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Brazil's race to approve the end of the Amazon: The BR-319 highway needs a new environmental impact assessment (commentary)

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- *Brazil's race to approve "reconstruction" of Highway BR-319 (Manaus-Porto Velho) is gaining ever more momentum, with President Lula declaring his support for the project on the 10th September, a moment that could not be more ironic amid the country's dramatic fire crisis, argues researcher Philip M. Fearnside in this commentary.*
- *The impact of BR-319 extends far beyond the roadside strip to which the EIA and licensing discussion is limited. Planned side roads such as AM-366 would open the vast rainforest area west of the highway to the entry of deforesters, loggers and others. The rainforest in this area is also at risk of collapse from climate change, and this risk would be further increased by the deforestation and forest degradation provoked by the planned roads linked to BR-319. Loss of this forest would be catastrophic both for global climate and for water supply to other parts of Brazil, including São Paulo.*

- *The area at risk is both the most critical and the easiest to avoid deforesting. All that needs to be done is to not build the highways that would provide access, while in other parts of Amazonia stopping deforestation requires changing the behavior of hundreds of thousands of individual actors. A new EIA is needed that includes all areas receiving impacts from BR-319 in the northern and western parts of Brazilian Amazonia. The EIA cannot be a mere bureaucratic step after which the project is automatically approved – the rational decision is to reject the project, writes Fearnside.*
- *This text is a commentary and does not necessarily represent the views of Mongabay.*

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The proposed reconstruction of Brazil's BR-319 (Manaus-Porto Velho) highway (Figure 1) needs a new environmental impact assessment (EIA). No rational decision can be made on going ahead with this project without considering all its major impacts, and everything points to the project being a monumental disaster for the environment, among other negative effects (see here and here). The biggest impacts have been excluded in the current biased licensing process, which is designed to guarantee approval of a road that would likely lead to the end of the Amazon forest (see here and here). The project is not viable and declaring that there will be "governance" along the highway route will not make it so even if this governance were to materialize in fact (see here and here).

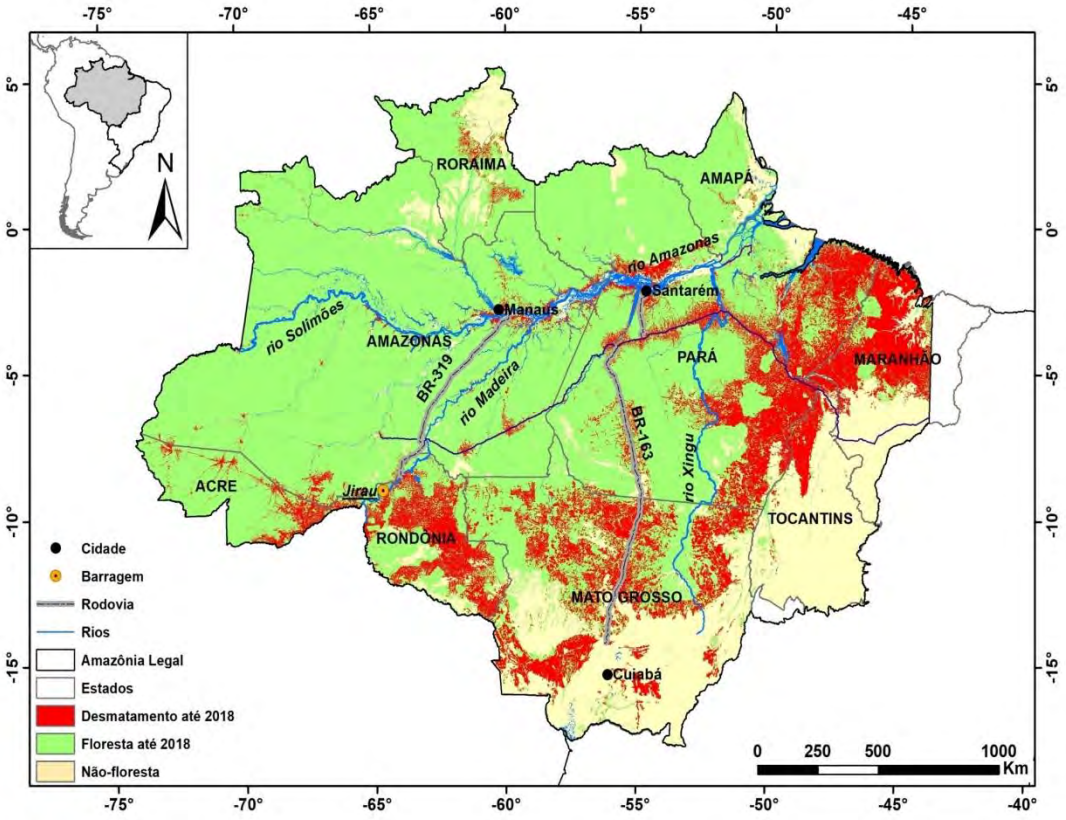

Figure 1. Brazil's Legal Amazon region showing forest (green), deforestation (red) and the BR-319 highway connecting the area at the junction of Amazonas, Acre and Rondônia (AMACRO) with Manaus, in central Amazonia.

Like a horse with blinders, the highway proponents, the licensing agency and virtually all the political discussion focuses only on what may happen on the roadside itself, and not in the vast areas of Amazon forest that would be impacted outside of this narrow strip. The EIA considers only the roadside strip BR-319 connects the notorious AMACRO deforestation hotspot at the junction of the states of Amazonas, Acre and Rondônia to Manaus, in the relatively intact central Amazon. AMACRO is the largest source of the smoke that is currently engulfing Brazil, including centers of political power like Brasília and São Paulo (see here and here).

Figure 2. Burned landscape during the fires of 2024. The AMACRO deforestation hotspot that would be connected to vast areas of Amazon forest by BR-319 and its side roads. Photo credit: © Marizilda Cruppe / Greenpeace

Existing roads connect Manaus to large areas in the northern Amazon, including the state of Roraima on the border with Venezuela. Roraima is particularly problematic due to the hostility of its politicians to environmental controls, even supporting the illegal goldminers in the Yanomami Indigenous land (see here and here). These areas connected to Manaus would receive deforesters and loggers coming from AMACRO via BR-319.

New roads such as AM-366 (Figure 3) would be built connecting to BR-319, opening the vast rainforest area west of BR-319 to deforesters and loggers from AMACRO (see here, here and here) DNIT (National Department of Transport Infrastructure) recently openly confessed that AM-366 is part of the effect of BR-319. In the agency's 14 September submission to the Brazilian court that will judge its second appeal attempting to overturn the judicial ruling that cancelled BR-319's Bolsonaro-era preliminary license, DNIT stated that "improving access and expanding the road network, especially towards AM-366 and AM-364 the state highways" will "promote the development of rural and forestry activities in the affected areas". "Rural and forestry activities in the affected areas" refer, of course, to deforestation and to the degradation of the forest by logging. In other words, DNIT now claims credit for the supposed benefits of AM-366 but none of the guilt for its impacts.

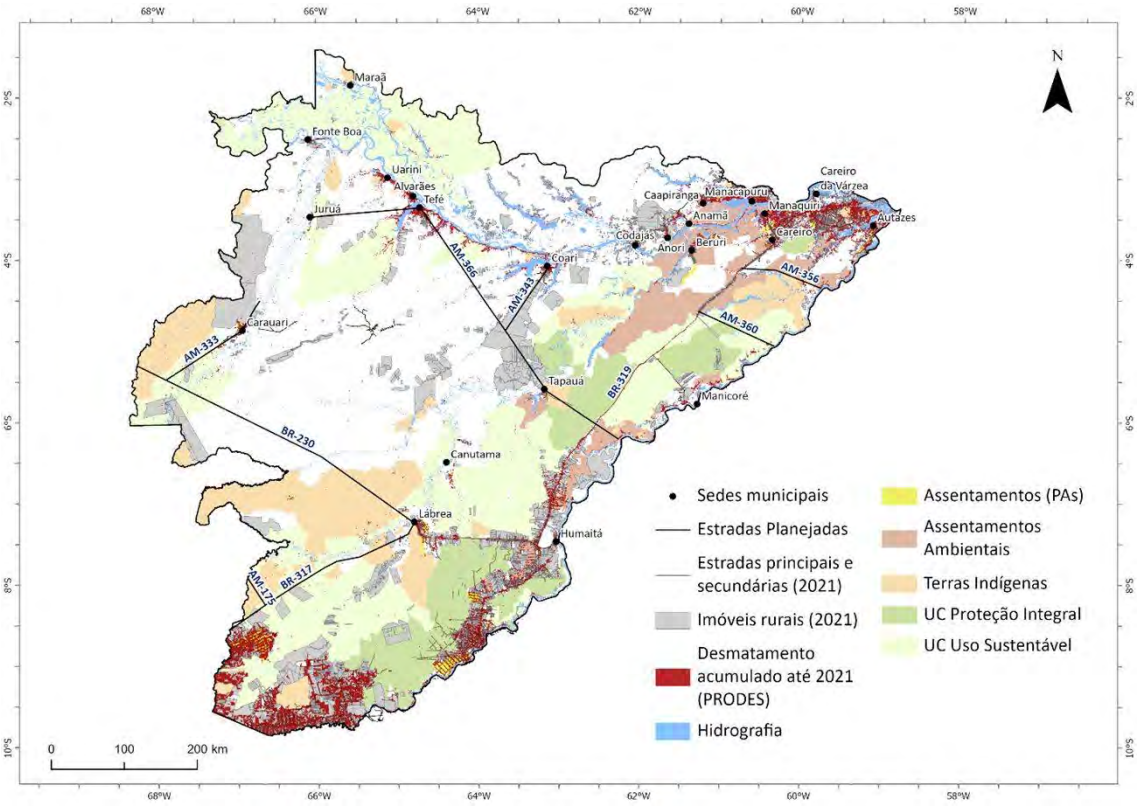

Figure 3. Map of the BR-319 area with the Trans-Purus region. The areas in gray are claims in the Rural Environmental Register (CAR) up to 2021. Source: Yanai et al. (in preparation).

AM-366, which would be an Amazonas state highway, has heretofore been portrayed as having nothing to do with BR-319, being bureaucratically separated from this federal highway (e.g., DNIT, 2009, Vol. 1, p. 58). However, without BR-319 the plans for AM-366 would not exist, and its impacts are an integral part of the impacts of BR-319. As a state highway there would be little to stop the construction of AM-366 regardless of its impacts, as history has shown that the state environmental agency that would be responsible for licensing lacks independence to resist pressure from the state governor (see here and here).

The disastrous wider impacts of the BR-319 project are the “elephant in the room” that has not yet been perceived by political leaders, as evidenced by President Lula’s 10 September declaration of support for reconstructing BR-319 made at a moment when much of the Amazon and other parts of Brazil were on fire. One must assume that the President is unaware of the role of BR-319 in future greenhouse gas emissions and therefore in increasing the global warming that is currently impacting Brazil through fires and droughts.

The vast forest area to the west of BR-319 is critical to the future of global warming. This area has a huge stock of carbon in forest trees and in the soil under the forest (see here and here). This carbon is at risk of being emitted to the atmosphere either by direct deforestation and degradation from logging or from tree mortality from

droughts and forest fires resulting from continued global warming. The remaining forest in southeastern portion of Brazilian Amazonia is already in a likely irreversible decline due to climate change and the fragmentation of the forest by the advance of deforestation (see here and here). The recent study published in *Nature* by Flores et al. shows much of the area to be opened by BR-319 and AM-366 to be at risk of collapse, a process that would be increased both by ongoing climate change and by the fragmentation and logging that would result from the highway projects (Figure 4). Logging, whether legal or not, greatly increases the vulnerability of Amazon forest to forest fires, making larger areas catch fire and increasing the damage to each hectare of forest that catches fire. Projected climate change will greatly increase the probability of forest fires in Amazonia.

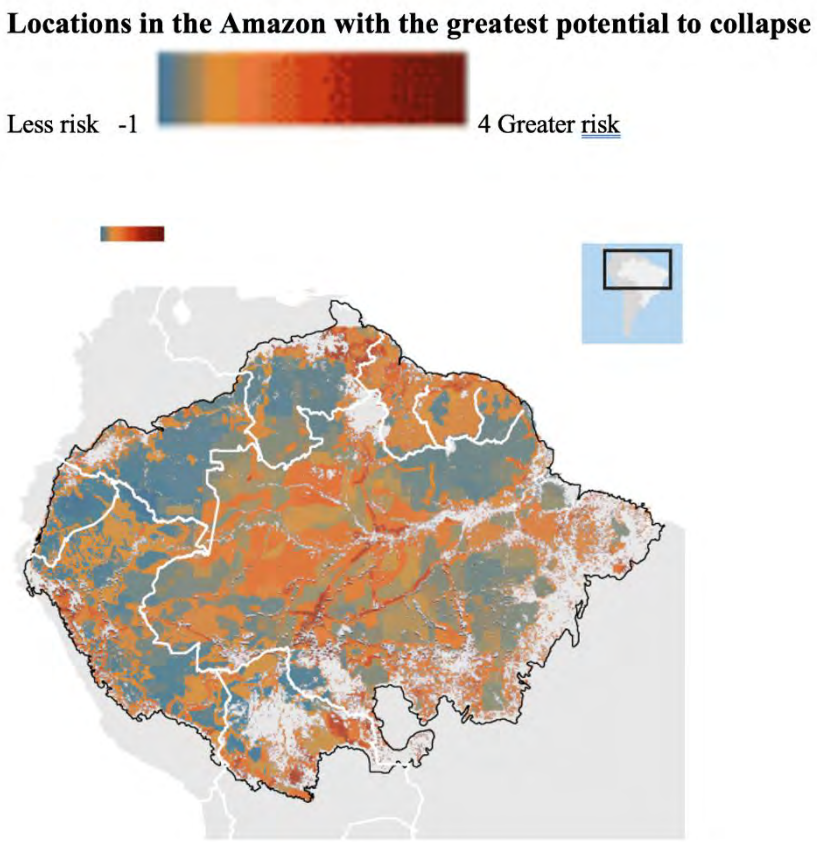

Figure 4. Map of the results of Flores et al, 2024 indicating the BR-319 route with the highest risk of collapse and much of the Trans-Purus region also at high risk. (Map from: Sassine, 2024).

If the forest in the "Trans-Purus" area west of BR-319 is lost, either to deliberate impacts such as deforestation or to unintended impacts such as collapse from climate change, the resulting greenhouse gas emissions would be sufficient to push global climate past a tipping point beyond which global warming escapes from human control. The consequences would be catastrophic throughout the world, including Brazil, which is one of the most vulnerable countries. Loss of the

rest of the Amazon forest and its environmental services would be one of these impacts.

The "global stocktake" released by the Climate Convention at COP28 indicates that in 2023 all deliberate human emissions (i.e., fossil fuels + deforestation) totaled 55 billion tons of CO_2-equivalent, or 16 billion tons of carbon (i.e., not counting the two oxygen atoms in each molecule of CO_2) per year. This means that the most that human society can do to halt global warming is to not emit any more, but that is "only" 16 billion tons of carbon. If unintentional emissions from "indirect" sources such as more forest fires, melting tundra, warming soils, and reduced CO_2 uptake by warmer oceans total more than 16 billion tons of carbon per year, then global warming escapes from control. Panamazonia has stocks of carbon many times large than 16 billion tons (Table 1), and only a fraction of this entering the atmosphere over a span of a few years would unleash this catastrophe. The Trans-Purus region that is at risk from BR-319 and its planned side roads has a substantial part of this stock and is also the region that is most easily prevented from emitting it – by not opening it to the entry of deforesters.

Table 1. Carbon Stocks in Pan-Amazonia in 2013

Billions of tons of carbon

Vegetation			
	Brazilian Legal Amazon	58.6	Nogueira et al. (2015)
	Rest of Pan-Amazonia	~20	Considering biomass/ha in Brazil.
Soil			
	0-20 cm	33.8	Quesada et al. (2011)
	20-100 cm	59.1	Quesada et al. (2011)
	100-800 cm	251	Trumbore et al. (1995)

Table 1. Carbon Stocks in Pan-Amazonia in 2013

The Trans-Purus region is also critical to the continued supply of water to Brazil's agricultural areas and to the country's largest city: São Paulo (see here, here and here). Prevailing winds in Amazonia blow from east to west, and this is the last area where water is recycled and from which the winds known as "flying rivers" carry it to São Paulo as water vapor. Estimates of the percentage of annual rainfall in the La Plata River basin, which includes the state of São Paulo, range from 16% to 70% (Table 2). Even the lowest of these estimates means that Brazil cannot afford to lose this source of water. The climate in São Paulo and other parts of southeastern Brazil has changed, with major droughts increasing due to changes in ocean temperatures linked to global warming: in 2014 São Paulo

almost ran out of water, and in 2021 another major drought struck the city (see here, here and here).

Table 2. Dependence of the La Plata River Basin on recycled water from the Amazon

16%	Yang & Dominguez, 2019.
18-23%	Zemp, Schleussner, Barbosa, van der Ent, Donges, Heinke, Sampaio & Rammig, 2014.
23%	Martinez & Dominguez, 2014.
70%	van der Ent, Savenije, Schaefli & Steele-Dunne, 2010.

Table 2. Yang & Dominguez, 2019.Zemp, Schleussner, Barbosa, van der Ent, Donges, Heinke, Sampaio & Rammig, 2014.Martinez & Dominguez, 2014. van der Ent, Savenije, Schaefli & Steele-Dunne, 2010.

In conclusion, the BR-319 project needs to have a new EIA, and this has to be considered in the decision on proceeding with the highway reconstruction project rather than assuming that once all the boxes have been checked for the steps in the licensing process then the project automatically goes ahead.

In theory, an EIA is an essential input to rational decision making, but in practice in Brazil it merely serves as a bureaucratic step in giving a stamp of approval to projects for which the underlying decision on undertaking the project has already been made (see here and here). This needs to change, and BR-319 is the ideal place for this to happen. The stakes for Brazil are too high to do otherwise.

Greenpeace Brazil conducted an aerial survey in southern Amazonas and northern Rondônia to monitor deforestation and fires in July 2024. Photo © Marizilda Cruppe / Greenpeace.

An earlier Portuguese version of this text was published by Amazônia Real.

Header image: Greenpeace Brazil conducted an aerial survey in southern Amazonas and northern Rondônia to monitor deforestation and fires in July 2024. Photo © Marizilda Cruppe / Greenpeace.

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