, or at least it would be much harder for these initiatives to thrive. Interestingly, the initiatives are not always connected by an explicit bond or formal agreement of aims and outputs rather they share values, ideas and technologies in a very loose way.

In this report, we look at citizen-generated data initiatives from the point of view of the DataShift project team's recent experience in the analysis of open science and grassroots innovation initiatives as part of an on-going analysis of learnings and ideas. The aim of the report is to analyse four diverse experiences in different areas that work towards addressing (in explicit or implicit ways) some of the new SDGs.

The report includes an in-depth assessment of each initiative's long-term or ongoing impact, looking especially at:

- **Use of the data:** Has the data been used by policy-makers, civil society organisations or other actors? If so, how?
- **Data quality:** Are any levels of verification built into the initiative? How sound is the data, particularly if it comes from multiple sources?

- **Sustainability of the initiative:** What is the initiative's projected lifespan? Is this clearly indicated? Are there plans to maintain the initiative's online presence after the period of data collection ends?
- **Local context:** How is data on the topics that citizen-generated data initiatives address received at the local level? Is it considered trustworthy?

The report also includes a summary of key findings and trends drawn from the assessed initiatives.

This report is organised as follows: we briefly present the research methodology and introduce the cases and the SDG to which they relate. Then, we present the four case studies. Finally, we draw some brief conclusions on the findings of the case studies.

METHODOLOGY

Valeria Arza and Mariano Fressoli

The research is organised in three phases. In the first we informally consulted experts and people related to grassroots initiatives in particular around open data and makerspaces and researchers working in open science initiatives about possible case studies.

In the second phase, we conducted a broad web search to identify documents and new experiences. We also gathered material from Wingu, which was doing its own small survey.

In the third phase, in consultation with DataShift and Wingu, we selected our four case studies. One necessary condition, put in place by DataShift, was that they were related to the SDGs. Within this broad requirement, we included as much variety as possible, in terms of issues but also levels and types of openness and collaboration. We believe diversity can help ensure a more robust set of findings but also enables us to explore the heterogeneity of current citizen-generated data initiatives in Argentina.

The selection process allowed us to include a diverse set of experiences, involving different actors, such as activists and non-governmental organisations (NGOs), and different forms of data production, including collective mapping and phone applications. The four initiatives are introduced below, along with the three SDGs they relate to:

SDG 6: ENSURE ACCESS TO WATER AND SANITATION FOR ALL. This goal aims at improving the quality of and access to drinkable water, especially for children, given the high incidence of infant mortality owing to diseases associated with inadequate water supply, sanitation and hygiene.

¿QUÉ PASA RIACHUELO? is a free access online platform that includes an interactive georeferenced map that presents all the information available on the Matanza-Riachuelo Basin Authority as well as citizens' reports of acts of pollution. The Riachuelo is a small and contaminated river that acts as the southern border between the city and the province of Buenos Aires. This initiative helps people visualise the state of execution of the clean-up plan and report breaches or any other problems affecting the environment and general well-being.

SDG 15: SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION, HALT AND REVERSE LAND DEGRADATION, HALT BIODIVERSITY LOSS. This goal aims at combating desertification and at conserving biodiversity in the belief that these actions are needed not just by future generations but also by millions of people currently living in poverty.

EBIRD ARGENTINA is a web platform that receives citizen-generated birdwatching data from amateurs and professional observers. The large amount of data collected enables the provision of information on the spatial distribution of species and allows for tracking population trends. This can help in identifying areas or important sites for bird conservation and contribute in this way to design management plans, including the recovery of threatened or endangered species. At the same time, data can be used for scientific purposes to study the distribution patterns and movements of birds throughout Argentina, including migration routes, wintering and breeding areas, arrival and departure, expansions or contractions in the ranges of species and many other important issues.

SDG 16: PROMOTE JUST, PEACEFUL AND INCLUSIVE SOCIETIES. This goal aims at reducing all forms of violence and at promoting the rule of law and equal access to justice for all, through ensuring responsive, inclusive, participatory and representative decision-making at all levels and public access to information.

TERRITORIO INDÍGENA is a recently created web platform that refers geographically to specific conflicts affecting indigenous communities. As of now, 183 conflicts have been included on the platform. The website invites visitors to produce information on conflicts not reported on the platform, using a specific form. Project organisers then move to validate data collected in this way. So far, the platform has received information on 30 other conflicts, which are in the process of validation.

ICONOCLASISTAS aims to generate visual devices that can communicate scenarios of injustice and also others proposing alternative pathways. The collective maps are one of the initiative's most celebrated creations. To produce these, the project relies on mapping workshops, which encourage collaborative work on maps and cartographies to share knowledge that can then be used for the critical visualisation of the most pressing local problems. The team shares all the resources and practices through a website that functions as a multimedia dissemination platform. Socialisation and appropriation of the material is encouraged through the use of creative commons licences.

Prior to our visit, we carried out a deep web search of materials and documents. We then conducted one or two interviews with representatives of each the initiative in each case study. These interviews focused on use of data, quality of data gathered and processes of verification (if any), funding, available support/ sustainability and reception by the local population.

In total, we conducted six semi-structured interviews with representatives of the cases, each of which lasted around one hour. We also participated in a workshop with some of the case study projects as part of the Developing Latin America (DAL) initiative organised by Wingu. Later, Mariano Fressoli participated as an evaluator/reviewer in the final event of DAL.

We present the four case studies in this order: eBird Argentina; ¿Qué Pasa Riachuelo?; Territorio Indígena; Iconoclasistas.

CASE STUDIES

CASE STUDIES

EBIRD ARGENTINA

http://ebird.org/content/argentina/

Martín del Castillo and Mariano Fressoli

eBird is a citizen science project developed in the United States in 2002 by the Ornithology Laboratory at Cornell University and the National Audubon Society. It is a free access tool available on PCs and recently on mobile devices to manage and share online data of bird sightings made by amateur and professional watchers, built on the simple concept that each time a watcher grabs their binoculars they have the chance to gather useful information about bird sightings.

eBird makes use of free software specially developed for the initiative, such as Birdlog and eBird Mobile.[1] The use of these applications allow users to collect data using their mobiles and to send it directly to a server, thus fostering efficiency in the process of gathering, archiving and distributing information about birds to a much wider audience. eBird's regional portals are customisable, in response to the need to meet the demands of local users. Each portal is integrated into the application infrastructure, with the database in the United States. eBird is an open platform, whereby data can be shared and analysed freely across political and geographical borders.

The large amount of data collected by eBird, which contributes to information about the spatial distribution of species and allows population trends to be followed, can help in the identification of important areas and sites for the conservation of birds. In this way, it can contribute to the design of better plans for managing or recovering threatened species or those in danger of extinction.

CONTEXT AND FUNDING

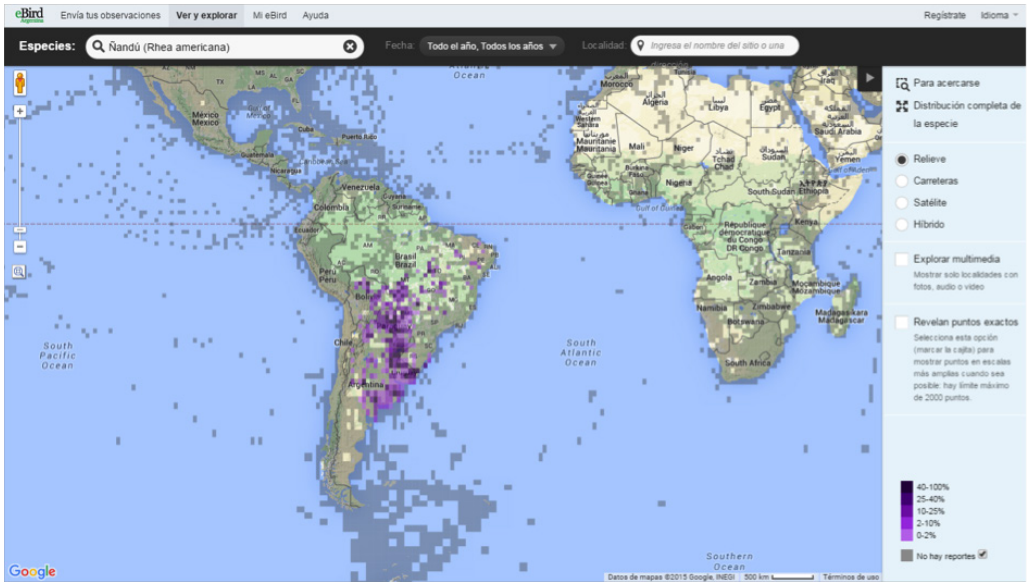
Local partners manage the platform in the countries in which eBird has been launched. The Plata Ornithology Association, known as Aves Argentinas, launched the eBird Argentina website in 2013, during the 15th Argentine Ornithology Meeting (RAO). The site is maintained under the supervision of the institution's technical team, which is also tasked with promotion and user training.

1 eBird also allows the use of customisable apis to make use of the data.

To carry out local adaptation and the launch of the site, Aves Argentinas applied for funding from the Ministry of Science and Technology (MINCyT). Some of the funds were used to carry out an eBird course to train those who attended the RAO and the National Meeting of Birdwatching Clubs (COAs), and in a symposium about sightings databases. As part of the agreement with MINCyT, the Argentine database will be passed to the National System of Biological Data (SNDB). There are also plans to establish an interface that will allow data to be uploaded to both sites (eBird and SNDB) in parallel. However, as of September 2015, this has not yet been finalised.

ACCESS TO THE DATA

The data is open and freely accessible. Much of the information available can already be found in interactive distribution maps that can be filtered by species or location, and in bird presence graphics by week, as well as according to geographic area and with filters for species. This feature is a bonus as it allows data to be visualised and explored in a simple way.



The database can also be downloaded directly from the website by all those registered on eBird. Each request is transmitted to the Ornithology Laboratory at Cornell, and in a short space of time the specified data (time period, chosen species, geographical area, etc.) is sent to the user. In this manner, the information is available as much for the general public as for the scientific community. Additionally, the eBird website allows developers to build different apps to use the information in the database.

As the SNDB does not yet have Argentine data, the only way to access the country's data is via the Cornell site.

COMPILATION AND ANALYSIS

eBird collects data about the appearance and relative abundance of birds in specific locations through websites available in various languages. Bird watchers who use eBird to report their sightings must follow a standardised protocol to load the information to guarantee the uniformity and quality of the registers. This protocol is quite easy to follow and has improved with time, successively adding different characteristics that allow watchers' data to be classified in a more precise way.

When uploading data, users must indicate with the greatest possible precision the location and protocol followed to count birds: if the birds were sighted (1) travelling – that's to say, in movement; (2) at a point in space (motionless); (3) touring around an area (in which case the different ecosystems must be specified); and (4) if randomly. For each protocol and the additional information required (distance travelled and time dedicated to the sighting in the case of point (3), for example), an indirect measurement of the effort made by the watcher is sought.

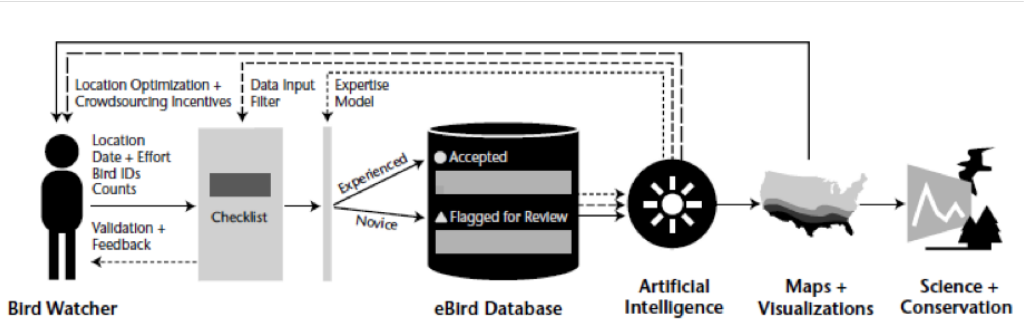
Once the location and protocol have been selected, the site displays a verification list including the species most likely to be spotted in the reported location at the given time of year. On this list, users must indicate the number of each species sighted, and the information is sent. The list is then subjected to some automatic control filters that seek to detect "unusual" registers. These are re-sent, also automatically, to the user who created them to check the flagged data. If the data is confirmed to be correct, the list will then be passed to a regional expert, called an "inspector", for evaluation, who can get in touch with the watcher to ask for additional information to help determine the validity of the register. If the register is rejected, it will not form part of the eBird database, although it will be saved in the user's personal register.

The automatic filters are built, maintained and updated by the regional experts. Interaction with the watchers is crucial to improve the quality of the controls, especially in regions where there is only one inspector for a very extensive area. In Argentina, there are currently 20 experts who do the work of inspectors on a voluntary basis. The short-term objective is to reach one expert for each province. Beyond the voluntary work of the experts, the Aves Argentinas personnel dedicated to the project are minimal (four people). As such, it is entirely a citizen science project, depending on the voluntary participation of an amateur public.

USE OF THE INITIATIVE

The site appeals to amateur bird watchers who traditionally made their own lists of birds. One of the attractions of eBird for them is the ability to track their personal bird listings, share their data with other users, receive alerts about rare birds, upload their old sightings lists, explore information about when and where to find birds (which could be useful, for example, in planning a field trip) and play games that appeal to the competitive spirit . More recently, eBird Argentina, as requested by users, has included the option to upload images and sounds and use mobile phone applications, which simplifies the task of registering the birds. The site also gives users recognition for their sightings. For example, it publishes the top 10 or 100 eBirders, as much for the species spotted as for the list that was uploaded.

On a global level, the volume of data collected by eBird has grown exponentially in a period of 10 years, at an annual rate of 30-40% between 2003 and 2013.[2] By mid-2013, 140 million sightings had been collected from 150,000 different watchers, who had spent 10.5 million hours collecting data.[3] It is unlikely that it would have been possible to compile this enormous quantity of data on a global level without the voluntary work of the birdwatchers and the collection infrastructure. The eBird system thus presents itself as a super-efficient way to collect data and exponentially increase the information available on birds, which also allows for diverse open collaborations.[4]



Source: Kelling et al. (2013).

2 Brian Sullivan et al., "The eBird Enterprise: An Integrated Approach to Development and Application of Citizen Science", Biological Conservation 169: 31-40, 2014.

3 Brian Sullivan et al., 2014.

4 Steve Kelling et al., "eBird: A Human/Computer Learning Network to Improve Biodiversity Conservation and Research", AI Magazine 34(1): 10-20, 2013.

So much so that, on a par with the increase in data collection, there has been an increase in the number of publications that come from collaborations between researchers from diverse scientific fields: ornithology, landscape ecology, macro-ecology, biography, computer sciences, statistics, human computation, conservations sciences, etc.[5]

In 2013, more than 1,100 people from 40 countries solicited information from eBird, carrying out more than 3,400 downloads representing 2.6 terabytes of data.[6] The users were classified into four large categories. Approximately 50% of the requests came from people self-categorised as students or academics, seeking background for research projects. While the majority of these people studied the distribution of species, a large number were using the data as input for GIS, statistics or computer sciences. Many NGOs or government users requested data to estimate the occurrence of species on public and private lands. People who were not from the academic field solicited data to explore the appearance of birds in their region of interest, whereas business users did so as part of environmental impact studies. The amount of data downloaded, as much as the diversity of actors, users and disciplines, seems to in fact indicate forms of data-driven intelligence,[7] which could not have been produced had the data not been available.

BENEFITS

- eBird familiarises users with the use of standardised techniques of data collection, increases their knowledge about birds, habitat, ecology, etc. through the interactive visualisation tools and improves their ability to watch through interaction with regional experts. In sum, it leads to expertise-building in amateur bird watchers.
- The platform promotes collaboration between professionals and the community of amateur bird watchers, and among professionals. It puts professionals from diverse regions of the country in touch.
- It allows the generation of a large database that is updated on a daily basis, which can be used for the identification of areas that are critical for the conservation of birds, and improves knowledge about different bird species in the country. In the brief period that eBird Argentina has been running, 967 of the country's approximately thousand species of birds have been detected.

5 Kelling et al. indicate that, since 2006, eBird data has been used in more than 60 peer-reviewed publications and reports, from highlighting the importance of public lands in conservation to studies of evolution, climate change and biogeography. Sullivan et al. mention that in the past decade more than 90 peer-reviewed publications have either used eBird data or studied aspects of the eBird project.

6 Brian Sullivan et al., 2014.

7 Michael Nielsen, Reinventing Discovery: The New Era of Networked Science, Princeton, NJ: Princeton University Press, 2012.

- It allows the reuse of data and makes it possible to infer new hypotheses or uses by scientists who belong to others fields and/or users who are not necessarily bird watchers (e.g. studies on ecology, human computing and recreational users of the data). These processes are known in the literature as data-driven intelligence.[8]

BARRIERS AND CHALLENGES

- In Argentina, the challenge is to promote the tool among a larger number of bird watchers, so as to increase the number of people uploading observations from different parts of the country and improve the accuracy of the data uploaded (including, for example, the bird count on the lists).
- Related to this, a peak in data uploads tends to be observed during the summer and winter holiday months. Use of the tool needs to be promoted by Aves Argentinas during the months in which lower activity is registered to improve the quality of the database.
- eBird depends on the work of volunteers to make revisions to the lists that do not make it through the automatic filter. Currently, the number of inspectors is limited compared with the number of lists uploaded and the geographical area to be covered. This impacts the quality of the automatic filters: the inspectors do not have enough time or knowledge on the birds that inhabit the determined places.
- A latent challenge for the project relates to data archiving. Currently, the data is harvested in Cornell University only and mirroring the data with the SNDB has not yet happened. The risk of this setup is that Cornell will stop making the data available or the project will simply be suspended and the data repository collected in Argentina lost .

For diverse reasons (amount of data collected, number of users, construction of an international network, automation of part of the data validation process, etc.), eBird has turned into a test case of open science on a global level. Analysis of the case allows for observation of how open joint participation, open access and open source exponentially increase data collection.

On this point, three highlighted features can be detected: attention paid to the visualisation and availability of data online, the creation of automatic filters of validation (which speed up collection) and the use of social network tools to generate a certain sense of belonging and identity among volunteers. In this way, the eBird architecture allows various ways to increase efficiency, among which the

8 Michael Nielsen, 2012.

following stand out: (1) the use of hundreds of volunteer amateur bird watchers leads to an increase in the production of data collection; (2) online availability and shared use leads to an increase in the efficiency of the use of data: and (3) as the database was promoted and used, data started to be used in diverse scientific fields (landscape ecology, macro-ecology, biogeography, computer sciences, statistics, human computation, conservation sciences, etc.), creating new knowledge not originally predicted by the project, allowing processes of data-driven intelligence.

Finally, we would like to signal that centralisation of the data on a foreign university's servers holds potential risks regarding the appropriation and sovereignty of the data. It is clear that the existence of this initiative in Argentina contributes to the promotion of open science in the country. The challenges highlighted can be an incentive for the construction of adequate infrastructure to collaborate in these projects internationally.

¿QUÉ PASA RIACHUELO?

http://quepasariachuelo.org.ar/

Martín Del Castillo and Mariano Fressoli

The ¿Qué Pasa Riachuelo? (QPR) website is an initiative that uses visualisation and data collection tools to generate awareness about and show the Matanza-Riachuelo Basin clean-up process. The project began in 2011 as an initiative put forward by a collegiate association created by the Supreme Court of Justice in 2008 to control the ruling that ordered the clean-up of the Riachuelo. This collegiate body includes the Foundation for Environment and Natural Resources (FARN), Fundación Metropolitana, Greenpeace, the Centre for Legal and Social Studies (CELS), the Neighbours of La Boca Association, Fundación Ciudad, Poder Ciudadano and the Citizens' Association for Human Rights.

The project consists of a free access online platform that includes an interactive georeferenced map with all the information available on the Matanza-Riachuelo Basin Authority as well as citizens' reports of acts of pollution. The objective is for all those interested in the clean-up of the basin and improvement in the quality of life for the area's inhabitants to be able to follow the state of execution of the clean-up plan and report breaches or any other problems affecting the environment and general well-being. It is a social monitoring tool. The project is undertaken in collaboration with the hackerspace GarageLab, with the support of Avina Foundation and funding from the World Bank, Heinrich Böll Stiftung and the European Union (EU).

CONTEXT

The Matanza-Riachuelo River is an approximately 64 km-long channel that originates in Cañuelas and flows into the Río de la Plata in La Boca neighbourhood, acting as the southern limit between the city and the province of Buenos Aires. The Matanza-Riachuelo River Basin covers more than 2,200 km2 and includes the municipalities of Almirante Brown, Avellaneda, Cañuelas, Esteban Echeverría, Ezeiza, General Las Heras, La Matanza, Lanús, Lomas de Zamora, Marcos Paz,

Merlo and San Vicente, with a combined population of around 3.5 million people. The lowland river is exposed to industrial waste and rubbish dumps, making it a highly contaminated channel.

The "Riachuelo Case" was born 2004 when a group of locals and workers from Villa Inflamable, Avellaneda, presented a lawsuit to the Supreme Court for as a result of the river's contamination. In relation to the collective damage, which includes environmental degradation, in 2006 the Matanza-Riachuelo Basin Authority (ACUMAR) was created, an autonomous public organisation combining the work of the three governments that have authority in the territory (national, Buenos Aires province and Buenos Aires city) and that of the 14 municipalities of Buenos Aires province. This works as the highest authority in the region on environmental issues. In 2008, the Supreme Court held a landmark ruling, ordering ACUMAR to improve the quality of life of the citizens of the entire basin, to repair the air, water and ground and to prevent future damage.

In this context, QPR set the objective of strengthening residents' and neighbourhood groups' ability to monitor the basin and increase public influence on policies being implemented in the territory. For this, the group has a free and open website, which has a georeferenced interactive map including all the information available on ACUMAR, including on landfills, contaminating industries ranked based on their environmental risk level, industries that have presented their conversion plan, industries that have rationalised their processes, waste management centres that promote recycling (eco-points) and settlements. At the same time, an important part of the project consists in the social monitoring citizens undertake from the platform, including, since 2013, the reporting of acts of pollution in a direct way, establishing the location of the act and uploading of photos and videos. The data is later crossed with available public data. In this way, the initiative seeks to promote citizens' ability to monitor public policies and influence decision-making on the basin territory.

WORKING MODEL AND DATA COLLECTION

The initiative had two stages of development, both of them under the general objective previously mentioned: strengthening the ability of community members to monitor and thus influence public policies implemented in the territory. In the first, QPR aimed to reach this objective through the collection and periodical publication of data generated by ACUMAR to announce progress in the clean-up process. This information consists of data about industries (businesses declared "contaminating agents" are georeferenced, as are those that have presented conversion plans and those that have converted their productive processes to mitigate their

environmental impact); sites where there is an illegal accumulation of domestic waste (rubbish dumps); places with irregular occupation of land that do not have basic living conditions (settlements); eco-points; and the tributaries of the Matanza and Riachuelo Rivers (sub-basins).

In a second stage, it was decided to broaden the information visualised on the platform and allow the participation of citizens in the generation of data. ACUMAR's delays in passing information to the NGOs administering QPR meant the published data was out of date, which represented a loss in the social value of the tool. The section with ACUMAR data was maintained and a new section was added with information sent by community members to report environmental problems in the basin ("alerts"), containing photos and videos. This new section, called "social monitoring", also has "stories" (FARN neighbourhood alerts to the competent authority to carry out report requests, which include responses, and to which documents, regulations and news associated with the issue are added); "actions", which show activities carried out by the community (report requests, reports, mobilisations, etc.); "responses" to the "actions" carried out; and, finally, a subsection on "news", which presents a social survey of issues associated with the basin in the media.

Activities to be developed in this second stage, which had EU funding for two years (ending in September 2014), also widened. To the development of the platform with georeferenced information (of free and open access) was added the intention to (1) generate a network of local actors monitoring the advances of the clean-up plan and reporting acts of contamination that were detected; (2) develop an information system that allows reception of reports of local actors and "crossing" these with public information; and (3) carrying out of workshops to train community members and committed citizens with the monitoring and social control.

This new phase of the project was led by FARN with the collaboration of Fundación Ciudad and the Forum of Argentine Journalism (FOPEA). GarageLab dealt with the development and maintenance of the website. These developments were open source and are available on Github. During development of the website, it was initially planned to also make a mobile phone app to facilitate data uploads; after a time this idea was dismissed (principally because of the difficulties encountered in getting local community members to use the technology).

FARN and Fundación Ciudad worked to identify and reunite neighbourhood organisations and groups of community members who understood and worked on local problems and who had the ability to convene a wider public with the aim of conducting training workshops. FOPEA, meanwhile, was dedicated to the task of establishing contact with journalists and local newspapers to educate them in the need to cover issues related to the basin's clean-up more frequently.

This issue often disappears from the media, even though the consequences of the environmental degradation are continuously present in the life of the locals (bad smell, health problems, etc.).

Between 2012 and 2014, around 20 workshops took place between the 14 municipalities that make up the basin. Each meeting introduced the implications of the judicial ruling that gave the order to clean up the basin and improve the quality of life of its 8 million inhabitants. Participants were made aware of the importance of the social monitoring of the activities of ACUMAR and the importance of demanding the publication of progress on the clean-up. Finally, the platform was presented, with an explanation of how to find information, the different kinds available and how to upload new information (stories, photos, videos, etc.).

A screenshot of the platform

To facilitate participation of the basin's inhabitants, as part of the project a section of the platform called "Send your alert" was also created, on which users can report an environmental problem in the basin. Clicking opens a window with fields in which the following must be specified: title of the report, description, location, category, photos and associated news. Users don't have to identify themselves.

VALIDATION OF THE INFORMATION

The official information that appears on the map is generated by the basin authority, ACUMAR, and FARN has just undertaken the first-stage work of harvesting and uploading to the platform. It was originally thought that this information could be updated in a periodical way, but the slowness of communication with ACUMAR has thwarted this goal.

As for the information sent in by community members to "Send your alert", FARN evaluates the form and gets in touch with the informants to validate the information and to evaluate the steps to follow. When necessary, FARN can request specific information from ACUMAR in order to check the information or report a new problem.

BROADCASTING AND USE OF INFORMATION

The information supplied by ACUMAR is available for free download on QPR's website and through the Public Data initiative.[9] Public Data is a project of Poder Ciudadano and GarageLab, both members of QPR, that offers an open catalogue of information from the public sector in Argentina.

Communication of the platform in the workshops has been complemented by promotion via social networks and media, and through the presentation of the platform in the schools of some neighbourhoods in the basin. A plan to train secondary school students sought to promote the participation of youth, who are the most familiar with the use of technology. The training offered information on the tasks and responsibilities of ACUMAR in the basin (among them the industrial conversion of productive establishments and the relocation of families living in the highest-risk areas), and on the use of the QPR platform: how to upload information and reports of contamination, rubbish dumps, settlements and problems with access to water.

Since development of the QPR platform, ACUMAR has given an employee the task of checking the reports received from FARN. It has also modified its own page to show the data it has generated itself (this was not previously published in an open way).

The idea to publish contamination alerts and the responses of public control organisms had been appropriate and adopted in a new cleaning and citizen monitoring project on the Duwamish River in Seattle in the United States. GarageLab provided advice for the development of the website and the corresponding platform.

SUSTAINABILITY OF THE EXPERIENCE

For its first stage, the initiative had funding from CELS and the AVINA Foundation. Resources for development of the second stage, consisting in modification of the platform to incorporate alerts and the undertaking of training workshops in schools and neighbourhood organisations, came mainly from the EU and, on a smaller scale, FARN.

9 http://datospublicos.org/

EU funds ended in September 2014. Since then, because of a lack of resources, the workshops and secondary school courses have been discontinued. These activities were the principal means of encouraging citizen participation. The initiative has virtually stagnated: the information that has been published can be found online, but there is nobody in charge of the project to validate the information sent and, at the same time, there are no activities to encourage the uploading of data, which reduces use of the tool. However, FARN's Eduardo Abascal stated an intention to relaunch the page in the near future and pick up some of the activities again.

BENEFITS

- The platform and workshops worked to educate, connect and alert neighbourhood groups and organisations to actively participate in the monitoring of actions implemented by public authorities in the area of the Matanza-Riachuelo River Basin. Awareness was built on the scale of the problem affecting the entire basin.
- The strategy of the NGOs that make up QPR and the participation of community members through the workshops promoted by QPR were factors that increased pressure so that ACUMAR gradually started to publish information that it was in fact obliged to make public but had been slow to share. Currently, ACUMAR has its own georeferenced tool showing information on the quality of the water and air and the relocation of shanty towns and settlements, landfills, industries, etc.
- From the perspective of the organisations that make up QPR, a lesson has been learnt about the difficulties and obstacles in developing an application or using new technologies to develop social programmes. Basically, the tool's potential does not guarantee its success. Success depends on the ability of users to appropriate the tool, which in turn depends on the familiarity of the interested actors with new technologies and on perceptions of the achievements and limitations of the tool. The workshops are a good way to overcome limitations, but their sustainability depends on the existence of resources.

BARRIERS AND CHALLENGES

A lack of resources means the platform is currently virtually paralysed. Since EU funding ended in September 2014, the platform has been maintained by resources from FARN. This has affected the initiative in various ways. A system to receive and "cross" alerts with published information in an automatic or semi-automatic way has not been developed. The validation of reports by social actors requires the designation of personnel to carry out the cross-referencing. Lack of funds thus limits the ability of FARN to corroborate the information community members supply.

Meanwhile, workshops for adults and courses in schools have been discontinued. These activities were the principal means of building awareness and making locals and neighbourhood organisations committed to using the platform, given the resistance offered by the population to using the website.

In relation to this resistance, and despite different actors (citizens, NGOs, media) giving the initiative a good reception and valuing it positively as a tool for exposing the problems in the basin, it faced great problems in attracting community members to carry out alerts or incorporate the use of other technologies, such as mobile phone apps. This is explained by a combination of factors:

- In the face of a lack of connection between QPR and ACUMAR, the platform was not perceived as an effective mechanism for channelling the complaints of citizens.
- There was a fear among some of reprisals by the environmental authorities (a groundless fear, given the anonymous character of the tool, or, as we see in the next point, a lack of practice in the use of technology or even a lack of trust in the institutions within QPR).
- Perhaps most importantly, some community members, despite having modern smartphones, had problems navigating the site and filling in the virtual form because of a lack of use of web browsers.

Factors that affected, and continue to affect, the reach and usefulness of the platform include the reluctance of ACUMAR to share information, the resistance of the citizens to commit to using it, for the diverse reasons already mentioned, and a lack of resources to use to educate the population. This has all meant the information published has become outdated.

In sum, in this context, the biggest challenge in reviving the platform seems to be access to funding to bring back the workshops and courses in schools to encourage the population to report acts of contamination.

TERRITORIO INDÍGENA

http://www.territorioindigena.com.ar/

Valeria Arza and Martín del Castillo

Territorio Indígena is a website that presents a map of Argentina showing indigenous conflicts that have arisen as a result of breaches of rules in force by governments, businesses and judicial power. This initiative of the Argentine headquarters of Amnesty International (AI Argentina) in collaboration with other organisations was launched in mid-2015 to give greater visibility to the problems facing indigenous communities. As well as mapping the different existing conflicts, AI Argentina promotes the signing of seven petitions to defend the rights of indigenous people.

The indigenous population in Argentina has been systematically excluded throughout the country's history. During the colonial period, and especially the series of military campaigns, a large part of the indigenous population was exterminated, in a literal genocide. From the 19th century, the territory and resources of the indigenous population were pillaged, leaving them condemned to live in situations of extreme poverty – which then resulted in other forms of social exclusion. Today, there is a significant distance between provincial laws, national laws and international treaties of human rights in terms of rights and their effective application.

LOCAL CONTEXT AND MOTIVATIONS

Territorio Indígena arises from both a need to provide a useful tool for the indigenous community and a failure to implement the provisions of Law 26.160, which suspends evictions of indigenous communities for four years and orders a survey of lands occupied by the communities within a timeframe of three years. Although this was sanctioned in 2006, by 2013 only 24% of the communities had been surveyed, and by 2015 there were still reports of repercussions and evictions ordered by the Judiciary and executed by provincial police. At the end of 2009, as the timeframe had not been met, a new law, 26.554, extended the suspension of

evictions and the undertaking of surveys until 23 November 2013. In 2013, when the deadline had again passed, evictions and the survey were again extended, with the sanctioning of Law 26.894, which determined that the rules would be in place until November 2017.

Against this backdrop, in 2014 AI Argentina started to consider what kind of tool could be useful to "dialogue" with Law 26.160, or expose its shortcomings and delays in the surveying of indigenous land. The tool does not have a precise inspiration; other AI experiences were taken into account, for example mapping of Gaza bombings and other experiences, but none related to indigenous peoples' conflicts. Thus, it was decided to develop a map that shows the territorial problems these communities are facing today. The objective, if the tool is successful, is to spread it to other sections of AI in Latin America.

In addition to the mapping, and as part of the same project, AI Argentina organised a series of petitions to collect signatures to put pressure on the authorities to take concrete measures related to indigenous communities. One of these petitions is of a general character and another six were designed for specific cases on which AI Argentina plans to work more closely.

The general petition requests that evictions be suspended and the cadastral survey be carried out according to stipulations in Law 26.160; promotes a law of community ownership; promotes integral policies of consultation and prior consent regarding plans that affect indigenous communities; assures the rights of these people to demonstrate without the fear of retaliation; and guarantees the freedom of political, social, economic, cultural and religious organisation of indigenous peoples.

The six specific petitions are as follows:

- **Quilmes Indian Community** (Calchaquíes Valleys, Tucumán province): Restitution of the Sacred City and judicial guarantees for one community member who is in prison
- **Chocobar** (Tucumán province): Judgement and punishment for those responsible for the death of Javier Chocobar, who was shot dead while peacefully defending his land in 2009 (there is still no trial date), and delivery of the community title for the Chuchagasta indigenous community as established by Law 26.160
- **El Descanso** (Formosa province): Compensation for losses as a result of construction of a road over Pilagá territory in 1997 by the state and guarantee of consultation and prior consent regarding any plans and decisions that affect the communities
- **La Primavera** (Formosa province): Delivery of community title for ancestral land of the Potae Napocna Navogoh community and judicial guarantees for one community member who has been accused by the Justice

- **Lof Mapuche Campo Maripe** (Neuquén province): Guarantee of consultation and prior consent regarding any plans that affect communities (in the wake of the Vaca Muerta oil venture to extract non-conventional oil via hydraulic fracturing (fracking), which began in 2011), the undertaking of an environmental impact evaluation of fracking and guaranteeing the application of Law 26.160
- **Winkul Newen–Relmu Ñamku** (Neuquén province): Judicial guarantees in criminal proceedings (in December 2012 the judiciary delivered an eviction order to the Winkul Newen community to favour the advances of the Apache oil company. The community resisted the eviction and three of its members were later investigated and prosecuted for attempted murder and aggravated damage), the cessation of persecution and threats, consultation and prior consent and the application of Law 26.160

COLLECTION OF INFORMATION

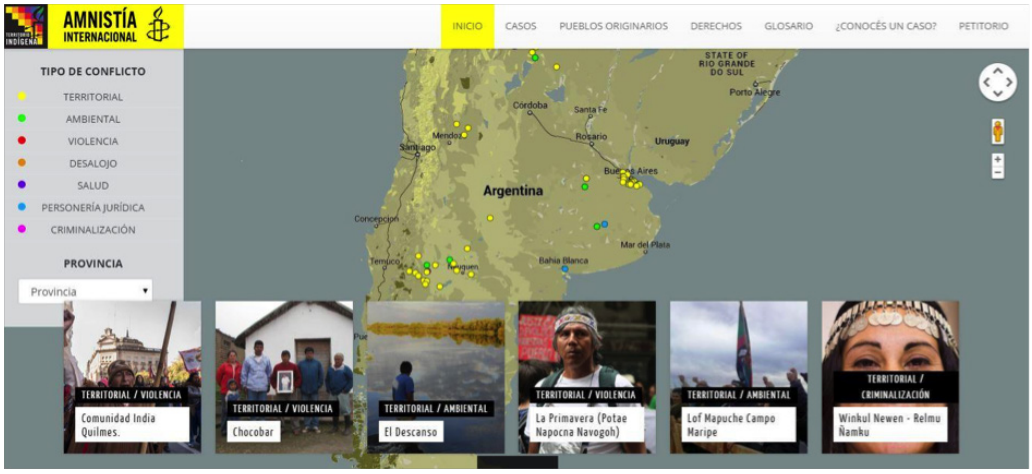
The website was launched in August 2015, days after International Day of the World Indigenous Peoples. The communication campaign was carried out through social networks and press contacts.

The map shows 183 cases of conflicts in Argentina, in which indigenous communities demand compliance with their rights against governments (municipal, provincial, national), corporations (agricultural, mining, oil, tourism, among others) and judges and prosecutors who ignore the laws that are in place. The conflicts are categorised into six types: territorial, environmental, evictions, violence, legal status and criminalisation.

The mapping was carried out with the support and collaboration of the communities themselves, the organisations that accompany them and experts on the subject. Thus, the sources of information include organisations that participated in the project, such as the Argentine Association of Interpreters, Andhes, the National Ombudsman, Endepa, Gajat and Serpaj, as well as lawyers from these organisations and journalists. Among the experts it is worth highlighting Darío Aranda, journalist and activist for indigenous rights. More conflicts were surveyed than it was decided to show; the site shows only conflicts on which public information (for example court records) exists, to validate the conflict's existence.

The mapping project has foreseen the creation of instances of collective construction of data. The idea is to systematically update the map with input from the organisations that accompany indigenous peoples, from lawyers and from indigenous leaders. The website features a section with an open form where users can report the existence of other conflicts. Since the launch of the site in August 2015, information has been received about around 30 additional cases.

Before being published, this information must be corroborated, which includes verification by the staff of AI Argentina using available public information and with the interested parties.



The Territoria Indigena user interface

It is worth highlighting that, although the information is available for viewing online on the maps, the databases that feed the maps are not openly shared with the public. This is because of the sensitivity of the data, which includes judiciary information as well as requests and/or complaints that are not always recognised by local or national authorities.

VALIDATION

As mentioned above, the information collected is in the first instance confirmed by checking public information that is available, in particular judicial rulings, news or other kinds of public information. The open form to report conflicts has obligatory fields that facilitate the posterior verification of the information. Cases in which the information is circumstantial or informal – that is, it can't be verified using the means mentioned above – are not uploaded.Until now, the process of verification has been rather ad hoc: a protocol for information verification has not yet been set up.

In all the cases shown, the team seeks and obtains the consent of communities before they become part of the map. At the same time, precautions are taken to confirm the information with the communities, and above all to ascertain if they are effectively willing to appear in the mapping. The objective of this process is to ensure that exposing the conflicts does not put indigenous communities at risk.

SUSTAINABILITY OF THE INITIATIVE

AI Argentina is funded by donations from the public and some support from AI's European sections. The project does not have a specific budget beyond the development carried out for the software and the first collection of data. However, the members of AI Argentina are considering extending the initiative and launching new versions as new cases appear.

The possibility of extending the map to other sections of AI in the region is also projected. However, the map software was custom-made and the programmers did not use open source software. In this sense, replication of the page is limited, and in practice, if other organisations wanted to copy the design, they would need to re-hire the same programmers or carry out the programming again.

USE OF THE DATA

As we have noted, on its website AI Argentina calls for the signing of seven petitions, with the aim of presenting these to the people and institutions on which the cases depend politically and judicially. Responses by local or national authorities have thus far been scarce, although it is worth remembering that this is a platform that was launched only a few months ago.

BENEFITS

The page allows for increased visibility of indigenous conflicts on a national level. So far, the map has been well received by indigenous communities. No complaints, claims or negative feedback about the contents have been received. On the contrary, some people have been in touch with comments or contributions, suggesting corrections to the categorisations given by the team (e.g. if the team did not identify a certain conflict as territorial but rather as an eviction).

AI Argentina has also carried out a regional communication campaign on the initiative on local radio stations, which has had a very good response. Territorio Indígena has also been mentioned in at least one publication of national reach.

AI Argentina also expects a series of meetings with national authorities, such as the National Institute against Discrimination, Xenophobia and Racism, and also with representatives of the indigenous communities, to carry out an evaluation of the information published and receive feedback from the interested actors.

BARRIERS AND CHALLENGES

The sensitivity of the information limits the openness of the database. This move towards protecting data is understandable, though, and highlights the care that management of the data requires when its publication can directly affect vulnerable communities.

Another point related to the process of validation is that, thus far, AI Argentina does not seem to have developed an automatic protocol of verification of the information. This means that the process of publication of new cases is delayed and the tool loses its agility. Issues related to the protocol on updating data onto the page has also not been resolved.

The fact that the programming of the page is not open source limits its reappropriation and/or improvement. It is also an obstacle to AI Argentina extending the mapping project to other countries in the region.

ICONOCLASISTAS

http://www.iconoclasistas.net/

Valeria Arza and Martín del Castillo

Iconoclasistas arose from the desire of two communicators to work with grassroots organisations and the general community to communicate panoramas of injustice and social inequality and boost collaborative practices of resistance and transformations. Through the generation of images and visual devices, such as maps, posters and flyers, the pair aim to provide tools to encourage a reflective consciousness and a critical knowledge of local problems and to generate networks of solidarity and affinity between different groups. The aim is to centralise dispersed knowledge to build a story that challenges hegemonic interpretations or shows an ignored reality. Iconoclasistas defines itself as a "space of experimentation, collective research and collaborative practices".

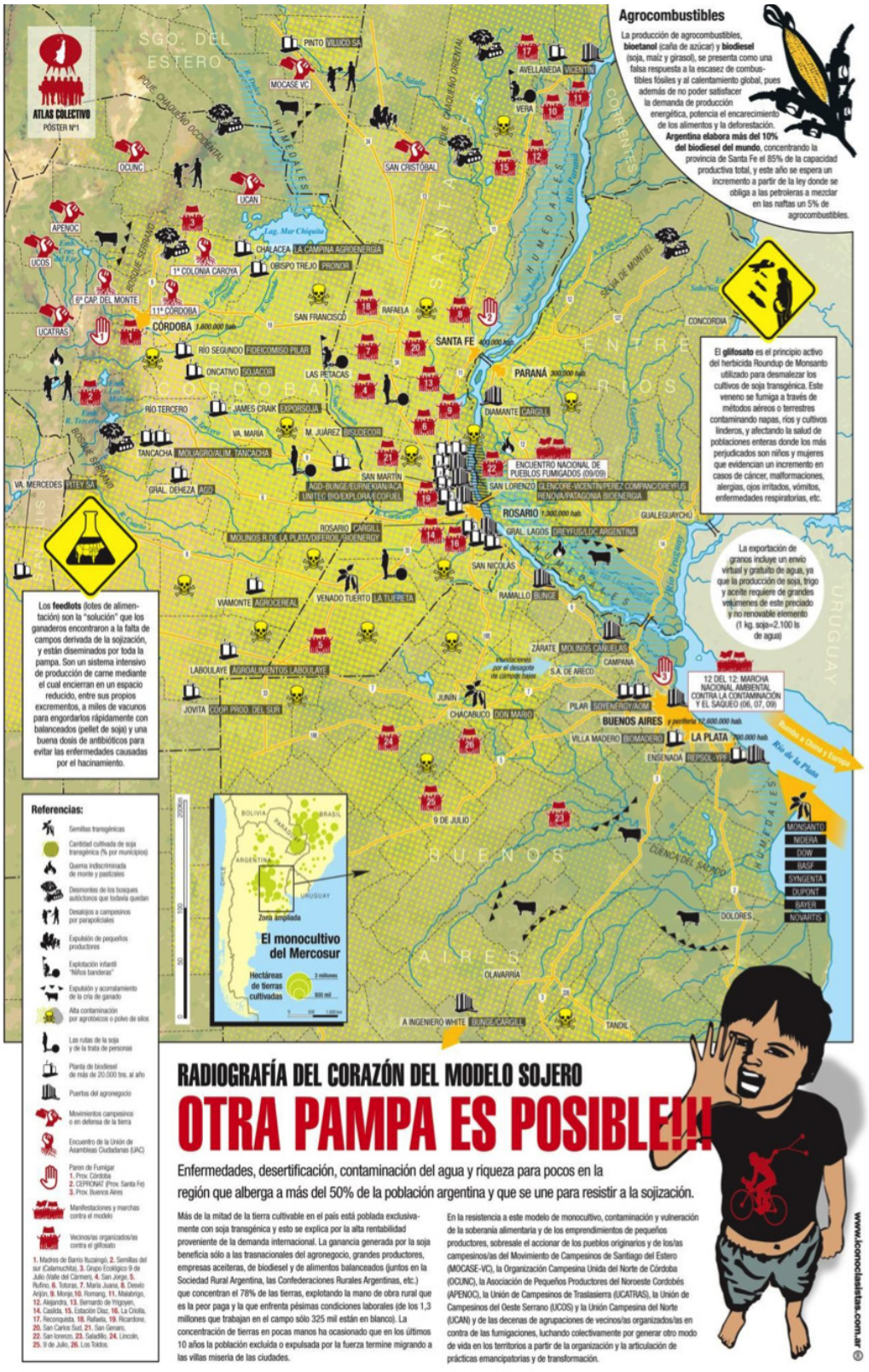
Created in 2006, the duo that make up Iconoclasistas combine graphic art, creative workshops and collective investigation to generate open access resources and practices. Throughout these years they have created a large number of images (icons, pictograms and graphics devices) in easy-to-reproduce formats that are available on their website for use in mapping. There are also instructions online to facilitate the use of the practices by any actor interested in replicating them. The resources uploaded can be reappropriated, reproduce, and reformulated as long as they are not used for commercial purposes. The website thus works as a multimedia communication support tool that powers socialisation and stimulates appropriation through creative commons licences. Third parties integrate Iconoclasistas images into particular designs to illustrate an idea, fact or concept.

The most successful tools have been collective mapping workshops, which are presented with variations depending on the working group, the time available and the issue being addressed.

CONTEXT

Iconoclasistas is the result of a search for tools to generate new strategies of action and resistance in Argentina's post-2001 crisis scenario. It was set up in a context of strong experimentation with social innovations that included escraches (protests at rights violator's homes/workplaces), assemblies, pickets and new forms

Image 1: The heart of soya agri-business



of collaboration such as barter fairs, collective workshops, etc. These kinds of actions, which peaked after the crisis, started to peter out or were co-opted by the government in power. In this context, Iconoclasistas sensed the need to develop new tools of mobilisation, as well as tools to represent the problems affecting communities and to connect struggles or conflicts. Around 2004, Iconoclasistas toured different Argentine cities on the invitation of political groups, citizen assemblies and student groups to experiment with new forms of communication and research and to generate tools that could be reappropriated.

In 2008, the team began to develop collective mapping workshops: promoting collective work on maps and cartographic plans through the design of a series of tools that help share non-specialised knowledge and daily experiences to make the most pressing territorial problems visible and to identify those responsible, connections and consequences. The construction of collective stories serves as a factor in the creation of emancipatory practices.

The initiative is particularly powerful because it represents, on an actual cartographic map, the day-to-day experiences of participants in the mapping process. Anyone who looks at the maps can rapidly understand where the situation is and who is involved. Maps give us a general overview of a particular situation but also inform us about political responsibilities, connections, causes and consequences. Two examples of their outcomes are illuminating.

The first, called "The heart of soya agri-business" (Image 1), was produced in 2010 to show, on a map of Pampa region, hard data, such as quantity of hectares cultivated with soya and location of silos and harbours from where soya products are exported, together with social and political data, such as regions or towns where groups of neighbours have organised against fumigations, where there have been demonstrations against the production model, where social movements have defended land against expropriation, where local populations have been evicted, where fumigation has taken place and where indigenous vegetation and forests have been burned or cut down.

The second example is called "Ciruja republic" (Image 2). Cirujas are people without formal jobs who make a living by searching for things in the rubbish that can be used, consumed or sold. In Argentina, a particular group of cirujas, called cartoneros, emerged in the early 2000: these people search for items that can be recycled in specialised plants. The Ciruja republic map shows the different organisations and places cartoneros access in their day-to-day work in José León Suárez in Buenos Aires. The map shows landfills; recycling plants; meeting, work and cultural places; plants for separation and classification of materials, etc. Since it makes visible the work of people who remain largely invisible and marginalised, cartoneros organisations have used the map as negotiation tool when facing the

authorities in José León Suárez: it works as a proof of the extent of their presence in the territory and the diversity of their day-to-day work and cultural activities.

Image 2: Ciruja republic

WORKING METHOD

Iconoclasistas members distinguish between "reactive mapping", which implies simply visualising the problems, and collective mapping, which highlights collective grassroots work and has the final objective of empowering the community and strengthening solidarity ties. Thus, in the workshops are students, neighbourhood organisations, social movements, artists, communicators and all those who have an interest in collectively thinking their territory.

The workshops are moments of collective work that allow the consensual development of narratives that dispute and contest those installed as natural in society (those corresponding to public opinion and the mass media, and those associated on the level of beliefs, mandates and forms of common sense). The workshop is a space of collective reflection, with the aim of organising dispersed stories in a common support tool (the map) to communicate with greater efficiency the needs of a marginalised collective.

The map starts from cadastral maps downloaded from OpenStreetMap or, if there is time, maps drawn by hand by the participants. A while before the mapping, there is a moment of coordination and exchange with the organisers (be they groups, cultural spaces, social movements, etc.), to discuss in depth the problems, themes and what it is hoped the workshop will achieve. This means the work can begin from a common base that can broaden and diversify in the concrete proposal.

To begin the workshop, there is an introduction to cartography, critical to clarify the potential of the work with maps and graphic devices, and a debate about the ideological construction of hegemonic representations and the importance of alternative outlooks. Then participants are divided into small groups, which share knowledge and experiences and use their imaginations and memories to trace and intervene in the map. There are no conditions to participation in the workshops. Iconoclasistas believes everybody has the ability to "ascend" – to realise the flight of a bird, which allows them to visualise the land.

The icons used during the workshop are specially designed by Iconoclasistas for playful intervention in the maps. They then are available on the organisation's website. The icon themes come from prior exchanges with the organisers, who provide a framework from which to start talking in the workshop. Various types of symbols and graphics are made use of. Creation of collages, phrases, drawings and mottos is encouraged. Critical creation is activated through conversation and the passing on of experiences, knowledge and views. This maximises listening, sharpening the senses and a focus on a common platform. These multiple devices are used to signpost flows, processes, connections, subjective shots, body platforms, etc.

The workshop ends with a "sharing" of the maps developed by the groups. This is key to revealing differences and building comprehension, and gives rise to a creative space that does not close in on itself but positions itself as a starting point available for uptake. In this way, the workshops have two general objectives: (1) working territorially based on agreed goals with the organisers; and (2) socialising a collective mapping tool stimulating participants' appropriation and experimentation.

To encourage collective mapping as a tool that can be used by other actors as an instrument for critical reflection, the team has produced a booklet, shared on the website, that suggests the steps to follow to carry out a collective mapping workshop. Following this document, and as a cumulation of various years holding workshops, in 2013 the book "Manual de mapeo colectivo: Recursos cartográficos críticos para procesos territoriales de creación colaborativa" was published. This analyses in greater depth the different methodologies and models for planning and undertaking collective mapping workshops. These materials are openly available free of charge on the website.

The book presents the different ways of working that have been used and improved over the years. The different formats of collaborative elaboration seek to promote collective reflection and creation. They vary in design and layout and were invented, adapted and perfected through the idiosyncrasies of the different groups of participants. Some of the practices are as follows:

- **On the fly mapping**: Table with maps and files that individuals can intervene in with the objective of registering information in detail that can later be systematised
- **Turntable**: Large map divided into parts, worked on through rounds of themed intervention, that are later made up in the style of a jigsaw
- **Mural maps**: Posters hung on the wall, ready for intermittent and random intervention, in a space of permanent circulation
- **Magnetic support**: Signposting of maps on blackboards through icons that can be moved, to speed up encounters, shoot ideas or register junctures
- **Timeline**: Relaying of significant facts, key people, public policies and uprisings, symbols, allegories and signs in a space of time

PUBLICATION AND VALIDATION OF THE DATA

The results of the collective mapping are published on the Iconoclasistas website, and at times are exhibited in art shows and publications. Publication always comes with the consent of workshop participants, as maps can contain sensitive information. Publication also requires prior data validation. First, the data is submitted for evaluation by participants themselves. Second, once the workshop is over, Iconoclasistas checks the data via internet searches.

Iconoclasistas decides to omit data when (1) the facts cannot be verified and/or (2) exclusion will not diminish the ability of the map to communicate or make visible the problem being worked on. The objective of the maps is not to contain all or the highest quantity of information available, because they would then run the risk of being illegible. Rather, the workshops, supported by the maps, seek to promote the construction of a collective story through "different vectors of information" from which it is possible to go deeper.

SUSTAINABILITY OF THE EXPERIENCE

Iconoclasistas is maintained based on the voluntary efforts of two people who are deeply committed to the struggles of social movements. In some cases, the costs of the collective mapping workshops are covered by interested organisations (like universities, municipalities or social movements). The website that holds the maps, open source resources and manual is maintained through personal funds and the work of the Iconoclasistas members themselves.

RESULTS AND USE OF THE INITIATIVE

Iconoclasistas has carried out more than 100 interventions between mapping workshops, cartographies and publications. The mappings have reached various countries in Latin America, such as Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela, and have also reached some countries in Europe, including Austria, Portugal and Spain. The activities and presentations of Iconoclasistas include publications in Australia, Canada, the United States and some European countries, as much in artistic meetings as in political and academic circles.

In the region, Iconoclasistas is an established and recognised group and is regularly called by social movements, NGOs and assemblies to undertake mapping activities. Its tools have been replicated and reused in "derivative workshops" by other groups, including artists, activists and even secondary schools, in Argentina and the region. The Iconoclasistas Facebook page has more than 22,500 followers.

Iconoclasistas maps have been widely used as tools of visibility and political struggle by the social groups involved, allowing them to communicate situations of injustice or inequality in a simple way. An example of this is the cartoneros from José León Suárez, who used their map to show the authorities their historical trajectory in the region and territorial coverage in a simple and powerful way. As such, the map was used as a tool for political negotiation.

BENEFITS

- The collective mapping workshops allow for the collection and systemisation of dispersed knowledge within a group of people (be it a community or an organisation) and stimulate their subjective recognition as a group tackling the same theme using their own experiences. It is intended to be just one more strategy, a medium for reflection, the socialisation of knowledge and practices, to maximise creation, imagination and empowerment using the impetus of collective participation.
- Participants in the workshops learn tools that can later be used to problematise specific issues in a simple way, to signal power relations, to visualise conflicts and resistances, etc.
- Combining cartography with art and open source cultural practices, etc.
- The knowledge pool generated is available to participants and the general public, and is shared as much in the spaces in which the workshop is carried out as it is via the website. Appropriation of the methodology is promoted via the publication of entertainment materials and communication. The website also presents the experiences of the other actors who decide to replicate the collective mapping workshops. Supplies, comprising images that can be used to intervene in the maps, are also freely available.

- Increased visibility of local problems promotes citizen control over the action of different power groups (businesses, governments, communities), mobilising citizens to seek solutions to local problems.

BARRIERS AND CHALLENGES

- Although this is not an explicit objective of Iconoclasistas, the absence of rigorous mechanisms for data validation is a limitation from the point of view of the potential of the tool in terms of the generation of knowledge for scientific purposes.
- Regarding the "appropriability" of the results of the workshops, although much of the visualisation of the product (map, timeline, etc.), the resources (vectorial images) and the methodology (manual for developing collective mapping workshops) are of open access, the publication format of the maps (images) makes it harder for other collectives to take up intervention on any particular map.
- In the face of a lack of specific funding, Iconoclasistas relies on its own resources or those of the organisations that contacts it. This could be an obstacle in undertaking activities with groups that need time and economic resources.

DISCU

DISCUSSION

Mariano Fressoli
Valeria Arza

The elements and activities necessary to achieve the SDGs are all interrelated, and there are many different stakeholders, whose interests are not always well aligned. Any suggestion to move forward on a path of greater environmental and social sustainability requires the participation of a great diversity of actors providing different knowledge, expertise and resources.

This report has presented four initiatives that promote openness in production and appropriation of data, information and knowledge in fields of application associated with three of the SDGs, as discussed in the introduction.

The great challenges the SDGs bring up could be addressed through traditional ways of producing knowledge (e.g. experts collect and analyse data and then write up reports for policy-makers). However, it might be much more efficient if many people, responding to different types of interests, jointly contribute to the creation of knowledge, information and innovative solutions.

And it is not just a question of efficiency. Collaborative production enforces social values such as democratisation and empowerment, by enhancing the participation of a variety of actors in the production of data and knowledge, by opening up access to these recourses and by promoting more horizontal decision-making. These values favour democratic production of knowledge that empowers and mobilises people.

In sum, in a context of strong cognitive challenges put forward by the need to transition to more sustainable societies, the outcomes associated with citizen-generated data and knowledge are more likely to be socially innovative, accurate, democratic and powerful in terms of reducing inequalities – and they can be achieved at a lower economic cost and higher speed. We believe that, by opening up the process and outcomes of social efforts, difficult tasks can become simpler, thus improving the effectiveness of any action towards sustainability.

Interaction is an effort in itself: it takes time and can be frustrating. But today there are technological tools to facilitate these processes and accelerate the benefits associated with citizen-produced knowledge.

On the four different citizen-generated data initiatives, we have analysed the process of data collection and validation and the extent to which the experiences can be sustained in the near future. We have also identified the main benefits and obstacles. In this final section, we reflect on what we have learned on these items.

CITIZEN-GENERATED DATA: WHO USES AND PRODUCES IT?

Figure 1 below summarises the extent to which opening-up and collaboration are present in the different stages of data production and sharing.

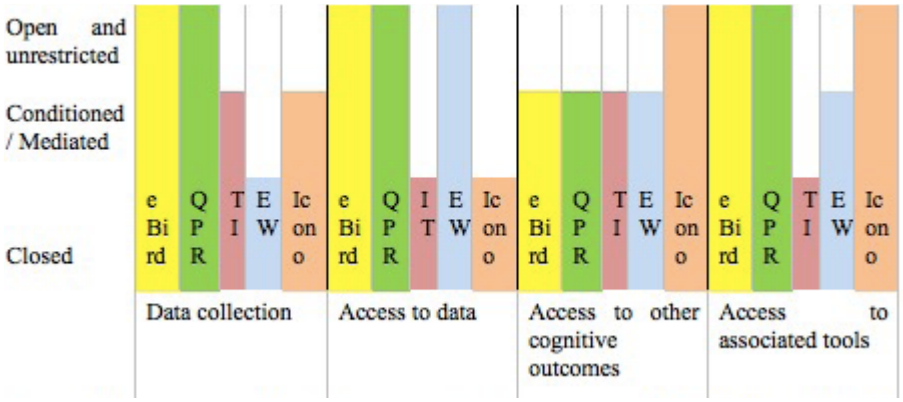


Figure 1: Degree of openness in citizen-generated data by initiative

Data production is unrestricted in the case of eBird and QPR: anyone can produce new data using the form provided on the websites. In Territorio Indígena, participation is conditioned: although anyone can identify cases of conflict involving indigenous populations, it is not yet clear how and when these cases will be incorporated in the mapping. Finally, Iconoclasistas promotes the participation of different stakeholders, as long as they participate in the workshops it organises.

Access to data is open to anyone in the case of eBird and QPR. However, neither Iconoclasistas nor Territorio Indígena offers access to data used in the production of their maps. Iconoclasistas provides full access through creative common licences to all final maps in different formats. Territorio Indígena visualises maps on its website but the reuse and sharing of its outcomes is restricted to the use of its website. The same is the case for all the other initiatives.

eBird, QPR and Iconoclasistas provide full access to their tools. These are open source and can be easily obtained in public repositories (eBird and QPR) or through the website (Iconoclasistas). In the case of Territorio Indígena, tools are not available without contacting (and presumably paying) the programmers who designed the software.

In general, all four initiatives had very little information on data usage. Some information on the actual supply of data exists, but less on demand or use. We can conclude from the conversations we had with key informants that data is used directly by citizens (e-Bird, QPR), by NGOs (e-Bird, Iconoclasistas, QPR and Territorio Indígena), by the municipal government (QPR) and by social movements (Iconoclasistas).

However, we cannot know for sure because very few projects collect data on usage. None of the initiatives has automatised processes to collect user data and many of them do not even know how many visits they have to their website. This may be related to lack of resources to develop or install the needed infrastructure, but we believe it also responds to the fact that these initiatives are at the forefront of their kind in the country and, so far, quite isolated. The culture of collective data production and sharing is just starting; these projects are still at the very beginning of the learning curve and are mostly trying to settle down. They do not compete among themselves on the basis of users and there is no apparent need/urge to design impact assessment indicators.

HOW SUSTAINABLE ARE THEY?

In general, the initiatives depend on the generation of fresh funds from projects to survive in the short to medium term. Of the four initiatives studied, only one (eBird) has long term-funding.

eBird Argentina depends on funds from an NGO (Aves Argentinas) and secured some initial funding to establish the programme in Argentina. This case is interesting also because much of the infrastructure needed (servers, software, technical assistance) has not been built by Aves Argentinas but was already available open source (created and maintained by Cornell University). In this case, the dilemma is that using an international infrastructure without a decentralised management could risk losing control of the data and/or depends ultimately on a third actor that provides the funding for the infrastructure (i.e. Cornell University).

The rest of the cases are being funded project by project, which means that, once the administrative period is finished, they need to raise further funds to sustain the initiatives. In cases like QPR, this means that, once funding finished in 2014, the project went into a sort of stand-by state, whereby the website is still maintained but the organisation does not really have the resources or personnel to carry on the process of outreach, data verification and uploading.

Despite these difficulties, it is also worth noting that the cases analysed do not imply a huge cost in terms of personnel or infrastructure. And if they use open source tools, they are highly replicable. This is a huge advantage of citizen-generated data and other open initiatives. For instance, eBird relies on hundreds of volunteers to gather data in Argentina but is managed through only 4 employees and 20 expert advisors working ad honorem. With such a small staff and the participation of "birders", it has managed to map almost every species of birds in Argentina in less than three years (similar work by scientists would probably have taken at least a decade). In this sense, citizen-generated data operates under

the principles of "exponential organisations" described by Salim et al.: these have "massive transformative purposes" but work with staff on demand, make intensive use of information and communications technology and big data and do not rely on high capital costs for their operations.[10] But these organisations are able to mobilise citizen support only if they have a good grasp of social networks and community management. Except for eBird, this is still a challenge for the cases analysed.

BENEFITS

VISIBILITY AND OUTREACH

A common thread in all the cases is that, by using mapping and other techniques and by sharing data and outcome on the web, they are able to make visible certain problematics (violence against minorities, land-grabbing, environmental risks, etc.) that are not always present in the mainstream media. All initiatives have managed to gather disperse information and to show the scale and relevance of the problems they tackle. In some cases, like Territorio Indígena, Iconoclasistas and QPR, the process of visibilisation also helps communities recognise themselves as part of a common problem or issue. This can even scale up to the point where the participants start to recognise themselves and identify as part of a wider collective, as is happening with eBird and the "ebirders". The visibilisation of a common issue is important not only in terms of empowerment (see below) but also as a tool to engage with other actors, such as authorities, the press and potential supporters. Almost all the cases showed good reception of activities in the media. Even in the case of Iconoclasistas, which does not upload data, journalists and other organisations have reused the collective maps developed.

The downside of visibilisation is that a good reception is not always followed by governmental answers or public support. In relation to QPR, ACUMAR has modified some of its procedures to accommodate the demands put forward by the initiative and even its own website to show similar information. In the rest of the cases, however, the situation is more blurred. For instance, Territorio Indígena has not had an immediate answer from the authorities, and this will probably depend on further engagement work beyond the initiative. Thus, it seems that citizen-generated data initiatives can initiate a process of dialogue but do not by themselves solve organisations' claims (something that probably will need to be complemented by other forms of mobilisation).

10 I. Salim, M. Malone and Y. van Geest, Exponential Organizations: Why New Organizations Are Ten Times Better, Faster, and Cheaper than Yours (and What to Do about It), New York: Diversion Books, 2014.

AUTONOMY AND EMPOWERMENT

Another important benefit of the initiatives is a renewed sense of autonomy and empowerment in communities once they learn to use the tools. This is of course hard to measure, but respondents mentioned it several times. For example, some indigenous communities complain that they are not included on a Territorio Indígena map; others contact the project to correct information posted on the website. The community of *cartoneros* from José León Suárez carried a physical copy of the map to show authorities the extent of the area where they work. In the case of eBird, the sense of empowerment came with the ability to learn by interacting with other bird watchers. It is perhaps the interaction and self-recognition that go hand-in-hand with the data production process (more than the production itself) that give participants a sense of empowerment.

Participation seems key to gaining autonomy, but, as Arnstein shows, there is a ladder of participation, with condescending participation at the bottom and real control at the top.[11] It is worth keeping in mind this classification since it is not always easy to judge how much participation really empowers the participants of an initiative. As Arnstein says, it depends on the actual commitment of participants and the distribution of power. Again, an interesting case is eBird. Although there are many users of the website, degrees of participation and commitment differ between pure recreational users, who are restricted in their skills to make full use of the data available, and those who use the data for scientific purposes and can make the most of it.

REPLICABILITY

One important benefit from some of the cases is the possibility of replicating the working methods, technologies, software and other tools. This benefit is based on the open source character of the tools, which allows different actors to access, use and modify the technologies available. In other movements, like open science and makerspaces, open source seems to be the rule.

In fact, we expected to find similar results in citizen-generated data, but this was not always the case. In cases like QPR, eBird and Iconoclasistas, the use of open source tools and creative commons licences is mandatory. QPR, for instance, has uploaded its software files to Github and its tools have already been reused in the United States. The case of Iconoclasistas is also remarkable, since what has been reused is not code or technologies but the vector images and the manual for conducting the collective mapping. The webpage of Iconoclasistas has plenty of examples of resuse by other actors, including artists, schools and activists.

11 S. Arnstein, "A Ladder of Citizen Participation", Journal of the American Institute of Planners 35: 216-224, 1969.

The exception to this pattern is important. Territorio Indígena did not regard it as necessary to use open source software in the beginning of the project, which seems to go against its aim of extending the initiative to other countries in Latin America.

PRODUCTIVITY

High productivity and collective intelligence are two of the virtues often quoted by advocates of open source practices and technologies. This is especially evident in the literature on open science. We also expected to see this characteristic around the cases, but the results are nuanced. The only case where there is a clear peak in productivity of data collection seems to be eBird, where the a amount of data on birds has increased exponentially. In the other cases, it is difficult to see this kind of result, either because the initiative is very recent or because it did not get enough participation to achieve a high level of responses.

For instance, Territorio Indígena collected most of its data either in house or in collaboration with advisors, and only then allowed citizens to send information. At the time of this report (November 2015), it had received 30 forms but had yet to review and upload them. QPR has also had a lot of difficulties fostering citizen participation online. In some cases, people have just called them to send information instead of using the webpage.

Iconoclasistas does not rely on online data collection and uses analogue methods of data-gathering, which limits the amount of people who can participate in the workshops. However, collective intelligence is definitely amplified through interaction in the workshops among people with different experiences, skills and expertise. In interviews, Iconoclasistas highlighted several times how enriching for everyone the workshops were. The richness of the initiative cannot be measured in figures, but the fact that the data was generated collectively would have made a great difference in terms of data quality and socio-political impact.

CHALLENGES AND DILEMMAS

LACK OF RIGOROUS MECHANISMS OF DATA VALIDATION AND USE

One common problem was a lack of clear procedures to validate information and to check who the users are. eBird is an exception on the first issue, since it has a clear protocol on how to upload the information. But even in this case, it is difficult to learn how many users of the information the Argentinian chapter has.

In the rest of the cases, the process of checking information before adding to the database is usually done through ad hoc processes. Embedded webpage checks that could filter some of the information automatically are generally not used. As such the process of data validation is mostly manual.

The same happens with the generation of indicators of use of data. It is difficult to know how many users actually visit the project webpage and/or use the information produced. For instance, QPR did not install a visit counter at the beginning of the project; it started using one only in the last period of the project. Territorio Indígena did not have information on individual visits to the webpage at hand. Here, again, most of the cases had some information on use by social actors but they were not tracking them in a precise way. For instance, when we asked Iconoclasistas who used its resources, the respondents could mention many users by heart; they also had an idea of the type of actors most interested in visiting their website, but they did not know these in full detail.

This may be related to a lack of resources to develop or install the needed infrastructure, but we believe it also responds to the fact that these initiatives are at the forefront of their kind in the country and, so far, quite isolated. The culture of collective data production and sharing is just starting; these projects are still at the very beginning of the learning curve and are mostly trying to settle down. They do not compete among themselves on the basis of users and there is no apparent need/urge to design impact assessment indicators. eBird stands here as a much more consolidated case because it is already big and settled internationally. This is only an hypothesis, but it marks the question of "indicators" to help measure the results of this kind of initiative. The interviewees did not see this as a problem but in the long term it could hinder assessment of the actions the projects are taking on.

STRATEGIES TO SCALE UP

Another common issue was absence of detailed plans to scale up and extend the experience of citizen-generated data to other localities. The exception here again is eBird, which has become a global endeavour, with Aves Argentinas only one of the many national chapters. Difficulties with scale-up are common with grassroots initiatives and innovation projects.[12] Sometimes, there are no motivations to scale up and project leaders are happy enough to open up their tools to whoever would like to use them, as with Iconoclasistas. However, in the case of Territorio Indígena, there are clear advantages to scaling up (to create a regional map of indigenous conflicts), and interviewees mentioned it as a possibility. However, difficulties in doing so remained: despite intentions to extend the map to other countries in the region that face similar problems (e.g. Brazil), Territorio Indígena did not use open tools at the beginning, which hinders any process of replication.

12 Adrian Smith, Mariano Fressoli and Hernán Thomas, "Grassroots Innovation Movements: Challenges and Contributions", Journal of Cleaner Production 63: 114-124, 2014.

Interestingly, the cases have been noticed enough to foster some replications. For instance, QPR tools have been reused in the United States and Iconoclasistas has been appropriated several times. In light of these experiences, it is tempting to raise impossible counterfactual questions such as those related to what would have happened had these initiatives thought about scaling up from their initial stages and planned strategies thereafter.

POLITICAL SENSITIVITY

A much harder problem for citizen-generated data relates to how to manage information when dealing with politically sensitive cases, like those related to violence against minorities, land-grabbing, environmental risks, etc. Territorio Indígena, QPR and, to a lesser extent, Iconoclasistas are at the crossways of judiciary and political claims and a lot of care is required to ensure the information produced is reliable and trustworthy. Another important issue is to ensure the people collaborating with the project do not become exposed to reprisals by the authorities or other incumbent powers. As such, the projects mentioned need to maintain a delicate balance between opening up information to make issues visible and securing data on collaborators. In the case of Territorio Indígena, this has been done by checking with the communities whether they want to be mentioned on maps. In the case of QPR, complaints are kept anonymous.

Another important issue that did not appear in the cases but constitutes a risk is when to release the information to the public. As the case of the Intergovernmental Panel on Climate Change, information that is made public before a proper analysis and curation could be detrimental to the causes advocated by the proponents of the initiative.[13] So far, the cases analysed are using just common sense to ensure the data produced does not make the affected communities more vulnerable. But this could not always be the case: important causes could fail if this is poorly managed. Perhaps a lesson here is the need to foster spaces and forums where civil society groups can learn how to deal with these sensitive issues, which may also work as a trigger to mobilise resources in case something goes wrong.

CULTURAL BARRIERS

One last challenge noticed across the cases was the difficulties incumbent institutions sometimes face understanding the practices and practicalities of citizen-generated data. This can be seen, for instance, in the lack of and/or delayed responses to initiatives like QPR and Territorio Indígena so far. In the case of

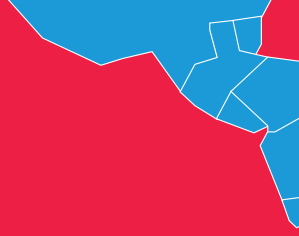
13 James McAllister, "Climate Science Controversies and the Demand for Access to Empirical Data", Philosophy of Science 79(5): 871-880, 2012.

eBird and other open science initiatives, the data produced by citizens may not be regarded as reliable or "scientific", as a result of prejudices among more traditional scientists or mistrust of citizen-produced data that has not been peer-reviewed.[14] This is why initiatives like eBird took steps to provide semi-autonomous filters and expert-supervised validation mechanisms.

As such, on a broad range of issues incumbent actors and institutions struggle to understand the potential and benefits of citizen-generated data. Cultural change is always a difficult process and people used to some practices will probably resist new forms of doing things.

Furthermore, the initiatives seem to be at the cutting edge in their respective fields (e.g. QPR was the first initiative of this kind in Argentina). As such,they face the dilemma of being at the forefront of innovation in terms of grassroots data production and struggling to get recognition because of this. However, growing recognition of the importance of open data and the pressing need to produce data for sustainable problems and, at the same time, the lower cost of technology, among other factors, allow us to believe starting a citizen-driven data initiative could become easier (without necessarily meaning the dilemmas of sustaining these initiatives in the long term will go away). Until then, however, early adopters will pay the price of introducing new practices and technologies and negotiating standards and indicators with reluctant institutions.

14 RIN-NESTA, "Open to All? Case Studies of Openness in Research", 2012, **http://www.rin.ac.uk/system/files/attachments/NESTA-RIN_Open_Science_V01_0.pdf**



ARG

WHAT IS DATASHIFT?

DataShift is a demand-driven initiative that builds the capacity and confidence of civil society to produce and use citizen-generated data to monitor sustainable development progress, demand accountability and campaign for transformative change. Ultimately, our vision is a world where people-powered accountability drives progress on sustainable development.

WHAT IS DATASHIFT DOING?

Datashift is supporting civil society organisations to produce and use citizen-generated data in our initial pilot locations: Argentina, Nepal, Kenya and Tanzania. It is sharing experiences from this support to build capacity on citizen-generated data across the world, and is seeking to inform and influence global policy processes on the SDGs and the data revolution for sustainable development.

DataShift is an initiative of **CIVICUS**, in partnership with **the engine room** and **Wingu**. For more information, visit **www.thedatashift.org** or contact **datashift@civicus.org**.

CIVICUS | the engine room | Wingu Tecnología sin fines de lucro