City climate challenges

Nature Climate Change talks to Felipe C. Mandarino, city information coordinator within the Rio de Janeiro city government, Brazil, about building cooperation, facing data and knowledge gaps and responding to climate change in Brazilian cities.

Felipe C. Mandarino is a geographer and a city information coordinator at Instituto Pereira Passos, a data-hub organization within the Rio de Janeiro city government. Mandarino has more than 10 years of experience working with climate change, in both mitigation and adaptation projects, with a focus on MRV (monitoring, reporting and verification), applied science and national and international cooperation.

With the upcoming COP26, this is anincredibly important time for climate change agendas. What do you see as the highest priority for your city, Rio de Janeiro, and for Brazil in the coming months?

I can say more about the city, since the country — as reported in the news — has an anti-climate change federal government and policy. [Rio de Janeiro] is looking further into funding opportunities for adaptation actions but also mitigation, which I suspect is standard terrain for Global South regions. I'm focusing more on adaptation. This is where our main concern is because it has a more direct impact on the citizens, and [lack of adaptation] can increase inequality, which is something at the root of every major problem the city faces.

Have there been any specific impacts of the pandemic on opportunities for climate mitigation and adaptation?

We do not have the emissions data for 2020 for Rio yet, but, obviously, there will be an impact — the numbers will look smaller. This is helpful, of course, but it can also be harmful as it may give a false sense of comfort. Similarly, for Rio, we have had a decline in emissions since 2015, but this is largely due to an economic crisis.

However, in terms of resiliency building, I would say that the pandemic made people build a greater sense of community and community support. In the city of Rio, you saw lots of people making an effort to support each other. I believe that could be very interesting and potentially helpful for future scenarios or current scenarios of disasters associated with climate.

Why is climate change planning for urban environments so important?

The city level is where things happen. For example, infrastructure needs to be reinforced to protect from coastal erosion and sea level rise, which is a very local phenomenon in terms of application and planning. There can be no single general solution at a state or national scale because the infrastructure and risk vary a lot in space.

At the same time, the global context of fighting climate change is very much focused on the national level. But it's important that cities should have their space in the global climate agenda because if you look at cities the size of São Paolo or Rio, we are bigger than many countries in terms of population. Yet we don't have the same space in the global climate agenda. It's harder for cities to access resources, like funding, and that is the case even more so in a context like ours in Brazil, where the national government doesn't necessarily represent us and our needs.

You mentioned the political climate in Brazil in relation to climate change — do you see any other specific challenges for Brazil?

The lack of integration of policies between the three levels of government in Brazil, federal, state and city governments, is a challenge. At the state and federal levels, things are not going as well or as quickly as they should in terms of climate action. So this lack of policy integration, or the lack of policy at all, in the other levels of government is very challenging.

From personal experience, I would say it's almost like sometimes we feel lonely working [on climate change] in Brazil. The city team are very interested and skilled, and we have very good partners, for example, at local universities, but the team is still small for the enormous size of the tasks ahead. And we don't see this huge pressure [for climate action] from society, which could make all of the parts move faster towards the solutions. That's also because, in a country like Brazil, you

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have so many urgent problems. People go through hunger, so they're not working on or worrying about climate change — they are worrying about having something to eat. Of course, we know that climate change will make all of those things worse, meaning that not working on climate action will end with no solution for anything. It's hard to communicate that.

How have you tried to overcome this to develop city climate policy and planning in Rio?

We have been trying hard to integrate with cities in other countries so that we can learn from others and share our experiences. We are also trying to integrate as much as possible with researchers within research agencies and local universities. We benefit a lot from interacting with cities that are well ahead in terms of their planning, like New York or Copenhagen. But it's also really important, maybe even more important, to deal with the cities that are in a situation to ours, such as cities in the Global South — not only those in South America, but other cities, like Cape Town, South Africa.

With great support from C40, its member cities in Latin America, Rio de Janeiro included, are all releasing strong climate action plans.

What are some changes that you are seeing and some challenges being faced in urban planning in Rio right now?

I see a positive change in the city government staff — they are opening their minds to nature-based solutions and other sustainable solutions for urban planning and urban infrastructure. But there are challenges associated with change, for example, finding a way for bureaucracy that was developed for traditional engineering solutions to now work for other types of solutions that have different metrics to measure success and estimate cost.

Understanding the differences and communicating them is one thing, but there are also large data and knowledge gaps. If we want to design future urban solutions, we can no longer use historical data — we have to start planning and projecting for the way things will be in the future. For cities in Europe or in the United States, you have a good variety of fine spatial resolution climate projections to make these predictions. But here, we have one global climate model at fine spatial resolution that's adequate for city-level analysis. Only one. This is completely inadequate. If we're going to work with climate models, there are lots of uncertainties; each model has its own bias. So if we have only one, the uncertainties are incredibly large and hard to control for.

You mentioned communication between different groups of people. What are the challenges of integrating city government staff and researchers to achieve climate planning goals?

They are very different roles. The researchers are interested in doing basic science, alongside fulfilling their personal needs, such as the production of a certain number of papers every year, to evolve their careers. And we [the city staff] have our very specific challenges of knowledge gaps, data gaps, and so on. So sometimes it's hard to find common ground. In recent years, challenges in funding research in Brazil have led public universities to search for funding in the private sector, which can sometimes make it even harder to find common ground. However, we have good examples of engagement between city staff and researchers and are looking to build a sustainable environment of cooperation between these and other groups, like civil society organizations.

Interviewed by Tegan Armarego-Marriott

Published online: 11 October 2021
https://doi.org/10.1038/s41558-021-01182-8

Climate action and just transition

Climate action is needed across the Global South, with just transition the central priority. *Nature Climate Change* spoke to Maisa Rojas, associate professor at the University of Chile, about Chile's progress in climate governance and the challenges ahead, as well as the opportunities with COP26.

Maisa Rojas is an associate professor at the Department of Geophysics, University of Chile. Dr Rojas also serves as the director of the Center for Climate and Resilience Research and is the coordinator of the Chilean Scientific Advisory Committee on Climate Change and coordinating lead author of the WG1 IPCC 6th Assessment Report.

As a scientist, what was the biggest challenge working on an advisory committee to the government?

As scientists, we have standard methods of producing knowledge, but providing it to decision makers requires translating that knowledge. That process of translation and trust building requires a dialogue that can be difficult sometimes. To be considered a legitimate interlocutor, the scientist must stay independent and provide evidence-based advice that is traceable, along with the values underlying how scientific knowledge is created, verified and, very importantly, communicated. On the other hand, we also need to understand that societies can and do have different values. In this sense, the IPCC is a great example of a body that has mastered that clarity with its robust process for producing its reports and the 'calibrated uncertainty language' it developed to do this.

What specific challenges is Chile currently facing with regards to climate action?

When Chile took on the goal of being carbon neutral by 2050, an important and critical part of the strategy was that our forests continue to absorb CO_2. However, forest carbon absorption will probably decrease if we continue to inject CO_2 into the atmosphere. In addition, these forests are also impacted by climate change itself, through droughts, fires and other extreme weather events. I think this is an important challenge for countries like Chile that put a lot of emphasis on maintaining and even increasing the CO_2 sequestration capabilities of their forests.