

---

# IASS DISCUSSION PAPER

Institute for Advanced Sustainability Studies (IASS)

Potsdam, May 2020

## Covid-19 and the increasing fragility of the Brazilian Amazon

**Artur Sgambatti Monteiro**

**Lucas Lima dos Santos**



---

# Contents

---

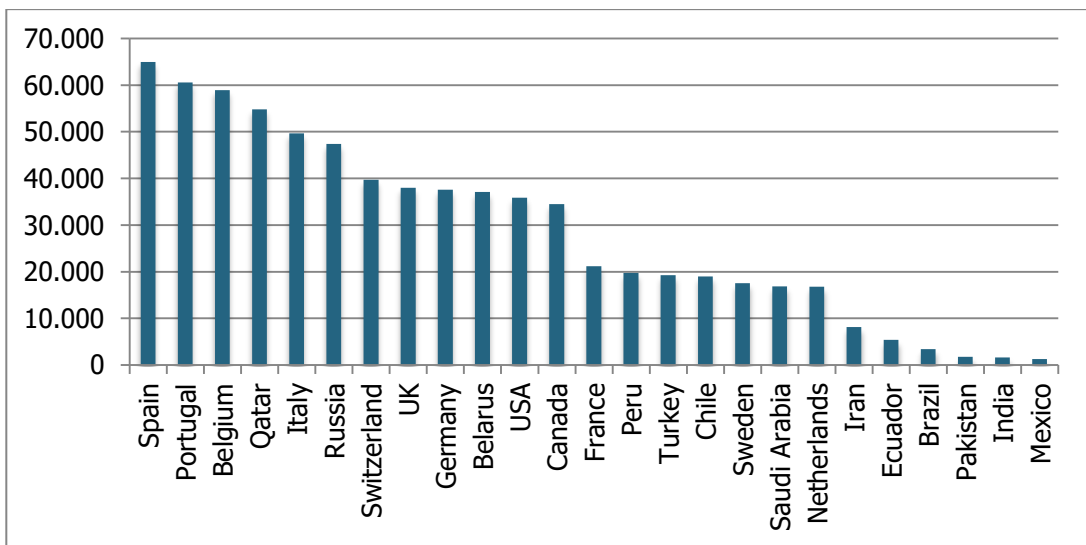
Introduction	3
The urban Amazon	3
Isolated communities and preserved areas	5
Rampant deforestation	6
The denial of reality	9
A new zoonotic outbreak from the Amazon?	10
Conclusion	10
About the Authors	11
References	11

## Introduction

In early May 2020, Brazil became a new hotspot in the Covid-19 pandemic for reasons connected to the country’s huge social inequalities, long-standing political and economic crises, an unevenly distributed health service (among both classes and regions), and the woeful handling of the current crisis by federal government representatives. The Amazon region is by far the most severely impacted part of the country. A vast biome characterized by great social and biological diversity, the Amazon Rainforest has been left vulnerable by the policies of successive governments and the ongoing exploitation of its natural resources. In this Discussion Paper we show how the Covid-19 pandemic is affecting the Brazilian Amazon, leading to the collapse of health systems in several Amazon cities, endangering indigenous ethnic groups, facilitating the clearance of huge forested plots, and, in the process, giving rise to growing concerns about the possible emergence of new transmissible zoonotic diseases.

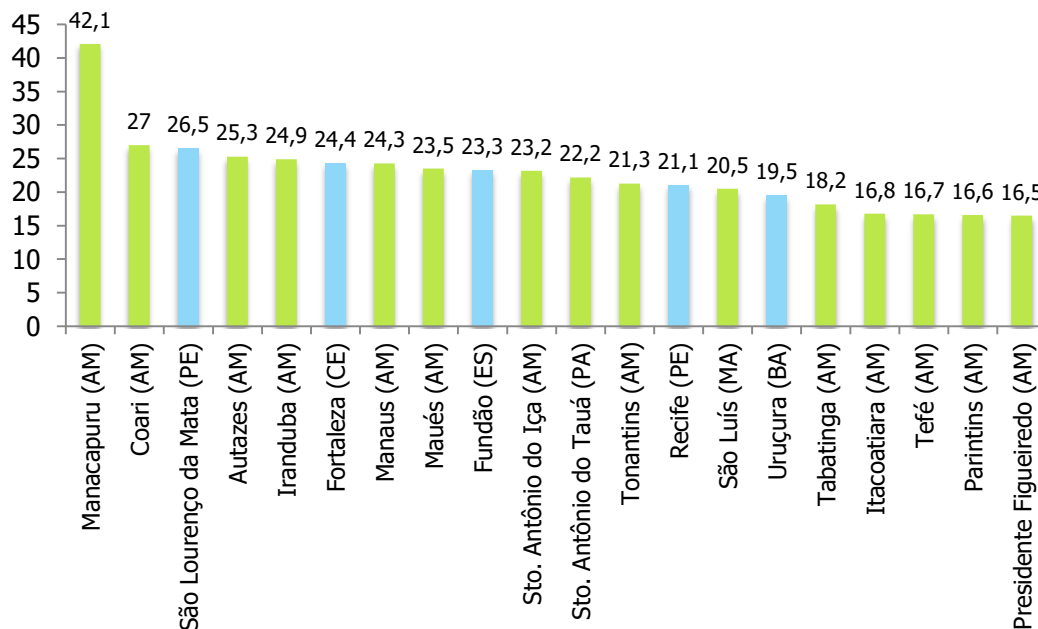
## The urban Amazon

On May 18th of this year, Brazil had 241,080 confirmed cases of Covid-19 (BRAZILa, 2020) and 16,118 confirmed deaths distributed all over the country. But it is doubtful that this data gives an accurate picture of the situation. As Graph 1 shows, Brazil is carrying out a really small proportion of tests per million inhabitants. On May 18th, the number of tests per million inhabitants was 3,462 (absolute number of 735,224), a very limited amount when, for example, compared with the United States (35,903, total 11.8 million), Germany (37,584, total of 3.1 million), and Spain (64,977, total 3 million) (Worldometers, 2020 and STATISTA, 2020). Indeed, the rate of testing in Brazil is on a par with that of countries like Pakistan, India and Mexico. Other Latin American countries like Ecuador (5,397, total 95,000) and Peru (19,767, total 650,000) are performing much better. Lack of testing results in an underestimation of the real impact of Covid-19 on Brazil and makes it difficult to take appropriate action to combat the virus. The figures for the Amazon Rainforest, even if they are not reliable, already indicate an alarming trend that is confirmed by observations on the ground.



Graph 1: Rate of Covid-19 tests performed in the most impacted countries worldwide as of May 18, 2020 (per million of population) Source: (STATISTA, 2020)

Graph 2<sup>1</sup> provides figures for the 20 Brazilian cities with the highest Covid-19 mortality rates (per 100,000 inhabitants). Three quarters of them are located in the Brazilian Amazon (in light green). The infection statistics show a similar picture: Here, too, Amazonian cities account for most of the 20 Brazilian cities with the highest infection rates (G1a, 2020). Both numbers make it clear that the situation in the Amazon is a matter of great concern. This state of affairs can be attributed to the poor conditions in these settlements, most of which are only accessible by boat, in particular their poor health systems. Although it has a similar population to the wealthier, south-eastern state of Espírito Santo (around 4 million inhabitants), the state of Amazonas has less than half the number of intensive care beds per 100,000 inhabitants (1.24, compared to 2.72) (Conselho Federal de Medicina, 2018). This demonstrates the huge social divide within Brazilian society and the lack of readiness and coordination to cope with the pandemic. Moreover, one can assume that things are actually far worse than suggested by the official death and infection rates.



Graph 2: Covid-19 mortality rates (per 100,000 inhabitants) in Brazilian cities. Source: (G1a, 2020).

There are also considerable differences between the Amazon cities included in Graph 2. The situation is particularly bad in Manaus, the capital of Amazonas (Al Jazeera, 2020). With 2.1 million inhabitants, Manaus is the largest city of the Pan-Amazon region. The presence of industry and other services and facilities (e.g. research centers, universities, hospitals, etc.) has drawn people to settle there and made Manaus the fastest-growing state capital in Brazil since the 1970s. However, a lack of adequate planning to deal with a fast-changing and complex reality, combined with low incomes and weak welfare policies (e.g. in housing, healthcare, and sanitation) have left many sections of the population highly vulnerable. This fragile reality is now reflected in cases of Covid-19.

For instance, Manaus has already had 948 confirmed deaths from Covid-19 (G1b, 2020), but this number is known to be a considerable underestimate. As the capital city of Amazonas, the state with the second highest rate of infection in the country,<sup>2</sup> Manaus is where most of the region's ICU beds

<sup>1</sup> It is important to stress that due to the high daily volatility of the data, we decided to use information from May 7th.

<sup>2</sup> The five Brazilian states with the most infections are Amapá (447.1/million), Amazonas (436.3/million), Roraima (296.6/million), Ceará (236.7/million), and Acre (216.6/million). With the exception of Ceará, all of them are located in the Amazon region ([Laqom Data, 2020](#)).

are located, and its medical facilities are already severely overstretched. The death rate of 313.6 per million inhabitants also puts Amazonas ahead of all the other Brazilian states (LAGOM DATA, 2020). In recent weeks, an estimated half of the Covid-19 fatalities in Manaus have happened in people's homes, and poorer members of the population have seen their loved ones being buried in mass graves.

All of this evidences the fragility of urban settlements in the Amazon. Unlike other larger cities with higher absolute numbers of infections and deaths (like São Paulo, Rio de Janeiro, Fortaleza and Recife), most Amazon cities have a small (<50.000) population scattered over a vast area, are not connected to roads, rely on poor health systems, and have poor communication channels, which makes it more difficult to monitor their situation. Paradoxically, the remoteness of these cities – together with a weak health service – could be a major factor in the vulnerability of their populations.

In addition to Manaus, 13 of the cities shown in Graph 2 are in the state of Amazonas. Parintins, Manacapuru, and Itacoatiara are among the 4 biggest cities in the state, with around 100,000 inhabitants each. They are confronted with similar challenges to Manaus: fast, unplanned growth, lack of response capability, and the burden of serving the healthcare needs of neighboring localities. Autazes, Iranduba, and Presidente Figueiredo are also interesting examples, since they form part of the Manaus Metropolitan Area (MMA)<sup>3</sup> that should have systems in place to deal with common issues such as health system readiness. Due to the large numbers of people seeking treatment there, the MMA has become both an epicenter of the outbreak as well as a source of infection for the wider hinterland.

The case of smaller and more isolated towns, such as Maués (downriver from Manaus), Santo Antônio do Içá, and Tabatinga (both on the border with Colombia) are also interesting in this regard. All of these towns have no road connection, rely entirely on fluvial transportation, and have a high indigenous population. These municipalities are also characterized by a low population density. Maués, for instance, has an administrative area of 40,000 km<sup>2</sup> (i.e. almost the same area as Switzerland) with just 10,000 inhabitants. However, although themselves isolated and limited in their resources, these towns do act as regional economic and trade hubs for even more remote extractivist communities, traditional populations and indigenous populations. This brings us to the next topic of our analysis.

## Isolated communities and preserved areas

In this section we examine the response to Covid-19 in remote areas such as natural reserves and indigenous territories. We consider both the direct health impacts of the virus on isolated and vulnerable communities and the indirect impacts seen in diminishing environmental controls, which has opened the door to deforestation, land invasions, illegal mining and land-use related conflicts.

Indigenous populations with little or no contact with people from overseas are highly susceptible to infections and new diseases, especially contagious ones. Indeed, this vulnerability was widely exploited by European colonizers. During the Portuguese invasion of Brazil several epidemic outbreaks decimated the populations of different indigenous groups.<sup>4</sup> In the twentieth century (1940s–1970s), the same annihilation strategy was adopted by Brazilian colonizers from the south of the country and the military. With memories of this still fresh in their minds, many indigenous communities try to isolate themselves even further by going deeper into the forest. According to the Brazilian Fundação

<sup>3</sup> The Manaus Metropolitan Area consists of an administrative structure that comprises the city of Manaus, 12 surrounding municipalities and also the state of Amazonas.

<sup>4</sup> From 1987 to 1990, 14% of the Yanomami people in the state of Roraima died from different diseases at the apex of the illegal gold-mining period in the region (NEXO, 2020).

Nacional do Índio – Funai (FUNAIA, 2020),<sup>5</sup> around 27 of Brazil's indigenous groups live in voluntary isolation, cut off from the rest of the world.

Some indigenous groups are especially vulnerable as a result of growing pressure from the agribusiness sector and illegal invasions, while others have a stronger organization and voice and can count on support from national and international actors and religious institutions. According to Brazil's Indigenous People Articulation (APIBa, 2020), over 500 cases of Covid-19 and over 40 deaths have been confirmed among indigenous populations in Brazil, including the Apurinã, Arapiun, Baniwa, Baré, Borari, Desana, Kokama, Galibi (Kalinã), Hixkaryana, Huni Kuin, Karipuna, Mura, Mundurucu, Macuxi, Zoró, Palikur, Sateré-Mawé, Tariano, Tembé, Tikuna, Tupinambá, Tukano, Yanomami e Warao (ISAa, 2020, APIBa, 2020 and COIAB, 2020). With 22 registered deaths from Covid-19 in the period from March 25th to May 18th, the Kokama people have so far been the most vulnerable to the outbreak (APIBb, 2020).<sup>6</sup>

These numbers may seem low when seen from a global perspective, but it is important to remember that Brazil's indigenous groups represent only 0.47% of the total population (896,000 divided into more than 300 ethnicities) and are extremely vulnerable to contagious diseases. Most of them do not die under medical supervision in hospital, either because there are no hospitals in rural areas or because existing healthcare services are already overstretched. The socio-environmental NGO Instituto Socioambiental (ISA)<sup>7</sup> has compiled an index of the most vulnerable indigenous territories, many of which are located in isolated parts of the Amazon (e.g. on the borders with Venezuela, Colombia and Peru) (ISAa, 2020). However, as shown, even such isolation does not prevent them from becoming infected.

Since the beginning of the outbreak, state and federal conservation agencies (e.g. ICMBio and state secretaries) and Funai have severely curtailed access to preserved areas and indigenous lands for government agents, researchers and civil society actors. However, in the context of the overall weakening of the control and conservation systems and previous steps taken by the current government, this restriction has not been strictly enforced. As we will show below, land-grabbers, loggers and gold-diggers are not in quarantine.

## Rampant deforestation

The Covid-19 related isolation measures have hampered deforestation control and preserved areas protection by public environmental agencies and led to a growing sense of impunity among organized groups. According to the Instituto Nacional de Pesquisas Espaciais (Inpe), the research institute responsible for measuring the monthly deforestation rate in Brazil, deforestation in the first months of this year was consistently higher than in the same period last year (INPEa 2020). This is very worrying when we consider that 2019 was the worst year of the last decade, when deforestation reached more than 10,000 km<sup>2</sup>. (INPEb, 2020). This recent tendency obscures the great success Brazil was having in combatting Amazon deforestation, which had fallen consistently since 2005.

<sup>5</sup> We should point out that at least one doctor working for Funai tested positive for Covid-19 after working in an indigenous territory in south-west Amazonas. The eight Tikunas who were in contact with him are in quarantine since March 27th and present no strong symptoms.

<sup>6</sup> It is important to state that the official figures for infections and deaths (regardless of the cause) among indigenous peoples only consider Indians living within indigenous territories. Those who die in urban settlements/hospitals are registered as "pardo" (mixed race). Indigenous associations see this as a strategy to diminish the representation of Indians in the statistics. Here we supplement the numbers from official sources with those from major indigenous associations, such as Coiab and Apib.

<sup>7</sup> ISA has a weekly podcast called "Copiô, Parente" to share information on Covid-19 with their partner associations and indigenous populations across the country.

Deforestation pressures are particularly strong in the “deforestation arc” region (i.e. the southern and eastern Brazilian Amazon – the red areas in Figure 1) and in parts of the states of Roraima and Amapá.

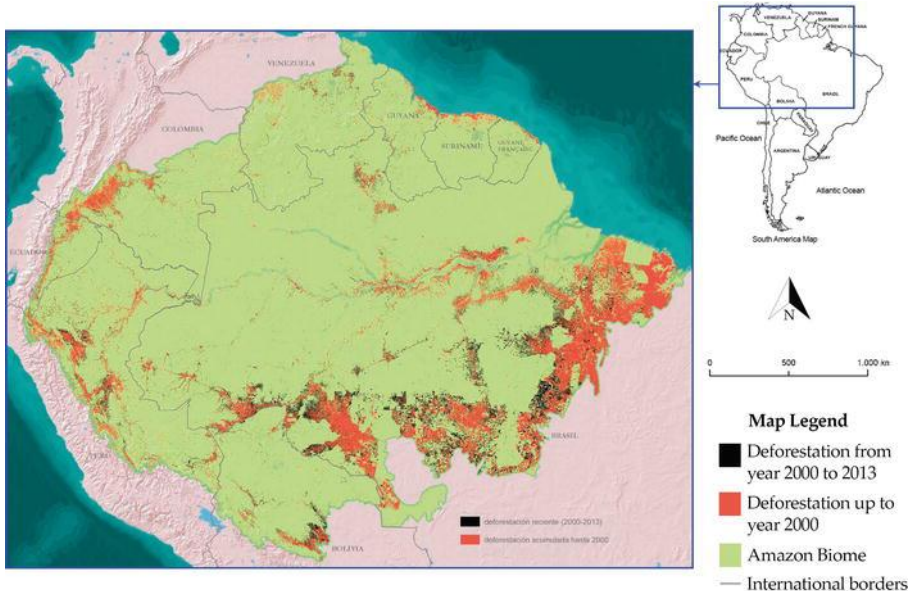


Image 1: Accumulated deforestation in the Brazilian Amazon in two periods before 2013 Source: (RAISG, 2020)

The sense of impunity that has emerged with the relaxation of deforestation controls is seen, for example, in the dismissal of the Environmental Protection Director of Ibama and two other top officials on April 14th, 2020. They were fired two days after a huge operation against illegal miners and loggers who were caught operating inside different indigenous lands in the deforestation arc. The operation aimed not only to put a halt to their activities but also to hinder the spread of the pandemic. However, Environment Minister Ricardo Salles considered it to be against the directives of the current administration. What’s more, on April 22nd, Funai issued Normative Instruction number 9/2020 (FUNAIb, 2020) on territories that had not yet passed through the entire demarcation process. This allows for the regularization of private lands in Indigenous Territories, a move that openly incentivizes the invasion, occupation, and even the sale of occupied land.

The recent invasion of Ituna/Itatá Indigenous Territory, as denounced by Greenpeace Brazil, is a grim example of how this legislation is already adding to the pressures on indigenous lands. The procedure for legalizing and establishing an indigenous territory in Brazil can take decades and comprises several steps, which have not been completed in the case of Ituna/Itatá. Almost 30% of all registered deforestation in indigenous lands in Brazil has occurred there and 94% of its total area has been registered in more than 200 private lots under the CAR system for land regularization (see Image 2, GREENPEACE, 2020). This means that the land can be legally claimed by land-grabbers. The Ituna/Itatá Indigenous Territory was created to protect the lifestyles of still isolated indigenous groups. Such invasions are historically controversial, illegal, and even prosecutable. but the political influence of the invaders means that they are rarely held to account.<sup>8</sup>

<sup>8</sup> It is important to point out that due to 1) the size of the Amazon Rainforest, 2) the isolation of such areas (indigenous territories, preservation units, etc.), and 3) the political conflicts that underlie many invasions, many violations of the land rights of traditional populations are not prosecuted under law. This impunity creates a vicious circle of land conflicts and rural violence.

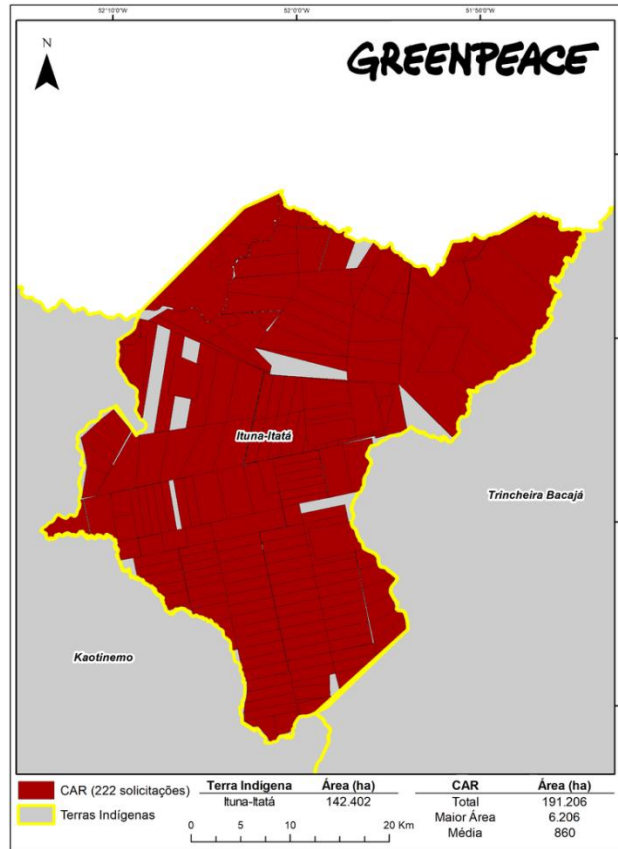


Image 2: Ituna/Itatá indigenous lands and claims for land inside its boundaries. Source: (GREENPEACE, 2020)

The country's environmental policies are changing in more ways than one during this pandemic. At the time of writing, politicians are trying to pass Provisional Measure 910/2019 (BRAZILb, 2019), nicknamed "MP da grilagem" (Provisional Measure on Land Invasion), which would allow those who illegally acquired public lands in the period before December 2018 to become its legal owners. In discussions of the measure, some politicians and agribusiness entities argue that it would speed up the process of granting titles to people who are already on the land. As a result, they would be able to produce more and access more loans. However, for civil society organizations and other institutions, the measure would reward those who illegally invaded and cleared forests on public lands, the territories of indigenous and traditional peoples. This can easily be perceived as an amnesty from the federal government for illegal miners, loggers, ranchers, and land speculators. The combination of that Provisional Measure with Normative Instruction number 9/2020 will bring unprecedented socio-environmental problems to the Brazilian Amazon and its people.

Different indigenous organizations have been taking action in response to mounting pressures. For example, the Waimiri Atoari (north of Manaus) has forced the federal government to publish letters clarifying actions (MPF, 2020) that have had adverse impacts on indigenous populations in Brazil. Numerous indigenous associations across the country claim that Funai's actions are insufficient and even harmful (APIBc, 2020) in the face of Covid-19 and are already drawing up an independent national indigenous plan against the corona threat (APIBd, 2020), resorting even to international appeals (IGARAPÉ, 2020). The Guajajara group in the deforestation arc, whose territory has been subject to recent invasions, has taken a more active approach to defending their land rights and created a task force called Guardiões da Floresta (forest defenders) to watch over their land. Confronta-



tions with land-grabbers have already led to the assassination of 49 forest defenders, the last of whom was murdered on March 31st, 2020.

Thus the impacts of the Covid-19 crisis on nature may be felt across the globe, but they are especially dangerous for native and traditional communities that have already suffered centuries-long persecution. When confronted with government inefficiency and negligence, the global outbreak takes on a genocidal quality that threatens the last remaining native populations on Earth.

### The denial of reality

The scientific denialism of the federal government is affecting all of the above-mentioned aspects of the outbreak. Jair Bolsonaro is an ultra-right politician who has always tried to impose an aggressive neoliberal system and promoted anti-environmental policies. Since the beginning of his term of office, Bolsonaro has repeatedly denied the validity of scientific studies. In the second half of his first year as president (2019), he criticized Inpe for releasing data on the high rates of deforestation that occurred in the Amazon Rainforest during that period, claiming that the data was inaccurate. The respected director and researcher of Inpe, Ricardo Galvão, was subsequently dismissed. However, the reality behind the data was tangible in São Paulo, the largest city in South America. On August 19th 2019, the city descended into darkness, in broad daylight, due to fires in the north of the country. Image 3 shows what the city sky looked like at 3 pm. The fires were also discussed outside of Brazil after the National Aeronautics and Space Administration (NASA) released satellite photos of the Amazon region, with high smoke densities (Economic Times, 2019). We should note that São Paulo is more than 1,500 km away from the Amazon.

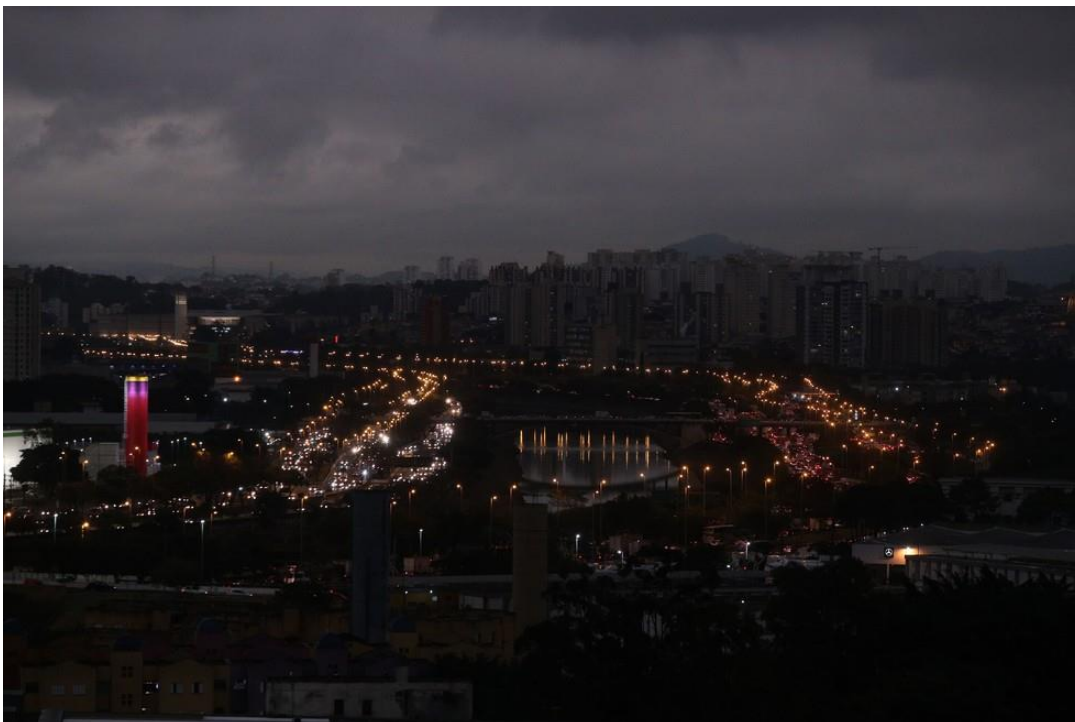


Image 3: The São Paulo sky at 3 pm, darkened due to smoke from the burning Amazon.  
Source: Alex Silva, (ESTADÃO, 2019)

Even in the face of Covid-19, Bolsonaro insists on questioning the dangers of the pandemic and the measures taken to combat it, including those adopted by the state governors and recommended by

the World Health Organization (WHO).<sup>9</sup> This is affecting the population's behavior. Bolsonaro's unveiled criticism of calls for social distancing has led to a broad public disobedience of these measures. A study that gathered location data from 60 million phones in Brazil on the day after one of Bolsonaro's televised speeches showed a significant rise in the circulation of people, especially in the regions that strongly support him (Época, 2020), including the city of Manaus. So many Brazilians for whom his statements are a reference are choosing to disrespect the quarantine rules, thereby contributing further to political instability and the spread of the virus.

Such biased policymaking and conflicting opinions on Covid-19 measures are not restricted to Brazil. In some countries, people are taking to the streets to demand a return to normal. Extreme right-wing movements are latching on to these protests as well as denying the severity of the crisis and even the existence of the virus. Such denialism is fueling a sense of impunity in relation to deforestation, illegal mining and land-grabbing, undermining Brazil's efforts to tackle both the outbreak and the loss of the Amazon Rainforest.

## A new zoonotic outbreak from the Amazon?

The deforestation of the Amazon Rainforest could give rise to another wave of epidemics. According to Professor Philip Fearnside from the National Institute of Amazon Research (INPA), many pathogens have crossed over from wild animals to humans (e.g. HIV and Covid-19) and the Amazon, with its vast biodiversity, could be a source of new pandemic outbreaks (FEARNSIDE, 2020). This is even more worrying when we consider the rampant deforestation described above, which could bring human populations closer to wildlife and increase consumption of hunted animals. This new scenario makes the conservation of the Amazon Rainforest more urgent than ever.

## Conclusion

This paper cast light on the particular challenges posed by the Covid-19 outbreak to the fragile Brazilian Amazon. The damages already wrought by the region's history of exploration have been dramatically augmented and exposed in this situation. The lack of an overall comprehensive development program that embraces conservation strategies, social assistance, research, and economic alternatives means that this vast area has been forgotten in terms of social development and environmental protection. The resulting unpreparedness for an extreme situation like the pandemic highlights the urgent need for an inclusive policy and a reversal of Brazil's politics of exclusion (that applies to both classes and regions). In addition, the political instability and denialist rhetoric is exacerbating the overall crisis.

We believe that the following measures now need to be taken in response to the current outbreak and as a way of strengthening the Brazilian Amazon in the longer term.

1. Reorganisation of the Brazilian health system so it can cater for a larger share of the population, especially poorer people in remote areas;
2. Implementation of development policies that appreciate the Amazon not as a source of natural resources but as a cradle for cutting-edge innovations that allow for a stronger decentralization of opportunities in Brazil and the Amazon. Ismael and Carlos Nobre present interesting ideas on this subject in their Amazonia Third Way Initiative (NOBRE & NOBRE, 2018);
3. Regularization of lands in the Brazilian Amazon and the application of the law against invasions and violence against traditional communities and indigenous

<sup>9</sup> Bolsonaro has surpassed even Donald Trump in his denial of the threat posed by Covid-19. See <https://www.theatlantic.com/politics/archive/2020/03/bolsonaro-coronavirus-denial-brazil-trump/608926/>

- groups (plus an end to legal actions aimed at amnestying land-grabbers or commercializing indigenous lands);
4. Inclusion of traditional groups in policymaking in order to ensure that their needs and perspectives are being considered; and
  5. Recognition of the importance of scientific knowledge for addressing the corona crisis and developing sounder conservation and development policies for the Amazon.

In the absence of real change towards a more equitable development balance among Brazil's regions and an acknowledgement of the value of the Rainforest and the people who live there, texts like this will continue to chart the progressive destruction of the Amazon biome. We hope that the current suffering will be sublimated into conservation and development efforts and that Covid-19 will be a watershed that marks the end of denialism and leads to a more inclusive and respectful global society.

## About the Authors

**Artur Sgambatti Monteiro** has worked in environmental management in various fields, from the monitoring and remediation of oil spills, to sustainable architecture, urban planning, territorial planning, and socio-environmental conflicts. He is currently a Fellow at the IASS, where he works on a research project that examines international cooperation in the conservation of the Brazilian Amazon with a focus on GHG emissions targets, economic alternatives, and civil society resilience. Prior to that, he worked on land-use policies in the Amazon Rainforest as well as urban development policies, water management, and threatened species conservation plans at the Fundação Vitória Amazônica in Manaus, Brazil. He holds a Master's in Urbanism from the Federal University of Rio de Janeiro and a Bachelor in Environmental Management from the University of São Paulo.

**Lucas Lima dos Santos** is currently completing a PhD in social anthropology at the University of Campinas in the state of São Paulo. He holds an M.A. in Brazilian Cultures and Identities (University of São Paulo) and a B.Sc. in Biology (São Paulo State University). An experienced researcher in the fields of biology and anthropology, Lucas Lima has carried out research projects with traditional and indigenous peoples on the Brazilian coast and in the Amazon Rainforest. He has spent much of his career to date analysing the relationships between environmental policies and traditional cultures. Lucas has also worked with the environmental institution of the São Paulo State Government to develop management plans for conservation areas.

## References

Al Jazeera. Bo, Teresa. Brazil virus outbreak: Amazonas state capital becomes hotspot. 05 May 2020. Available at: [file://localhost/<https://www.aljazeera.com/news/2020/05/brazil-virus-outbreak-amazonas-state-capital-hotspot-200505065735234.html>](https://www.aljazeera.com/news/2020/05/brazil-virus-outbreak-amazonas-state-capital-hotspot-200505065735234.html). (Accessed: 12 May 2020).

APIBa. Atualização de casos indígenas. Available at: < <http://quarentenaindigena.info/casos-indigenas/>>. (Accessed: 18 May 2020).

APIBb. #17 Alta letalidade da Covid-19 no Brasil atinge violentamente povo Kokama. Available at: <<http://apib.info/2020/05/09/17-alta-letalidade-da-covid-19-no-brasil-atinge-violentamente-povo-kokama/>>. (Accessed: 18 May 2020).

APIBc. Nota pública: contra as falaciosas acusações da Funai. 06 May 2020. Available: < <http://apib.info/2020/05/06/nota-publica-contra-as-falaciosas-acusacoes-da-funai/>>. (Accessed: May 13 2020).

APIBd. Lideranças indígenas organizam assembleia para construir plano de enfrentamento à pandemia. 07 May 2020. Available at: <<http://apib.info/2020/05/07/assembleia-resistencia-indigena/>>. (Accessed: 12 May 2020).

BRAZILa. Painel Coronavírus. Available at: <<https://covid.saude.gov.br/>>. (Accessed: 18 May 2020).

BRAZILb. Medida Provisória nº 910, de 2019: Regularização fundiária. Available at: <<https://www.congressonacional.leg.br/materias/medidas-provisorias/-/mpv/140116>>. (Accessed: 13 May 2020).

COIAB. INFORMATIVO COIAB: Covid-19 e Povos Indígenas na Amazônia brasileira. 13 May 2020. Available at: <<https://coiab.org.br/conteudo/1589398341647x595287320763039700>>. (Accessed: 14 May 2020).

Conselho Federal de Medicina. Medicina intensiva no Brasil. 2018. Available: <<https://portal.cfm.org.br/images/PDF/leitosedestados2018.pdf>>. (Accessed: 13 May 2020).

INPEa. Deter (Avisos).

Available at: <<http://terrabrasilis.dpi.inpe.br/app/dashboard/alerts/legal/amazon/aggregated/>>. (Accessed: 12 May 2020).

INPEb. Prodes (Desmatamento). Available at: <[http://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal\\_amazon/increments](http://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/increments)>. (Accessed: 12 May 2020).

Instituto Igarapé Carta Conjunta sobre a situação dos Yanomami e Ye'kwana no contexto da pandemia do COVID-19. 06 May 2020. Available at: <<https://igarape.org.br/carta-conjunta-sobre-a-situacao-dos-yanomami-e-yekwana-no-contexto-da-pandemia-do-covid-19/>>. (Accessed: 12 May 2020).

ISAa. Covid-19 and the indigenous peoples. <<https://covid19.socioambiental.org/>>. (Accessed: 12 May 2020).

ISAb. Copiô, Parente. Available at: <<https://soundcloud.com/socioambiental/sets/copio-parente>>. (Accessed: 14 May 2020).

Época. Schmitt, Gustavo. Desrespeito ao isolamento social é maior em áreas onde Bolsonaro tem mais apoio, diz estudo. 25 May 2020. Available at: <<https://epoca.globo.com/sociedade/desrespeito-ao-isolamento-social-maior-em-areas-onde-bolsonaro-tem-mais-apoio-diz-estudo-24391966>>. (Accessed: 15 May 2020).

Estadão. Com escuridão atípica, dia vira noite em São Paulo nesta segunda. 19 August 2020. Available at: <<https://sao-paulo.estadao.com.br/noticias/geral/com-escuridao-atipica-dia-vira-noite-em-sao-paulo-nesta-segunda.70002974047>> (Accessed: 15 May 2020).

Fearnside, Philip M. Will the next coronavirus come from Amazonia? Deforestation and the risk of infectious diseases (commentary). Mongabay, 08 April 2020. Available at: <<https://news.mongabay.com/2020/04/will-the-next-coronavirus-come-from-amazonia-deforestation-and-the-risk-of-infectious-diseases-commentary/>>. (Accessed: 13 May 2020).

FUNAIa. Povos Indígenas Isolados e de Recente Contato. Available: <<http://www.funai.gov.br/index.php/nossas-acoess/povos-indigenas-isolados-e-de-recente-contato?limitstart=0>>. (Accessed: 12 May 2020).

FUNAIb. Instrução Normativa no 9 de 16 Abril 2020: Disciplina o requerimento, análise e emissão da Declaração de Reconhecimento de Limites em relação a imóveis privados. 16 April 2020. Available at: < <http://www.in.gov.br/web/dou/-/instrucao-normativa-n-9-de-16-de-abril-de-2020-253343033>>. (Accessed: 12 May 2020).

G1a. Casos de coronavírus e número de mortes no Brasil em 6 de maio. 06 May 2020. Available at: <<https://g1.globo.com/bemestar/coronavirus/noticia/2020/05/06/casos-de-coronavirus-e-numero-de-mortes-no-brasil-em-6-de-maio.ghtml>>. (Accessed: 12 May 2020).

G1b. Mortes por Coronavírus no Brasil. Available at: <<https://especiais.g1.globo.com/bemestar/coronavirus/mapa-coronavirus/#/>>. (Accessed: 18 May 2020).

Greenpeace. Ituna-Itatá: uma terra indígena da Amazônia tomada por ganância e destruição. 11 May 2020. Available at: < <https://www.greenpeace.org/brasil/ituna-itata-uma-terra-indigena-da-amazonia-tomada-por-ganancia-e-destruicao/>>. (Accessed: 14 May 2020).

Lagom Data. Coronavírus no Brasil: Monitoramento atualizado diariamente com informações das Secretarias de Saúde desde 9.mar. Available: <<https://www.lagomdata.com.br/coronavirus/>>. (Accessed: 18 May 2020).

MPF. Justiça garante direito de resposta ao povo Waimiri-Atroari por discursos discriminatórios do governo brasileiro. 31 March 2020. Available: <<http://www.mpf.mp.br/am/sala-de-imprensa/noticias-am/mpf-justica-garante-direito-de-resposta-ao-povo-waimiri-atroari-por-discursos-discriminatorios-do-governo-brasileiro>>. (Accessed: 14 May 2020).

Nexo. Vick, Mariana. Como a pandemia agrava o risco de invasões em terras indígenas. 19 April 2020. Available at: <<https://www.nexojournal.com.br/expresso/2020/04/18/Como-a-pandemia-agrava-o-risco-de-invas%C3%B5es-em-terras-ind%C3%ADgenas>>. (Accessed: 12 May 2020).

Nobre, I., & A. Nobre, C. (2019). The Amazonia Third Way Initiative: The Role of Technology to Unveil the Potential of a Novel Tropical Biodiversity-Based Economy. In Land Use - Assessing the Past, Envisioning the Future. IntechOpen. Available at: < <https://www.intechopen.com/books/land-use-assessing-the-past-envisioning-the-future/the-amazonia-third-way-initiative-the-role-of-technology-to-unveil-the-potential-of-a-novel-tropical>>. (Accessed: 16 May 2020).

RAISG. Deforestación en la Amazonía (1970-2013). 2015. 48 p. Available at: <[www.raisg.socioambiental.org](http://www.raisg.socioambiental.org)> (Accessed: 16 May 2020).

STATISTA. Rate of coronavirus (COVID-19) tests performed in the most impacted countries worldwide as of May 18, 2020 (per million population). Available at: < <https://www.statista.com/statistics/1104645/covid19-testing-rate-select-countries-worldwide/>>. (Accessed: 18 May 2020)

The Economic Times. Stop war against nature: Greta Thunberg shares concerns on Amazon rainforest; NASA's pic shocks Alia, Marico boss. Available at: <<https://economictimes.indiatimes.com/magazines/panache/nasa-share-satellite-pic-of-smoke-covering-brazil-amazon-rainforest-fire-becomes-most-trending-topic/articleshow/70786023.cms?from=mdr>>. (Accessed: 15 May 2020).

The Atlantic. Friedman, Uri. The Coronavirus-Denial Movement Now Has a Leader. 27 March 2020. Available at: <<https://www.theatlantic.com/politics/archive/2020/03/bolsonaro-coronavirus-denial-brazil-trump/608926/>>. (Accessed: 15 May 2020).

Worldometers. Covid-19 Coronavirus Pandemic. Available < <https://www.worldometers.info/coronavirus/>>. (Accessed: 11 May 2020).



## Institute for Advanced Sustainability Studies e.V. (IASS)

Funded by the ministries of research of the Federal Republic of Germany and the State of Brandenburg, the Institute for Advanced Sustainability Studies (IASS) aims to identify and promote development pathways for a global transformation towards a sustainable society. The IASS employs a transdisciplinary approach that encourages dialogue to understand sustainability issues and generate potential solutions in cooperation with partners from academia, civil society, policymaking, and the business sector. A strong network of national and international partners supports the work of the institute. Its central research topics include the energy transition, emerging technologies, climate change, air quality, systemic risks, governance and participation, and cultures of transformation.

### IASS Discussion Paper

May 2020

**Contact:**

artur.sgambattimonteiro@iass-potsdam.de  
luca-bio@hotmail.com

**Editing:**

Anne Boden

**Address:**

Berliner Strasse 130  
14467 Potsdam

Tel: +49 (0) 331-28822-340

Fax: +49 (0) 331-28822-310

email: media@iass-potsdam.de

www.iass-potsdam.de

**ViSdP:**

Prof. Dr. Ortwin Renn,  
Managing Scientific Director

DOI: 10.2312/iass.2020.020

