



# CivicLytics

Social Understanding as an Enabler of  
Economic Growth and Cultural Heritage  
Preservation of the Amazon Region

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# INTRODUCTION

Understanding the perceptions and needs of people is fundamental for governments and multilateral organizations. Knowing what citizens really need is key to design and respond to those needs through strategies, operations, and initiatives aimed at improving their living conditions.

The project promoted and financed by the **Inter-American Development Bank** (IDB), and powered by Citibeats' technology, focused initially on 7 countries (Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, and Suriname) and took into account different topics (health, security, biodiversity, education, investment, bioeconomy and more). From November 2020 to July 2021, the project counted already with the analysis of more than **288,603** opinions expressed by citizens on digital documents (blogs, forum comments, tweets, news, websites, etc.) about the Amazon region.

The goal of the analysis was to include voices of Amazon citizens to better understand the perceptions and needs of people who live and/or work in the region and to improve the design and implementation of projects, initiatives, and policies.

***“A fundamental part of what we do at the IDB is engaging with people, including closely monitoring the pulse of citizens. Our country teams are a key part of this direct task, and we have also incorporated Artificial Intelligence tools to better leverage what we do in order to better understand complex civic scenarios.”***

(**Richard Martínez**, Vice President for Countries, IDB)

# ANCESTRAL KNOWLEDGE AND PRACTICES FROM THE PAST TO A NEW BEGINNING FOR THE AMAZON REGION



The information collected by the IDB program contributes enormously to the growth and preservation of the identity of the Amazon region. Citizens are clearly expressing the need for a more conscious and sustainable economy and the relevance of diversity and inclusion to keep the multifaceted cultural and social richness of the Amazon rainforest alive.

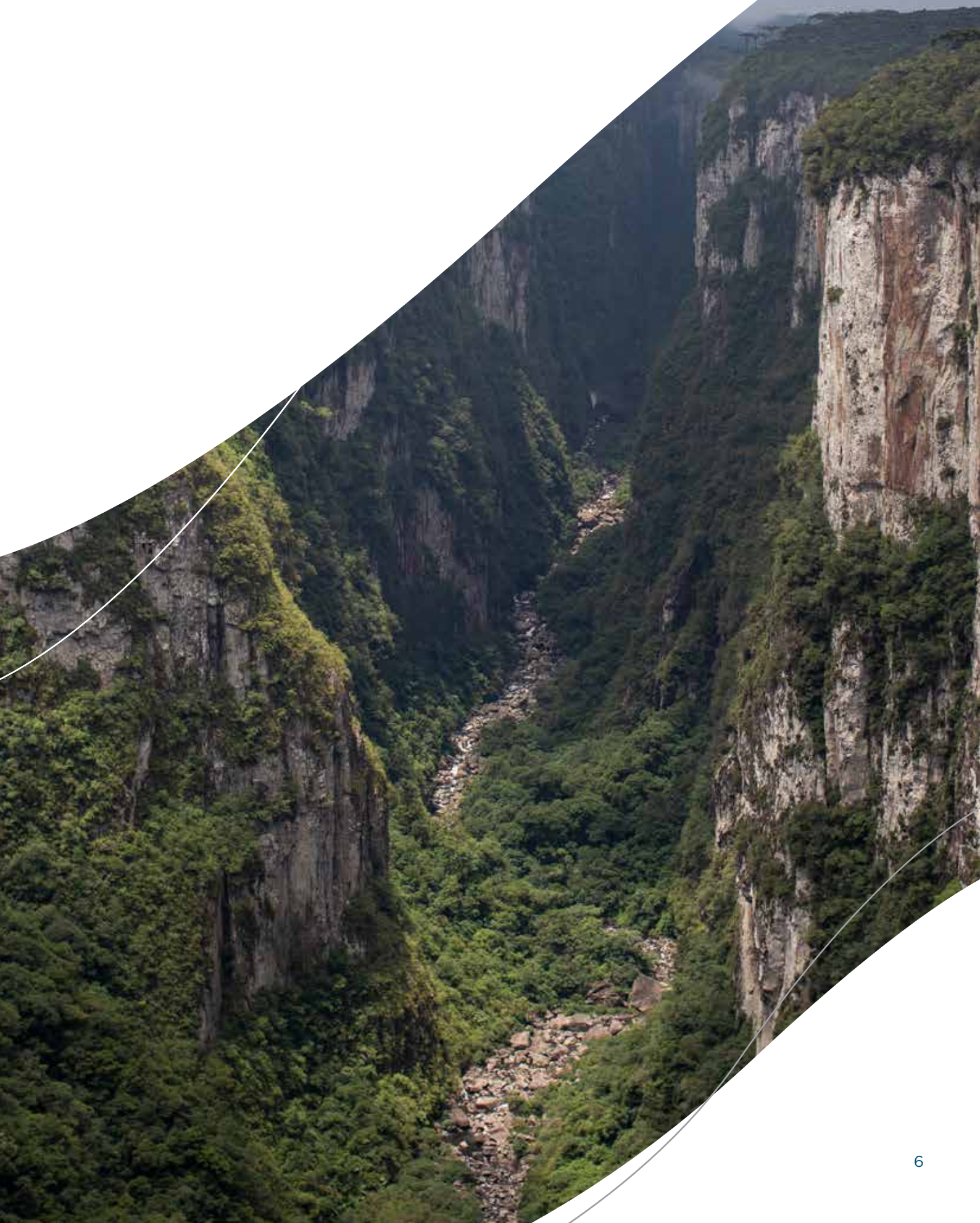
Ancestral knowledge plays a fundamental role in protecting the Amazon ecosystem; **69%** of the data analyzed in Colombia, and **43%** of the data in the region, consider the territorial knowledge as a key aspect. For this reason, the IDB will be designing, together with representatives of indigenous peoples, Afro-descendant groups, peasants, local and regional organizations, initiatives aimed at generating economic activities that are integrated with the territory and respectful of ancestral knowledge. The AI analysis contributed to raise awareness, for example, around the Maikuchiga Foundation, an initiative of an indigenous leader from the Mocagua community to rescue woolly monkeys orphaned by hunting, as well as promoting ecotourism and other conservation efforts. Another good example of economic activities integrated with the territory is “Seeds of abundance”, a training program for women from communities in the Amazon region based on the principles of the indigenous economy.

The so-called “biobusinesses” are clearly key to paving the way for sustainable economic growth of the region, focused on promoting the preservation of the Amazon basin and, at the same time, of the traditional indigenous knowledge.

***In Colombia, it was detected that 29% of the comments related to the habitat were complaints and that the public considered necessary a diversification of business activity towards bio-companies.***



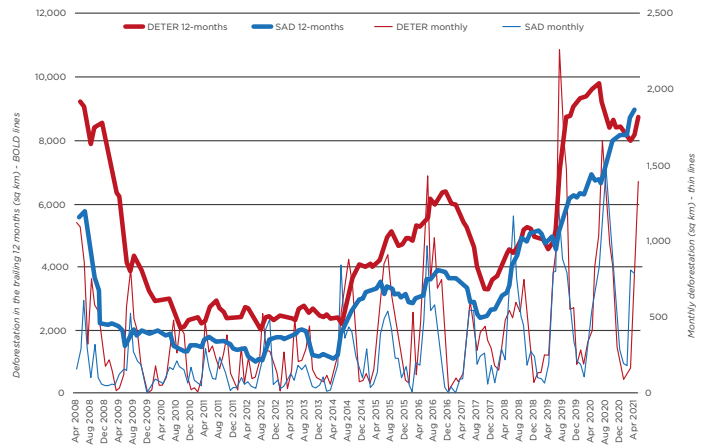
# THE IMPORTANCE OF THE AMAZON RAINFOREST



The Amazon rainforest covers a wide area comprising of much of the northwest part of Brazil, extending into Colombia, Peru, and other countries of South America, such as Bolivia, Ecuador, French Guiana, Guyana, Suriname, and Venezuela. The Amazon has existed for about 50 million years and, with its plants, trees, and animals of all types, represents [Earth's most biodiverse region](#). The rainforest, the largest in the world, has been described as the “lungs of the planet”, generating about **20% of the world's oxygen**. But oxygen is not the only precious resource that the forest has to offer, as witnessed by the hectic human activities that have been devastating the region for mining (oil and gas, copper, iron, and gold), ranching, and agriculture with an intensity that has been growing and growing in the last decades. Unfortunately, in the last few years, deforestation in the region has not slowed down. Quite the contrary, as confirmed by [government data](#):

*“According to INPE’s satellite-based deforestation tracking system, DETER, forest clearing in the Brazilian part of the Amazon amounted to 1,391 square kilometers in May. That represents a 67% increase over May 2020 and puts deforestation nearly on pace with last year’s rate, when forest loss in the region reached 11,088 square kilometers, the highest level since 2008.”*

Monthly deforestation alerts in the Brazilian Amazon since Apr 2008



Monthly deforestation alert data from INPE's DETER system and Imazon's SAD system. Imazon independently tracks deforestation to provide a check against official Brazilian government data.

A recent study (published in the journal [Nature](#)) has also confirmed how the Amazon rainforest is gradually losing its power to capture CO2 emissions and shifting from a carbon sink to a source of CO2. These insights only partially describe the relevance of the Amazon rainforest, highlighting the profound ties between the environmental protection of the region and its economic and social development, and cultural preservation, and the necessity to act as fast as possible to protect one of the greatest natural resources of the planet.

# **ENVIRONMENTAL PROTECTION AS THE MAIN DRIVER**

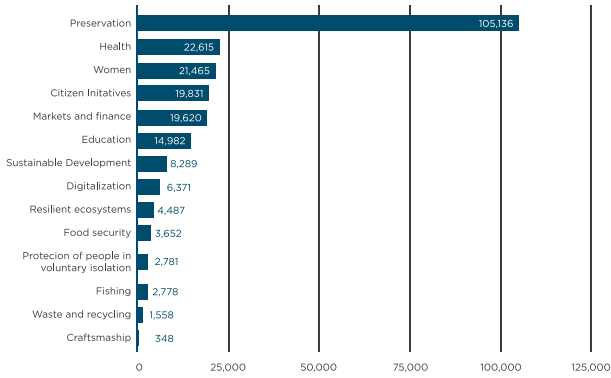




The IDB project, a social listening initiative that gathered more than 327,000 data in the Amazon region, confirmed how the importance of the rainforest from an environmental point of view remains the main problem for its population, much more than any other economic or social concern.

## Distribution of topics in the conversation

Distribution of documents by topic for the Amazon basin  
Number of documents



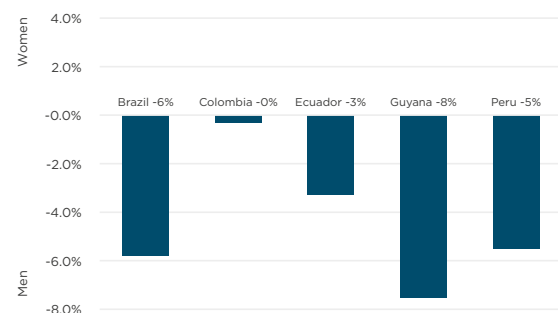
A country is classified as an outlier within a certain category if its volume of documents has more than 10% plus the average volume for the region

There are five main topics concerning the citizens of the Amazon basin: the preservation of biodiversity and natural resources; social development and health; education, access to credit, food security and employment; investments and private sector; bio-companies as a key factor.

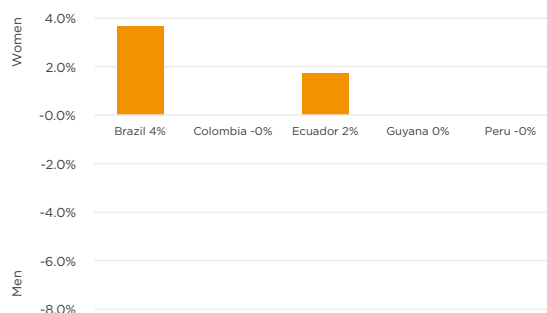
**38% of all concerns** expressed by the Amazonian population (with a peak of **79%** in Colombia) are linked to the protection of the Amazon basin. The analysis, between the months of November 2020 and July 2021, has also shown a **5% gender gap** in these comments related to the protection of the Amazon rainforest (more common among men than women). However, women appear to be much more active than men when it comes to promoting

initiatives to solve the issues of the region, particularly in Brazil and Ecuador. For example, in Putumayo, there is the Chagra for Life Foundation, an organization of women acting as “seeds guardians”, committed to ancestral crops, either for the food security of their communities or for medicinal purposes.

Gender gap in the need to protect the Amazon basin  
Difference between the share of complaints by women and men



Gender gap on citizens' initiatives  
Difference between the share of complaints by women and men



Gender gap = (share of comments/complaints by women) - (share of comments/complaints by men). A positive value indicates that the conversation is dominated by the feminine gender, and a negative one by the masculine gender.

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**TOPIC 1:**  
**The Preservation of Biodiversity**  
**and Natural Resources**





**The preservation of biodiversity and natural resources** is a key topic in countries like Colombia, Ecuador, and Guyana, with respectively **79%**, **52%**, and **43%** of the documents analyzed mentioning the topic. In Guyana, particularly, citizens celebrated the Public-Private Partnership (PPP) that led to the official recognition of the 1<sup>st</sup> Important Bird & Biodiversity Area by the South Rupununi Conservation Society. The data collected also showed the proactivity of the Guyanese citizens and their will to promote good practices to preserve biodiversity. The Guyanese citizens stood as advocates of the defense of the Amazon forest, begging citizens of other nations to realize the harm they are doing to the Amazon and stop polluting.

The protection of the environment represents an essential prerequisite for the Amazon population to improve their living conditions with **a positive cascade-effect** involving all the economic activities (agriculture, livestock), and consequently, create the conditions for guaranteeing fundamental rights such as social development, access to the basic health system, education, employment, access to credit, food, and security. This is confirmed, for example, by the central role played by fishing as an economic but also as a social and cultural-heritage activity in certain communities. In the Orellana Province, in Ecuador, **38%** of the talks collected pivot around the protection of the Napo river as a source of economic activities, including sustainable fishing. The Kichwa community fishing activity hugely depends on the preservation of the Napo river ecosystem in all its varieties (it has been noticed for example, that the presence of snails on the riverbanks in the morning is a signal that the following day there will be abundant fishing).

## TOPIC 2: Social Development and Health



**Health emergency** is present in **12%** of the average conversations in the Amazon region, with a significant **25%** in Bolivia. The Beni department (Bolivia) in particular, has witnessed a wave of civic unrest due to difficulties in the supply of vaccines and oxygen.

It is also interesting to note that, whenever health and social support from the government are lacking, people rely on the application of **ancestral knowledge** (a recent [study](#) underlines the deep connection between traditional knowledge, language, and medicine in the Amazon area, as confirmed by the words of Dr. Rodrigo Cámara-Leret, a biologist from the University of Zurich: “The loss of language will have more critical repercussion to the extinction of traditional knowledge about medicinal plants than the loss of the plants themselves”). Traditional methods are then considered as a trustful and always available source of knowledge, as confirmed by **42%** of the texts analyzed in Perú (compared to an average of **9%** of the whole Amazon region).

**TOPIC 3:**  
**Education, Access**  
**to Credit, Food Security,**  
**and Employment**



**Lack of education, unemployment, and poverty** are three topics deeply connected one each other, and for the Brazilian rural populations (**19%** of the talks compared to **6%** of the whole Amazon basin) in particular, the last two represent one of the main problems in their region. To solve the poverty issue and help poor families by distributing food, numerous networks are being formed as an initiative sponsored by citizens, but with no support from the authorities. Brazilians in the Amazon are experiencing increasing trends of food insecurity, which led to such a supportive response in the creation of food banks and of a food transfer program called Comida em Casa, benefiting 580 people. **100%** of complaints related to craftsmanship come from women, complaining about their food insecurity, caused by their employment informality and lack of tourism.

It was also found that in all countries, except Ecuador, women complain more than men about the **accessibility of financing funds for biobusinesses and access to markets** (an average of **6.7%** more complaints than men)

Talking about employment, in the sub-urban/peri-urban and rural areas, many were the comments denouncing **the lack of well-paid jobs** in the region, a situation that forces a lot of people to leave their homes and move to other parts of their country. And this, on its own, is a phenomenon that throws in other aspects that authorities need to take into consideration as they could escalate and create social tensions, such as internal migration, health and working conditions, lack of infrastructure in the destination areas, and more.



## **TOPIC 4:** **Investments and** **Private Sector**





Since the beginning of 2021, conversations about biobusinesses have been losing volume in the region. This decreasing trend might be explained by a deceleration of the entrepreneurial fabric, with fewer publications announcing product launches, investment rounds, or job offers. This further confirms the importance of the project by IDB in the region, which led to **discovering and supporting local bioeconomy** initiatives as well as **promoting biobusiness private investments**. In Brazil, for example, there was a fast increase of particular investors seeking start-up crowdfunding rounds, looking for quick gains and positive impact (both in R\$ and cryptocurrency). In Guyana, a Private-Public Partnership (PPP) was established between Discover Guyana (from the public sector) and Green Traveler (from the private sector) to promote green tourism and received with enthusiasm by the Guyanese. In Bolivia, events are being organized in order to bring together local projects and local investors as an answer to foreign investments in the country that ended up feeding narratives of resentment based on historic references (colonization) and the perception that the exporting model is not sustainable.

As far as new investments in the region are concerned, the volume of documents expressing **a need for direct investment in innovation** has remained stable since November 2020. A peak was identified at the beginning of 2021, when most universities and research centers in the region announced their funding campaigns, as shown in the following image.

**Evolution of the share of documents mentioning innovation in the Amazon basin**  
Percentage of documents



In Bolivia, **12%** of the documents talked about the telecommunication company Entel and the Universidad Amazónica de Pando, which signed a PPP aiming to improve the available e-learning offer, and thus increase the **accessibility to online education**.

In Ecuador, **4%** of the opinions analyzed focused on the project by the Confederación de Nacionalidades Indígenas de la Amazonía Ecuatoriana alongside indigenous communities **to install solar panels and radios in otherwise disconnected communities**. And in Suriname, the country that most of all expressed concerns about the **digitalization process**, even more than the protection of biodiversity, the innovation debate pivoted around different technologies developed by WWF and national universities to monitor trafficking routes and thus prevent the illegal trafficking of jaguars.

# **TOPIC 5: Biobusinesses as a Key Factor**



**Biobusinesses** are being identified across the region ranging from **traditional indigenous knowledge** (to grow cocoa and coffee) to the **use of new technologies** where collaboration between universities, big companies, and indigenous associations is seen as a key driver for success. Fishing, in particular, was considered by **6%** of all the participants as an important economic activity to increase the income of the inhabitants in the region and this explains the necessity to invest and promote policies to protect and boost the fishing activity in a sustainable and socially sound way. In Ecuador, for example, the Kichwa community is asking for the respect of the river Napo flow, as it is the source for their economic activities, including sustainable fishing. While in Colombia, initiatives to educate people and youth, in particular, are being promoted: in the province of Cacetá, students from 8 institutions are learning pisciculture and, local organizations together with Caritas Norway, have launched Project Pescado for developing Cacetá province's fishing economy.

A similar approach **to create awareness and education in local communities** can be seen in Guaviaré, Colombia, where a set of environmental management skills workshops are being offered to the citizens as a direct answer to local youth asking for more opportunities to give their opinion regarding **the use and exploitation of natural resources**, before the approval of a project.

Discovering **gender inequalities** for accessing credit, led to the creation of various government programs such as:

- In Mocoa, Colombia, to support female entrepreneurs and re-construct the city after the 2017 avalanche.
- In Ecuador, with the Disruptive Women Ecuador, funding female-led initiative.
- The Fondo Indígena Mujer Amazónica (FIMA) program to fund female-led grassroots initiatives.

The largest change proposed by the participants (**29%** of the sample) is **taking care of the environment**, which includes: separating and recycling trash, reducing deforestation, and improving the use of water.

The second change with **21%** is related to **the relationship with the communities**. In this case, the participants made reference to helping other people (including indigenous people) and being more collaborative.

For the third change (**10%**), the participants refer to **the relationship with the government** and its improvement, such as fighting corruption or participating in the political processes of their region.

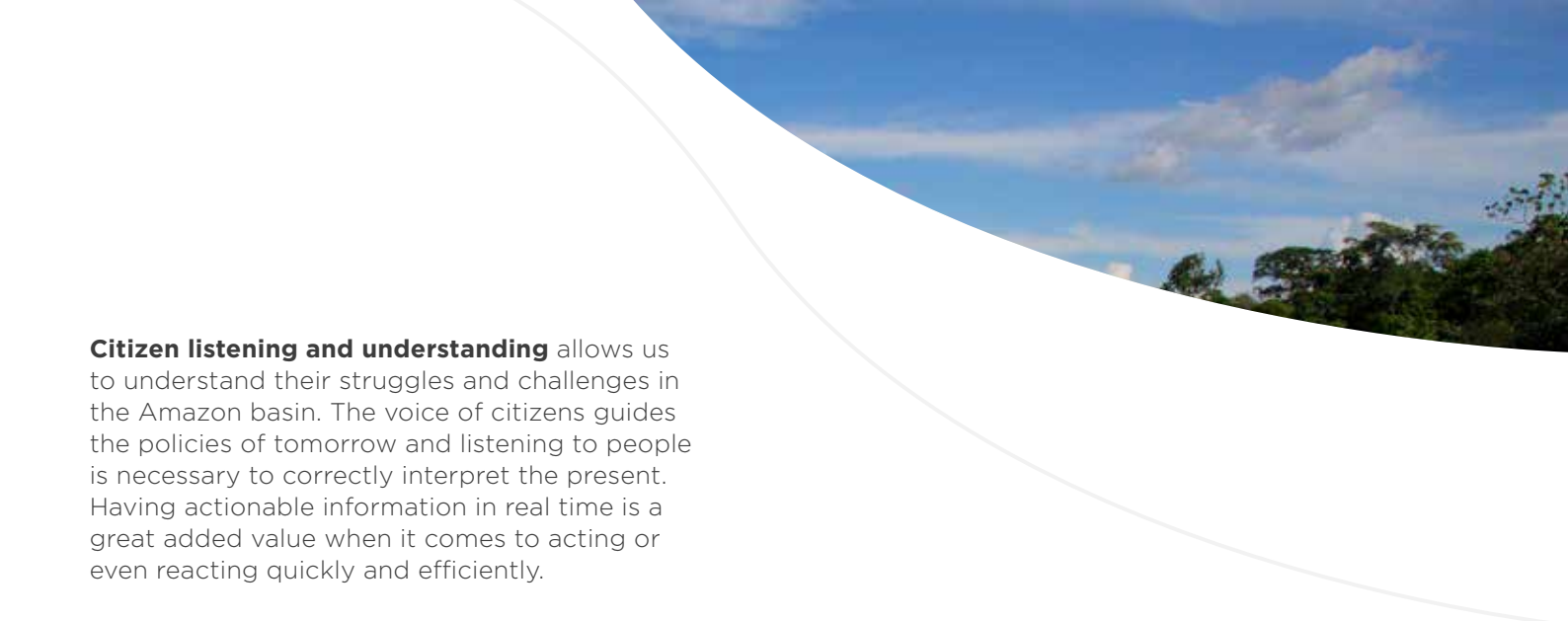
Finally, the participants made reference to **employment and the promotion of entrepreneurship**, but here it is not clear if this is a need or is something that they can contribute to.

*“Listening to understand citizens’ needs contains the seed for innovation because every innovation that has become a great business has the unavoidable condition of responding to people’s real needs.”*

(**Flavia Milano**, Team Leader/ Operations/Civil Society Senior Specialist, IDB)

**LISTEN. UNDERSTAND. ACT.**





**Citizen listening and understanding** allows us to understand their struggles and challenges in the Amazon basin. The voice of citizens guides the policies of tomorrow and listening to people is necessary to correctly interpret the present. Having actionable information in real time is a great added value when it comes to acting or even reacting quickly and efficiently.

In the short term, the project in collaboration with Citibeats has allowed the IDB to strengthen the data collection process, gathering information by directly interacting with more than 500 representatives of indigenous people, Afro-descendant groups, peasants, local and regional organizations. Likewise, it has contributed to adjusting and fine-tuning the proposal for the development of various bioeconomy projects. As a result, in October 2021, the Green Climate Fund approved a financing for the Amazon Project of **279** million dollars, being one of the most important financing issued by the Fund.

In the medium term, this initiative will help design projects at a national level and allocate funds to those areas with the greatest needs (for example, promoting access to credit for women in the Amazon basin; improving the sanitary conditions of people and the environment; promoting recycling policies; integrating ancestral practices to improve the implementation of bio-businesses; adopting methods to save water and technological developments to monitor and prevent illegal activities, from artisanal mining to poaching).



# THE METHODOLOGY



The IDB project used two different methods to collect data: **CivicLytics**, the AI tool powered by Citibeats to process and analyze open civic data freely expressed by citizens on the Internet; and **data on demand**.

- The **CivicLytics** data is a sample of citizen opinions (a total of 288,043 documents collected from Twitter, public comments on digital media, discussion forums, blogs, and different media) from November 2020 to August 2021 for the countries of Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, and Suriname. This data allowed to:

- Corroborate or redefine hypotheses about citizen perceptions and needs, providing an order of magnitude.
- Add the real-time data dimension to fine-tuned trends on new and growing problems that are not regularly identified from traditional methods (for example surveys).
- Provide actionable information.
- Understand citizens' reactions and potential trends to events as public policies, private sector interventions.

- Given the geographical characteristics of the Amazon basin and to reach rural areas or areas of low connectivity, the analysis was integrated with **data on demand**. Data on demand uses open distributed collaborations (or crowdsourcing) which provides visibility, knowledge, and information of more local situations. Practically, the crowdsourcing consists of a questionnaire (designed by Citibeats) sent to a previously defined network of verified citizens, who receive financial compensation for providing valid and complete answers to a full questionnaire using an application on their mobile phone.

- This method provided a sample of citizen opinions in two time periods (18 May - 21 May and 22 June - 20 July) for the Amazon region in countries (namely Brazil, Colombia, Ecuador, and Peru) where Citibeats had an agreement in place with TELCO providers. These data allowed to:

- Know the opinions of people located in sub-urban/peri-urban and rural areas, as well as cities and in regions of a country, such as a particular state or province, or specific areas.
- Add additional context to findings and information to the CivicLytics data.

## Context indicators

### Index

(share of total population)

	Bolivia	Brazil	Colombia	Ecuador	Guyana	Peru	Suriname
<b>Internet penetration</b>	47.5%	75.0%	68.0%	57.3%	37.3%	60%	59.7%
<b>Active social media users</b>	69.8%	70.3%	76.4%	78.8%	63.4%	81.4%	66.2%
<b>Twitter users*</b>	3.25%	9.2%	8.1%	8.5%	2.7%	5.4%	3.3%
<b>Share of female users</b>	34.6%	41.5%	41.5%	38.9%	36.7%	39.1%	24.1%

Source: Digital 2020: Global Digital Overview, <https://wearesocial.com/blog/2020/01/digital-2020-3-8-billion-people-use-social-media>

**CITIBEATS: UNDERSTAND HOW  
SOCIETY CHANGES IN REAL TIME**





We live in a hyperconnected world of about 8 billion people, where almost all of them produce and share data on a daily basis, spontaneously creating **an unprecedented minefield of information** (in 2020, 1.7MB of data was created every second by every person in the world).

This massive amount of data represents a precious resource, but also a challenge for governments. How to tap into that overwhelming, complex user-generated sea of information, too often left there, without being properly put to use? And also, given the **velocity** of events that affect people on a local and global scale, how can governments avoid losing time and detect social changes to react consequently and immediately?

Citibeats' technology has been conceived just for that, to **make each data count**, to use data to **give voice to all citizens** in real time, to be continually updated about citizens' opinions and necessities, and create a better, smarter, and more inclusive society. Our **language-agnostic** and **culturally adaptable** platform gives any institution or organization a qualitative and temporal edge that traditional survey methods or the media cannot compete with. The **time** factor is of essential importance as it hugely helps improve citizens' living conditions.

All these characteristics proved to be essential for the IDB research analysis in the Amazon region, offering a series of actionable insights and giving voices to many people that otherwise would have very likely remained unheard.

***“The IDB project powered by Citibeats’ software is a great example of how technology (namely an AI platform for social understanding) can contribute to actively and practically improve the living conditions of people and the environment. It is also one of the finest cases of how data can be used for understanding what matters to people, at scale, and help protect communities and a natural resource that is unique for our planet. Citibeats’ technology helps monitor complex narratives and collect unstructured data to deliver gender-unbiased, anonymized, actionable insights in real time. We are really proud to join IDB in this project. For us, it is a further confirmation that technology can help shape a better society.”***

(Ivan Caballero, CEO at Citibeats)

