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**Promotion and protection of all human rights, civil,
political, economic, social and cultural rights,
including the right to development**

Visit to Brazil

Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes*, **

Summary

The Secretariat has the honour to transmit to the Human Rights Council the report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Baskut Tuncak, on his mission to Brazil. In the report, submitted pursuant to Council resolution 36/15, the Special Rapporteur shares his findings and recommendations derived from his official country visit, carried out from 2 to 13 December 2019.

* The summary of the report is being circulated in all official languages. The report itself, which is annexed to the summary, is being circulated in the language of submission only.

** The present report was submitted to the conference services after the deadline in order to reflect the most recent developments.

Annex

Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on his visit to Brazil

I. Introduction

1. The Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes (toxics)¹, Baskut Tuncak, conducted an official country visit to Brazil from 2 to 13 December 2019, at the invitation of the Government. In the spirit of collaboration, the Special Rapporteur engaged in dialogue on various issues to examine the Government's approach on human rights implicated by toxic exposures.

2. The Special Rapporteur thanks the Government of Brazil for the invitation to conduct a country visit. He expresses gratitude for the opportunity for frank and constructive discussions with the Government, companies, and civil society, including indigenous, Afro-Brazilian, and *quilombola* communities, researchers and academics, and human rights defenders.

3. The Special Rapporteur had the opportunity to visit various parts of the country, and to experience the hospitality and generosity of the Brazilian people. He was deeply moved by the enduring struggle of victims, civil society and human rights defenders that met with him. It is these people that the international human rights system aims to protect, and whose resilience must be recognised and commended.

II. Sustainable development in Brazil

4. In 1992, the UN Conference on Sustainable Development was held in Rio de Janeiro. The "Rio Declaration" born from this landmark meeting has for decades helped to orient laws and policies of States around the world, including Brazil, toward a sustainable future.

5. A cornerstone of achieving sustainable development is decoupling economic growth from resource depletion and environmental degradation. Brazil experienced its first real decoupling between CO₂ emissions and economic activity in 2009,² suggesting that Brazil has the capacity to go in this direction if concerted efforts are applied. As human rights are inseparable and indivisible, so too is sustainable development from human rights.

6. However, today Brazil is on a steep path of regression from sustainability and human rights. Images of the rampant burning of the Amazon rainforest have become a frightening visual of this descent and Brazil's eroding commitment to these international values and principles. Yet, much of this regression is invisible.

7. Prioritizing development at any cost is poisoning Brazil, forcing the burden of inaction on the poor and other marginalized communities. Reports proliferate of corporate capture, corruption and conflicts of interests between Government actors and powerful businesses,

¹ Consistent with the previous reports of the current mandate holder and those of his predecessors, hazardous substances and wastes are not defined strictly; they include, inter alia, toxic industrial chemicals and pesticides, pollutants, contaminants, explosive and radioactive substances, food additives, biological agents and various forms of waste. For ease of reference, the Special Rapporteur refers to hazardous substances and wastes as "toxics", and therefore, in the present report, the term "toxics" (or "toxic substances") should be understood to also include non-toxic but hazardous substances and wastes.

² Luciano Charlitade Freitas and Shinji Kaneko (2011) <https://www.sciencedirect.com/science/article/abs/pii/S0921800911000838>.

advancing a deregulatory agenda. As countries in Europe and elsewhere improve environmental protections, efforts in Brazil are being undermined. Recent videos of Ministers plotting to use the coronavirus crisis to weaken protections validate concerns.

8. Brazil appears increasingly exploited by global supply chains capitalizing on weaker standards, oversight and enforcement. For example, Brazil's startling commitment to feed one third of the world by 2030³ stands to dramatically increase agrochemical use in ways that would be unacceptable in many export markets such as Europe, while also increasing deforestation, climate change and conflict with indigenous and local communities.⁴

9. In this context, this report focuses on the current impacts of Brazil's development model on the health, wellbeing and human rights in the context of exposure of people and peoples to toxics. It emphasizes the duty to prevent exposure and analyses the current approach to protect human rights including of the most vulnerable, from toxic exposures in dominant industries, including agriculture and extractives.

III. Duties and responsibilities to protect life and prevent exposure

10. Brazil has a duty to protect human rights to life, dignity, health, bodily integrity, clean water, nutritious food, adequate housing and safe and healthy working conditions. Read together, everyone in Brazil has the right to a healthy environment. From this flows Brazil's obligation to prevent exposure to hazardous substances, including toxic chemicals, pesticides,⁵ viruses, wastes and other contaminants of people and their environment.⁶ These human rights obligations correspond to specific responsibilities on businesses in Brazil.

11. Courts in Brazil have recognized these rights and the State's duty to prevent exposure. One welcome example concerns asbestos. Studies have identified hot-spots of cancer linked to asbestos, such as Osasco municipality in São Paulo.⁷ Accordingly, the Brazilian Supreme Court banned asbestos mining pursuant to the constitutional rights to life, health, and a balanced environment.⁸

12. Another positive example comes from efforts to tackle urban air pollution. In 2017, 60% of people in Brazil were living in areas above the WHO Air Quality Guideline for particulate matter (PM), and Brazil was among the top 10 countries with the highest mortality burden from air pollution, accounting for 66,000 deaths.⁹ Brazil has taken measures to reduce urban emissions overall, including implementing more stringent standards for vehicles. In 2012, Brazil was the first developing country to adopt Euro V-equivalent standards, further strengthened in 2018 to meet Euro VI standards.¹⁰ Great strides made in reducing indoor air pollution include concerted efforts to reduce firewood consumption in the residential sector from the 1970s to date, from 85% to 25%.¹¹

³ Brazil Government (2016 – 2025) http://www.mds.gov.br/webarquivos/arquivo/seguranca_alimentar/caisan/Publicacao/Caisan_Nacional/decada_versao_ingles.pdf.

⁴ Fernando Ferreira Carneiro et al (2015) p 52 <https://www.arca.fiocruz.br/bitstream/icict/26221/2/Livro%20EPSJV%20013036.pdf>.

⁵ The term pesticide includes herbicides, fungicides, biocides and other chemical agents designed to kill living organisms.

⁶ A/74/480.

⁷ Gisele Aparecida Fernandes et al (2019) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6679146/>.

⁸ Brazilian Association of the Asbestos Exposed (ABREA) (2019) .

⁹ Health Effects Institute (2019) ISSN 2578-6873 https://www.stateofglobalair.org/sites/default/files/soga_2019_report.pdf.

¹⁰ International Council on Clean Transportation (March 2016) https://theicct.org/sites/default/files/publications/Brazil%20P-7%20Briefing%20Paper%20Final_revised.pdf; International Council on Clean Transportation (February 2019) https://theicct.org/sites/default/files/publications/P8_emissions_Brazil_update_20190227.pdf.

¹¹ Adriana Gioda et al (Aug 05, 2019) <https://doi.org/10.1590/1413-81232018248.23492017>.

13. Brazil has made significant improvement in progressively reinforcing the role of the Federal Public Defender's Office for Citizens' Rights, and establishing national and state-level committees dealing with various human rights issues.¹²

14. However, deep concerns remain for how evidence of risk and harm often fails to translate into necessary protections, benefiting few in Brazil. Historical progress is rapidly being undermined by a dangerous combination of additional hazards and risks and erosion of laws and institutions.

Extractive industries

15. In January 2019, 270 people died when Vale's Córrego do Feijão tailing dam in Brumadinho collapsed.¹³ Most of those killed were Vale workers having lunch in the cafeteria located directly below the tailings dam. The force of the toxic mud dismembered bodies, and shattered what was a bucolic community. Families and friends bear the intense trauma of recovering and identifying the bodies of their loved ones, rebuilding and repairing, while suffering from the lingering sense that justice has not been served. The Special Rapporteur was moved by the testimony of the community to the emotional pain they experienced and the suffering they continue to endure.

16. It is astounding that such a disaster would occur four years after a catastrophic tailings dam failure involving the very same company Vale, in the same state of Minas Gerais. In 2015, the Fundão tailings dam in Mariana collapsed killing at least 18 people and countless endangered species, fish and other wildlife. The disaster decimated livelihoods of over 3 million local community members including indigenous peoples who depend on the 800 km Rio Doce watershed ecosystem. The so-called Mariana disaster involved companies BHP Billiton and Vale through their joint venture Samarco. Instead of tightening controls on extractive industries after the Mariana disaster, Brazil's Government inexplicably expedited licensing and failed to ensure adequate monitoring and oversight of operations.

17. While the Brumadinho disaster was technically caused by structural instability and liquefaction,¹⁴ the real cause lies with a remarkable lack of Government oversight and criminally reckless conduct by Vale. Not only was an employee cafeteria still located below an enormous dam after the Mariana disaster, but also serious managerial and organizational flaws and corporate neglect played a tragic role.¹⁵ An investigation by the Brazilian Congress revealed evidence that Vale's CEO was informed in an anonymous email weeks before the incident that the dams were at their limits. An independent investigation commissioned by Vale confirms that Vale influenced third party assessors, Potamos and the German firm TUV SUD, to falsely certify that the dam was safe.¹⁶ Similarly, with the Mariana disaster, engineers warned BHP, Vale and Samarco of the instability just six months before the collapse, yet they were dismissed and necessary precautions were not undertaken.

18. Today there are between 40 and 1000 tailings dams at risk of collapse in Brazil. Forty-five were classified as most vulnerable in 2017, of which 25 belong to public entities, and nearly 1,800 dams are at either high or moderate risk of failure.¹⁷ Vale has 124 registered iron

¹² Inter-American Commission on Human Rights (IACHR) (2018) <https://www.oas.org/es/cidh/prensa/comunicados/2018/238OPeng.pdf>.

¹³ Extraordinary Independent Consulting Committee for Investigation – CIAEA Investigation Report (20 February 2020) http://www.vale.com/PT/investors/documents/20.02.20_ciaea_report_i.pdf; Francisco Antonio de Castro Lacaz et al (July 26, 2017) https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0303-76572017000100302; Carlos Machado Freitas and Mariano Andrade da Silva (2019) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7138502/>.

¹⁴ CIAEA (2020) .

¹⁵ Carlos Machado Freitas and Mariano Andrade da Silva (2019) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7138502/>.

¹⁶ CIAEA (2020) .

¹⁷ ANA (2018) <https://www.ana.gov.br/noticias/45-barragens-preocupam-orgaos-fiscalizadores-aponta-relatorio-de-seguranca-de-barragens-elaborado-pela-ana>.

ore dams in Brazil, 41 of which are tailings dams, and 82% in Minas Gerais.¹⁸ In the “iron quadrangle” in Minas Gerais, Vale alone has 28 open pit mines, and communities in nearby cities cite grave environmental impacts including on access to water, such as from the Paraopeba river basin.¹⁹

Manufacturing

19. Throughout Brazil, factories and plants are located in unimaginably close proximity to communities, who are subjected to grave infringements of their human rights.²⁰ While manufacturing contributes to the country’s economic growth, its output comes with significant externalities, including climate change, cancer, and respiratory diseases, among many other impacts on local communities.²¹ Studies from Rio de Janeiro have found air pollution levels exceeding WHO standards, as well as elevated levels of toxic heavy metals.²² A study in Sao Paulo found that air pollution contributes to increased susceptibility to various health conditions, including cardiovascular disease and diabetes.²³

20. The struggle of over 300 families in Piquiá de Baixo²⁴ is emblematic. In the 1970s, a steel industry invaded a peaceful community without their consent, a glaring example of industry operating for decades without adequate regard for human rights, and limited State intervention. Community members live across the fence from steel plants. Vale supplies iron ore and transports processed products to ports for export, amidst the expansion of the mine-rail-port transportation system along the Carajás export corridor. Alarming, the steel factories in Açailândia have been operating without licenses for at least eight years, as they failed to meet environmental requirements.²⁵

21. Studies reveal multiple cases of health problems including coughs, shortness of breath and wheezing, and headaches.²⁶ Sixty five percent of community members reported respiratory problems, with others suffering from ophthalmological diseases, and various skin conditions, aggravated by the pollution.²⁷ Community members have been burnt from the slag and residues from pig iron, where the waste area was not properly fenced off, and no proper signalling of danger and the risks associated with contact with the pig iron.²⁸ Despite unmistakably hazardous pollution, data provided to the Government by the companies does not suggest that it is above levels of concern. The Government has not investigated or sanctioned the companies.

22. The situation of the communities in Piquiá de Baixo is a clear violation of rights to life, health, information, and many others. At the same time, this case reveals an incredible story of a community’s cohesion and resilience in fighting for their rights.

¹⁸ Vale (2020) http://www.vale.com/en/aboutvale/reports/atualizacoes_brumadinho/pages/learn-more-about-vales-dams.aspx ; Geraldo Wilson Fernandes et al (2016) <https://cirdi.ca/wp-content/uploads/2017/07/Deep-into-the-mud-ecological-and-socio-economic-impacts-of-the-dam-breach-in-Mariana-Brazil.pdf>; Carlos Machado Freitas and Mariano Andrade da Silva (2019) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7138502/>.

¹⁹ Movimento pelas Serras e Águas de Minas, Movimento pela Preservação da Serra do Gandarela (2014).

²⁰ Carvalho, LVB, Rocha, F, Finamore, R. (2019 / Dec). <http://www.cienciaesaudecoletiva.com.br/artigos/vigilancia-popular-ambiental-e-siderurgia-as-experiencias-de-piquia-de-baixo-ma-e-santa-cruz-rj/17475?id=17475>.

²¹ Id.

²² Rosa I. Rodríguez-Cotto et al (2014) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4448729/>.

²³ Environmental Justice Atlas, <https://ejatlas.org/conflict/pig-iron-industries-in-piquia-de-baixo-maranhao-brazil>.

²⁵ FIDH, Justiça nos Trilhos (JnT) (May 2019) <https://www.fidh.org/IMG/pdf/bresil734anglaisweb2019.pdf>.

²⁶ NEEPES, ENSP, FIOCRUZ (September 2018) <http://mapadeconflitos.ensp.fiocruz.br/?conflito=ma-industria-guseira-contaminacao-da-agua-falta-de-seguranca-e-condicoes-improprias-a-vida-e-a-saude-dos-moradores-do-distrito-industrial-de-pequia-acailandia>.

²⁷ FIDH, Justiça Global, JnT(2012) https://www.fidh.org/IMG/pdf/report_brazil_2012_english.pdf.

²⁸ FIDH, JnT (May 2019) <https://www.fidh.org/IMG/pdf/bresil734anglaisweb2019.pdf>.

Pesticides

23. Pesticide use in Brazil has increased over 338% since 2000.²⁹ Brazil has been among the top three pesticide consumers in the world, and at times the largest consumer for over a decade.³⁰ The tremendous use of pesticides is resulting in grave impacts on human rights in Brazil. Food production and economic growth are not a legitimate excuse for these preventable violations and abuses.³¹ Victims rightly allege deaths, health problems, as well as cruel, inhuman and degrading treatment resulting from pesticide exposure.³² Environmental degradation, including water contamination and biodiversity loss including of bees are grave effects.³³

24. Far too many cases occur of the failure to respect legally required buffer zones to prevent the spraying of schools, houses and community centres by agri-business. Despite national restrictions on pesticide spraying within 500 metres of inhabited places, states have varying levels of implementation, and overall there is inadequate enforcement.³⁴

25. Landless peasants reported repeated efforts by local businesses to force their eviction by spraying of pesticides over their homes 2-3 times per month. Indigenous, Afro-Brazilian and other communities regularly allege powerful agribusinesses intentionally spray pesticides on them as “chemical weapons” to drive them from their lands, which farmers and ranchers wish to use.³⁵

26. In 2018 an airplane sprayed pesticides over 340 families in Marabá Para, causing health problems for all the families, allegedly with the aim of evicting the community members. In January 2020, a court decision mandated a farmer, pilot, and contractor to compensate the indigenous community of Tey’i Jusu for aerial spraying of pesticides in and around their homes, which had caused headaches, sore throats, diarrhoea, and fever, with long-term health impacts yet unknown.³⁶ Efforts have been made to ban aerial spraying, for example in Ceará.³⁷ However, such efforts came at grave costs to the communities’ human rights defenders as discussed below.³⁸

²⁹ Brazilian Institute of Geography and Statistics IBGE (2017) <https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/21905-censo-agro-2017-resultados-preliminares-mostram-queda-de-2-0-no-numero-de-estabelecimentos-e-alta-de-5-na-area-total> ; Campanha Permanente Contra os Agrotóxicos e Pela Vida et al (CPCAPV) (April 2020), https://www.rosalux.de/fileadmin/rls_uploads/pdfs/Studien/Hazardous_20pesticides_ENG_final_20200422.pdf.

³⁰ Londres, F. (2011); quoted in Samuel Carvalho De Benedicto (2019); Marcos Antonio Pedlowski et al (January 2012) https://www.researchgate.net/publication/257085273_Modes_of_pesticides_utilization_by_Brazilian_smallholders_and_their_implications_for_human_health_and_the_environment ; Eloisa Dutra Caldas (December 2016) https://www.researchgate.net/publication/308013830_Pesticide_Poisoning_in_Brazil.

³¹ A/HRC/34/48.

³² A/74/480.

³³ HRC General Comment 36; Articulação para a Preservação da Integridade dos Seres e da Biodiversidade (APISBio) (March 28).

³⁴ Wanderlei Pignati et al (Dec 2014) <https://www.scielo.org/article/csc/2014.v19n12/4669-4678/pt/>; Human Rights Watch (HRW) (November 2019) <https://www.hrw.org/news/2019/11/06/brazilians-poisoned-pesticides-sprayed-near-homes-and-schools>.

³⁵ CPCAPV et al (April 2020) https://www.rosalux.de/fileadmin/rls_uploads/pdfs/Studien/Hazardous_20pesticides_ENG_final_20200422.pdf.

³⁶ Id.

³⁷ Aliança pela Alimentação Adequada e Saudável (2019).

³⁸ Id. ; State of Ceara by State Law N. 16.280 of January 20, 2019.

27. Between 2000 and 2013, pesticide exposure accounted for 10,666 deaths in Brazil.³⁹ The actual number is estimated to be between 34,000 and 51,000 deaths, considering the general underreporting of poisoning cases, and the low registration rate of fatalities.^{40 41}

28. Studies have found elevated risk of cancer in agriculturally intensive regions of Brazil, which like other diseases and disabilities may not be captured by mortality figures.⁴² Analytical studies demonstrate DNA damage in rural workers occupationally exposed to pesticides, in Central and Southern Brazil.⁴³ Pesticides are associated with reproductive health problems, including congenital malformations⁴⁴ and poor sperm quality in men.⁴⁵ Respiratory problems are more prevalent during crop season, attributed to pesticide exposure, independent of other factors including smoking.⁴⁶ A study in a rural area in Rio de Janeiro heavily contaminated with organochlorine pesticides revealed associated interference with hormone function, affecting thyroid systems with gender-specific impacts.⁴⁷ A study in Conceição do Castelo confirmed health risks to workers and communities are magnified by exposure to several different pesticides, the so-called cocktail effect.⁴⁸ The reality of exposure to multiple pesticides, and the magnified health impacts that may result but have not been assessed by regulators, must be kept in mind.⁴⁹

29. Disturbing accounts of aerial spraying abound,⁵⁰ endangering farm workers and communities, including children who are at extreme risk of health impacts.⁵¹ Aerial spraying of pesticides above a rural school in Rio Verde, Goiás, a centre of soy production in Brazil, caused poisoning of an estimated 92 children and some teachers.⁵² There have also been other similar incidents of pesticide spraying near schools, including in 2019 near an indigenous village school in the village of Guyraroká of the Guarani-Kaiowá people, in Mato Grosso do Sul,⁵³ others in Sergipe and Parana.

³⁹ Eloisa Dutra Caldas (December 2016)

https://www.researchgate.net/publication/308013830_Pesticide_Poisoning_in_Brazil.

⁴⁰ Andrea Franco Amoras Magalhães and Eloisa Dutra Caldas (June 2018)

<https://www.sciencedirect.com/science/article/pii/S0379073818301373>.

⁴¹ Tomaz Langenbach and Luiz Querino Caldas (2018)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6072638/>.

⁴² Francis L. Martin et al (October 2018) ; Raquel Maria Rigotto et al (2013)

<https://www.sciencedirect.com/science/article/pii/S0045653518311937>.

⁴³ Khayat et al (2013) https://lherp.ecoevol.ufg.br/up/199/o/Khayat_et_al_2013.pdf ; Danieli Benedetti

et al (20 February 2014) <https://www.intechopen.com/books/pesticides-toxic-aspects/genotoxicity-induced-by-occupational-exposure-to-pesticides>.

⁴⁴ Ueker, M.E., Silva, V.M., Moi, G.P. et al (2016). <https://doi.org/10.1186/s12887-016-0667-x>.

⁴⁵ Cleber Cremonese et al (January 2017)

<https://www.sciencedirect.com/science/article/abs/pii/S0890623817300060>.

⁴⁶ Rafael J. Buralli et al (2018) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6025513/>; Faria NM et

al (2005) <https://www.ncbi.nlm.nih.gov/pubmed/16341409/>.

⁴⁷ Carmen Freire et al (November 2013)

<https://www.sciencedirect.com/science/article/pii/S0013935113001552?via%3Dihub>.

⁴⁸ Juliana Dalbó et al (July 2019) <https://doi.org/10.1590/1413-81232018247.19282017>.

⁴⁹ Raquel Maria Rigotto et al (2013).

⁵⁰ Aliança pela Alimentação (2019).

⁵¹ CPCAPV et al (April 2020)

https://www.rosalux.de/fileadmin/rls_uploads/pdfs/Studien/Hazardous_20pesticides_ENG_final_20200422.pdf.

⁵² HRW (2018) <https://www.hrw.org/report/2018/07/20/you-dont-want-breathe-poison-anymore/failing-response-pesticide-drift-brazils>.

⁵³ Indigenous Missionary Council (16 May 2019) <https://cimi.org.br/2019/05/agrotoxicos-despejados-perto-aldeia-levam-criancas-jovens-guarani-kaiowa-hospital/>; Conf. O Calvário das crianças Guarani e Kaiowá contaminadas por agrotóxicos.

https://brasil.elpais.com/brasil/2019/08/02/politica/1564773673_055738.html; CPCAPV et al (April 2020),

https://www.rosalux.de/fileadmin/rls_uploads/pdfs/Studien/Hazardous_20pesticides_ENG_final_20200422.pdf.

30. Pesticides prohibited by other countries because of environmental or health risks remain in use in Brazil.⁵⁴ Thirty percent of active ingredients (116 of 393 substances) in Brazil are not approved in the EU.⁵⁵ Positive steps were taken in 2017 by ANVISA to ban the production, import, marketing and use of paraquat from September 2020.⁵⁶ However, this decision has yet to be enforced.

31. Brazil's drive to further expand agricultural production in recent years has not been met with equal measure to reduce pesticide use.⁵⁷ To the contrary, in terms of the number of formulations approved and volume applied, the trend of pesticide use in Brazil is of grave concern. In 2019 alone, Brazil permitted the introduction of 474 new pesticide products,⁵⁸ which several authorities noted would compound pre-existing monitoring deficiencies in the country. While the Government points to improved and more rigorous risks assessments since 2011, as well as shared competencies across ministries, recent reports regarding deregulatory efforts by certain ministers, the apparent unwillingness to apply a precautionary approach, and legislative proposals, such as the "poison package,"⁵⁹ that appear to concentrate regulatory decision-making powers in pro-business authorities, paint a troubling picture of eroding governance.

Forest fires

32. The Amazon forest, the lungs of the Earth, is a splendour of nature, boasting rich biodiversity, and supporting ecological balance and a stable climate.⁶⁰ Without the Amazon, the world would be devastated by the ravages of climate change, killing countless and thrusting millions into destitution. The Amazon is also the home of indigenous peoples and other communities, who are constantly at battle with the strong opposing forces of agribusiness and extractive industries.⁶¹ The burning of the Amazon forest presents a catastrophic risk to the human rights of billions of people around the world.

33. Furthermore, air pollution through forest fires releases 67% of PM_{2.5} emissions in Brazil, which coupled with CO emissions are associated with various diseases and disabilities, including respiratory problems.⁶² Not only does air pollution increase vulnerability to COVID-19, but the destruction of forest habitat also risks further introduction of zoonotic diseases that can develop into another global pandemic.⁶³

⁵⁴ Larissa Mies Bombardi (2019) DOI: 10.11606/9788575063590;

<http://www.livrosabertos.sibi.usp.br/portaldelivrosUSP/catalog/view/352/309/1388-1>; CPCAPV et al (April 2020), https://www.rosalux.de/fileadmin/rls_uploads/pdfs/Studien/Hazardous_20pesticides_ENG_final_20200422.pdf.

⁵⁵ ANVISA (July 2020).

⁵⁶ ANVISA, VOTO N° 056/2017/DIREG/ANVISA (2017)

<http://portal.anvisa.gov.br/documents/219201/2782895/Voto+Renato+Paraquate/fa409d90-a520-4302-9815-f39b683da509>.

⁵⁷ Bombardi LM. In: Merlino T, Mendonça ML, (2012) p. 75-86 quoted in Wanderlei Antonio Pignati et al (2017) https://www.scielo.br/scielo.php?pid=S1413-81232017021003281&script=sci_arttext&tlng=en.

⁵⁸ CPCAPV et al (April 2020)

https://www.rosalux.de/fileadmin/rls_uploads/pdfs/Studien/Hazardous_20pesticides_ENG_final_20200422.pdf.

⁵⁹ BRA 5/2018.

⁶⁰ UN, Global Sustainable Development Report 2019, p 98

https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf.

⁶¹ HRW (17 September 2019).

⁶² Fiocruz <https://climaesaude.icict.fiocruz.br/en/tema/air> ; Beatriz Fátima Alves de Oliveira et al (2011) <https://www.scielo.br/pdf/csp/v27n9/03.pdf>; Paula Henriques Blaskiewicz et al (2020) <https://doi.org/10.3390/ijerph17061984>.

⁶³ FIDH, JnT and Associação Comunitária dos Moradores de Piquiá (March 2020).

34. Brazil once made significant and commendable progress in curbing deforestation, with an 82% drop in the ten years leading up to 2014, designating protected areas, strengthening law and enforcement, and implementing satellite imaging.⁶⁴

35. Today, Brazil is on a dangerous path of rampant deforestation. Since 2014, deforestation has increased.⁶⁵ In 2018, the deforestation rate of the Brazilian Amazon forest was the highest recorded in the past 10 years.⁶⁶ Levels of deforestation have remained at elevated levels since.

36. Grossly insufficient measures have been applied to address the increases.⁶⁷ The Government stands accused of encouraging these human rights violations, through a lack of monitoring or enforcement – where those responsible for environmental destruction walk free, and those who depend on the environment for their livelihoods continue to suffer immensely.⁶⁸ Disturbingly, the oversight of indigenous lands and the forestry service was transferred to the agriculture ministry in 2019, which stands accused of promoting deforestation for agricultural expansion. Enforcement of what appears to be a large-scale criminal operations, such as in perpetration of the Amazon fires, is virtually non-existent.⁶⁹ Treated as a petty offence and seldom as criminal activity, perpetrators appear empowered with impunity.⁷⁰

Industrial chemicals

37. Unnecessary and unquestionably toxic industrial chemicals remain unregulated. Multifaceted regulatory gaps are poisoning workers, communities near and “downstream” of manufacturing facilities, and consumers. The cost of inaction on industrial chemicals includes the pain and suffering of victims and their families, and a tremendous economic burden on the Unified Health System.⁷¹

38. In 2018, Brazil’s chemical industry accounted for 10% of its GDP and was the eighth largest in the world.⁷² Many of these toxic pollutants have or are in the process of being more strictly controlled internationally because they do not readily degrade, bio accumulate in people, and have profound adverse health consequences across entire populations exposed through food, water, air and consumer products. For example, over 4,000 “forever chemicals” will persist in the environment indefinitely, and remain available for use in Brazil, whereas the EU is moving to restrict over 4,000 at once.

39. Until 2019, Brazil was making significant process in aligning chemical management standards to international best practices, including the OECD, thanks to dedicated civil servants. However, after the change in administration, the necessary strengthening of chemical legislation was abruptly aborted. This was an incomprehensible dereliction of duty -- not only failing to address ongoing violations from toxic chemicals, but also wasting significant resources invested and the opportunity for tremendous savings for the Unified Health System.

40. A significant opportunity still exists with respect to Brazil’s draft law on the inventory, evaluation and control of chemicals. Legislative discussions at the Congress should ensure the outcome of chemicals management regulations establishes a system with strict controls,

⁶⁴ OECD (2018) p 49 <https://www.oecd.org/economy/surveys/Brazil-2018-OECD-economic-survey-overview.pdf>.

⁶⁵ Id. p 51.

⁶⁶ UN (2019) p 98 https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf

⁶⁷ Id.

⁶⁸ HRW (17 September 2019).

⁶⁹ HRW (17 September 2019) .

⁷⁰ OECD (2018) p 45 <https://www.oecd-ilibrary.org/docserver/9789264291652-en.pdf?expires=1590687519&id=id&accname=guest&checksum=22218887ABE388F339B3CA9BAF50544D>; HRW (17 September 2019).

⁷¹ UNEP (2012 and 2019).

⁷² ABIQUIM, Deloitte (2018) <https://www2.deloitte.com/content/dam/Deloitte/br/Documents/energy-resources/Deloitte-Abiquim-Chemical-Sector.pdf>.

enforceable deadlines to phase out chemicals based on their intrinsic hazards, and that Brazil neither uses nor exports chemicals prohibited from use by OECD members.

IV. Protecting the most vulnerable

41. The principles of equality and non-discrimination are central to realizing human rights implicated by toxic exposures, taking into account circumstances of vulnerability. Yet, various examples exist where Brazil is not upholding these rights without discrimination. Brazil has an obligation, and has reaffirmed its commitment, to prioritise the protection of people in situations of vulnerability.⁷³

42. Human rights violations most often befall those who have faced discrimination historically.⁷⁴ Toxic exposure is no exception, with cross-sectional impacts and factors including race, income, occupation, age, and gender, contributing to differentiated implications on individuals and communities. In 2018, people of colour in Brazil represented 72.7% of the poor, with 27.2 million of these 38.1 million people being women.⁷⁵ While the National Council for Human Rights could play an important role in addressing environmental injustice, it inadequately does so, perhaps in part because half of the 22 members are Government representatives.⁷⁶

Indigenous, Afro-Brazilian and low-income communities

43. Numbering over 13,000 communities, indigenous, *quilombola* and other Afro-Brazilian, communities are often the most exposed to toxic pollution, further accentuating their already precarious situations. There is a strong intersection with poverty, and low-income communities in urban centres are also implicated.

44. The situation of indigenous peoples, Afro-Brazilians and the poor in Brazil is deteriorating rapidly due to changes in laws and policies to favour private interests, dismantling of key institutions, the absence of meaningful enforcement, and the rejection of the letter and spirit of human rights by the leadership in Brazil. For example, the National Indian Foundation (FUNAI) is operating with only 10% of its budget, therefore struggling to protect rights of indigenous peoples.⁷⁷ Bodies have been eliminated altogether, such as the National Council of Indian Policy (CNPI) tasked with promoting effective participation of indigenous peoples in decision-making.⁷⁸ Recurrent proposals to legalise mining, hydroelectric projects and other business activities in the Amazon and elsewhere,⁷⁹ raise legitimate concerns of disregard of the right to free prior and informed consent (FPIC).

45. Indigenous peoples' close connection with nature places them at increased danger of toxic exposure including pressure from industrial expansion, agriculture, extractive industries, urban growth, and waste dumping.⁸⁰ Indigenous peoples and traditional communities dependent on the Doce River suffered tremendously from the Mariana dam

⁷³ Brazil Government, para 8 <https://www.universal-rights.org/wp-content/uploads/2019/07/NV-199-19-Brazils-Voluntary-Pledges-and-Commitments.pdf>.

⁷⁴ IACHR (2018) <https://www.oas.org/es/cidh/prensa/comunicados/2018/238OPeng.pdf>.

⁷⁵ IBGE (11 June 2019) <https://agenciadenoticias.ibge.gov.br/agencia-noticias/2012-agencia-de-noticias/noticias/25882-extrema-pobreza-atinge-13-5-milhoes-de-pessoas-e-chega-ao-maior-nivel-em-7-anos>.

⁷⁶ Pogrebinski, Thamy (2017) <https://www.latinno.net/en/case/3105/>.

⁷⁷ Indigenous Missionary Council (CIMI) (2017) https://cimi.org.br/wp-content/uploads/2018/12/Report-Violence-against-the-Indigenous-Peoples-in-Brazil_2017-Cimi.pdf; Brazil Chamber of Deputies (2019).

⁷⁸ Brazil Chamber of Deputies (2019).

⁷⁹ HRW (1 March 2020) <https://www.hrw.org/news/2020/03/01/bolsonaros-plan-legalize-crimes-against-indigenous-peoples>; Amazon Watch (6 February 2020) <https://amazonwatch.org/news/2020/0206-illegal-bill-to-permit-mining-on-indigenous-territories-proposed-by-bolsonaro>.

⁸⁰ Álvaro Fernández-Llamazares et al (2020 May) doi: 10.1002/ieam.4239; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7187223/>.

collapse, losing access to water, crop production and livelihoods including fishing activities.⁸¹ Similarly, the residents of Pataxo village in Nao Xoha decried the death of their river, including destruction of fishing, following the Brumadinho dam collapse. Indigenous peoples in Ceará report air pollution from the Pecém industrial complex.⁸²

46. Low-income families, including Afro-Brazilians, suffered disproportionate exposure to dust and heavy metals in mud heaped in Barra Longa following the Mariana dam collapse by agents of the companies and the Renova foundation.⁸³ These communities reported various respiratory and other diseases, compounding the pre-existing inequity and environmental injustice.

47. Children in the North and Northeast regions, rural areas and Afro-Brazilian children suffer disproportionately from multidimensional poverty, lacking basic amenities including clean water and sanitation.⁸⁴ Women in these rural areas exhibit a persistence of bronchitis and asthma associated with indoor air pollution from the use of firewood or charcoal.⁸⁵

48. Land grabbing and political domineering against indigenous and *quilombola* communities is evident, contributing to toxic exposure.⁸⁶ Renegade artisanal gold miners continue to poison the Yanomami people leaving irreversible impacts on children and a toxic legacy of disease and disability for future generations.⁸⁷ Ninety percent of the Yanomami population has highly hazardous levels of mercury in their bodies.⁸⁸ Now, the Yanomami people are facing yet another existential health risk, COVID-19, as are many other vulnerable communities throughout Brazil.

49. Pesticide use as “chemical weapons” allegedly to drive indigenous and Afro-Brazilian communities from their lands is alarming. Further, 90% of some of the fishing communities affected in the 2019 oil spill in North and South-Eastern Brazil are Afro-Brazilians.⁸⁹ Community members complained of coughing, nausea, loss of income through reputational damage of their fish, and mental health problems associated with the disaster.

50. Brazil has made some notable progress. For example, the Special Rapporteur was encouraged to hear of bills that seek to make FPIC a legal requirement in certain states. Further, the Federal public health policy aims to create ways for communities in remote areas to access services, including through AMBIU ambulances and boats.

51. However, the rights to self-determination and FPIC have yet to be implemented in national laws, therefore undermining implementation.⁹⁰ Profound impacts of economic

⁸¹ Geraldo Wilson Fernandes et al (2016) <https://cirdi.ca/wp-content/uploads/2017/07/Deep-into-the-mud-ecological-and-socio-economic-impacts-of-the-dam-breach-in-Mariana-Brazil.pdf>; Carlos Machado de Freitas et al (2019) <https://doi.org/10.5123/S1679-49742019000100020>.

⁸² The Society for Threatened Peoples, Incomindios, and the Swiss Indigenous Network, on special request and on behalf of Angohó Pataxó representing Naô Xohã and Áurea Anacé representing Japura (2019) .

⁸³ Carlos Machado de Freitas et al (2019) <https://doi.org/10.5123/S1679-49742019000100020>; Evangelina da Motta Pacheco Alves de Araujo Vormittag et al (2018) <https://www.scielo.br/pdf/asoc/v21/1809-4422-asoc-21-e01222.pdf>.

⁸⁴ UNICEF (2018) https://www.unicef.org/about/annualreport/files/Brazil_2018_COAR.pdf.

⁸⁵ Giovani Baggio et al (December 2018) https://www.researchgate.net/publication/329778243_Indoor_Air_Pollution_and_Respiratory_Diseases_in_Rural_Areas_of_North_and_Northeast_Brazil.

⁸⁶ Brazil Chamber of Deputies (2019); Villarreal Villamar et al (2018) 7 <https://www.aacademica.org/maria.del.carmen.villarreal.villamar/22.pdf>.

⁸⁷ Claudia M. Vega et al (2018 May 23) doi: 10.3390/ijerph15061051; Brazil Chamber of Deputies (2019); Portal Fiocruz (<https://portal.fiocruz.br>) .

⁸⁸ Vega et al (2018) <https://www.ncbi.nlm.nih.gov/pubmed/29789499>.

⁸⁹ Paulo Gilvane Lopes Pena et al (2020) https://www.scielo.br/pdf/csp/v36n2/en_1678-4464-csp-36-02-e00231019.pdf.

⁹⁰ Conectas Human Rights, Instituto Socioambiental, Rapporteur on Indigenous Peoples of the DHESCA Brazil Platform (2016) https://www.upr-info.org/sites/default/files/document/brazil/session_27_-_may_2017/js22_upr27_bra_e_main.pdf.

expansion on the rights of indigenous peoples reliant on the environment and biodiversity are often ignored.

Workers

52. The Brumadinho and Mariana disasters provide ample evidence of the grave risks presented to workers in Brazil by hazardous substances and wastes. Fourteen of the 19 deaths resulting from the Mariana dam collapse were of workers,⁹¹ and most of the 270 victims in Brumadinho were Vale's own workers.⁹² Brazil abolished the Labour Ministry a few weeks before the Brumadinho dam collapse.

53. Most violations of workers' right to safe and healthy work in Brazil come from chronic exposures. Factory workers face various obstacles in realising their rights regarding protection from industrial chemical exposure. Workers of Cobrac/Plumbum, in Santo Amaro, suffer from lead poisoning.⁹³ Agricultural workers in Brazil face exposure to pesticides, placing their life and health at risk of chronic illnesses manifesting in them or their children later in life. Workers in the wood industry in Para, where 90% of all wood-related companies in the Brazilian Amazon are based, present a high cancer incidence, including mouth, liver and stomach cancers associated with exposure to wood dust.⁹⁴

54. Over 300,000 workers were exposed to asbestos in 2010.⁹⁵ Many of these workers will likely soon die from resultant cancers, with tens of thousands of cases (22%) undetected due to poor identification of disease types and tracking of occupational history.⁹⁶ As discussed above, Brazil has not closed its last asbestos mine, failing to enforce a Supreme Court decision and continuing to export asbestos that poisons workers and communities abroad.⁹⁷ Numerous countries, including most OECD members, have instituted full-bans on asbestos.

55. Positive efforts include the General Coordination for Occupational Health (CGSAT) of the Ministry of Health strengthening the National Network of Comprehensive Attention to Occupational Health (Renast), as well as the CAREX Brasil Project for occupational exposure to carcinogens.

56. In Brazil, workers' rights are increasingly threatened including through inadequate health data and monitoring systems, failures to protect workers most at risk including women, and migrant workers, and failures for worker victims of exposure to access justice. Protections are actively undermined by efforts to weaken labour unions, as discussed below.

57. Every worker has a right to safe and healthy work, including protection from exposure to toxics. In 2019, the UN Human Rights Council encouraged States to implement 15 principles on protection of workers from exposure to hazardous substances.⁹⁸ While Brazil recognizes all of the human rights of workers contained in the principles, it has yet to implement most of these principles.

58. Brazil must do more to address the situation of workers' chronic exposure to hazardous substances. The best way to protect workers is to eliminate the hazard.⁹⁹ As described above, particularly for industrial chemicals and pesticides, as well as workers in extractive industries, Brazil's workers continue to be exposed to many hazardous substances and processes forbidden around the world. In addition, Brazil has not ratified several key ILO

⁹¹ Carlos Machado Freitas and Mariano Andrade da Silva (2019) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7138502/>.

⁹² Id.

⁹³ Lorena S. Miranda and José Ângelo S.A. Anjos (April 2018) <https://www.sciencedirect.com/science/article/pii/S0925753517309566>.

⁹⁴ Sílvia Helena Árias Bahia et al (September 2005) <https://www.sciencedirect.com/science/article/abs/pii/S0013935104002427>.

⁹⁵ Francisco José Koller et al (2017) <http://docs.bvsalud.org/biblioref/2017/10/859582/49192-194253-1-pb.pdf>.

⁹⁶ Francisco José Koller et al (2017) <http://docs.bvsalud.org/biblioref/2017/10/859582/49192-194253-1-pb.pdf>.

⁹⁷ ABREA (2019).

⁹⁸ A/HRC/42/41.

⁹⁹ Id., Principle 4.

Conventions for occupational health, limiting the ability of the Government to improve the situation of workers.

59. Far too often, the Government and businesses' response in Brazil has been to blame the worker for injuries. Placing the onus entirely on agricultural workers to protect themselves using personal protective equipment, which is well documented around the world to be improperly used and often unavailable, can amount to victim blaming when exposure occurs. However, the failure lies with the Government for not implementing progressive measures to reduce the toxic threats that workers face. Personal protective equipment should be the resort, yet it is often the first and main measure of protection contemplated.

Children

60. Children in various parts of Brazil are subjected to toxic exposures in violation of their rights, from maximum development, life, health and bodily integrity, to having their best interests taken into account, among many others. Among indigenous, *quilombola* and low-income communities are their children who face the greatest risk of disease, disability and premature death from exposures, as illustrated by the case of the Yanomami, residents of Piquiá de Baixo and Barra Longa, rural communities sprayed by pesticides, and more.

61. These violations are not only a problem for minority and low-income children. A wide range of human and business activities are resulting in children everywhere in Brazil being born "pre-polluted" and thus pre-programmed for diseases and disabilities later in life.¹⁰⁰

V. Participation and human rights defenders

62. Brazil recognizes that everyone has the right and should be guaranteed the opportunity to "meaningful participation" in environmental and other public affairs, to assemble, associate, and organize.¹⁰¹ States should ensure children are empowered to express their views freely and to be heard.¹⁰² Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, and to maintain and develop their own indigenous decision-making institutions.¹⁰³ The rights to organize and of collective bargaining are inseparable from the right to safe and healthy working conditions.¹⁰⁴

63. Civil society and labour unions play a critical role, yet they are under attack in Brazil. Leaders, without any substantiation, brand advocates "terrorists", blaming them for environmental disasters such as the August 2019 oil spill. Institutions with a mandate to ensure civil society participation have been undermined, whereas others are now closed to participation.

64. Parliamentary committees have reported a chilling effect, and a fearful sense of impending danger among individuals, their families, and their communities.¹⁰⁵ Particular concern is raised that indigenous people and *quilombolas* do not have access to their right to participation in matters that affect their territories.¹⁰⁶

65. Changes to labour laws in 2017 and 2019 have reduced union dues collection and collective bargaining power, threatening the viability and efficacy of worker unions.¹⁰⁷ Petitions and hearings about the assault on worker's rights in Brazil have repeated been lodged at the IACHR, including the "Fazenda Brasil Verde" Workers case demonstrating the

¹⁰⁰ WHO (2018) https://www.who.int/ceh/publications/Advance-copy-Oct24_18150_Air-Pollution-and-Child-Health-merged-compressed.pdf?ua=1.

¹⁰¹ ICCPR article 25; HRC General Comment No. 25 para 6, 8; A/HRC/39/28 para 19.

¹⁰² CRC Article 12; A/HRC/39/28 para 59.

¹⁰³ UNDRIP, Articles 18, 19, and 20.

¹⁰⁴ A/HRC/42/41, A/HRC/RES/42/21.

¹⁰⁵ Brazil Chamber of Deputies (2019).

¹⁰⁶ Id.

¹⁰⁷ CIDH, OAS (2019) https://www.corteidh.or.cr/docs/solicitudoc/soc_3_2019_ing.pdf para 44; and Solidarity Center (2019) <https://www.solidaritycenter.org/brazil-unions-challenge-attacks-on-worker-human-rights/>.

State's failure to provide effective remedies for violations, even with knowledge of such violations.¹⁰⁸ The IACHR has raised concerns about Brazil regarding the criminalization of protests against the erosion of worker rights.¹⁰⁹

Human rights defenders

66. Today, disturbing accounts illustrate the grave danger facing environmental, indigenous, worker and other human rights defenders in Brazil, a problem that predates the death of Chico Mendez in 1988. The killing and criminalisation of indigenous and environmental rights defenders, and NGOs, is alarming.¹¹⁰ Increasingly, these brave individuals are targeted to prevent them from exercising any number of human rights, often at the behest of powerful interests. Brazil was the deadliest country for environmental human rights defenders in 2016, and ranked fourth in 2018, with the numbers pointing to an increase in 2019.¹¹¹ In 2017, three trade union activists were killed,¹¹² and this trend of murder and threats of worker representatives continues to 2020.¹¹³

67. During his two weeks in Brazil, the Special Rapporteur heard of no less than three defenders who were killed and two gravely wounded. During consultations in North-East Brazil, word arrived of four indigenous defenders shot as they left a community mobilization meeting nearby, two of whom sadly died. Another report was received at the end of his mission of another indigenous advocate who worked as a journalist, assassinated in horrific fashion.

68. Brazil has repeatedly pledged to protect human rights defenders and to implement concrete measures to ensure they carry out their work without impediments.¹¹⁴ Specific legislation and programmes demonstrate some motivation to take action.¹¹⁵ The Human Rights Defenders Protection Program (PPDDH) coordinates protection of all human rights defenders.¹¹⁶ While Brazil does not recognise specific categories of human rights defenders,¹¹⁷ environment and health rights defenders are included under the programme.

69. Critically missing are specific measures to address root causes of conflict, evident in the lack of sustainability planning and rampant pressure to usurp lands by businesses. Instead of trying to prevent the situation, there is an insistence that efforts are underway to address the consequences. This approach characterised by inadequate prevention strategies or investigations has not succeeded in ending impunity.¹¹⁸ Instead, physical protection of a limited number of identified human rights defenders appears to be prioritised.¹¹⁹ A general public policy to address inadequate coordination between state and federal agencies including with respect to investigations may be useful.¹²⁰

¹⁰⁸ RBA (March 2019) <https://www.cut.org.br/noticias/acao-contra-mp-dos-sindicatos-vai-ao-plenario-do-stf-c43f>.

¹⁰⁹ CIDH, OAS (2019) https://www.corteidh.or.cr/docs/solicitudoc/soc_3_2019_ing.pdf.

¹¹⁰ FIAN Brazil, HRtAFN (2019).

¹¹¹ Global Witness (2019).

¹¹² CIDH, OAS (2019) https://www.corteidh.or.cr/docs/solicitudoc/soc_3_2019_ing.pdf; ITUC (2018) <https://www.ituc-csi.org/IMG/pdf/ituc-global-rights-index-2018-en-final-2.pdf>.

¹¹³ ITUC (2020) https://www.ituc-csi.org/IMG/pdf/ituc_globalrightsindex_2020_en.pdf.

¹¹⁴ Brazil Government (2019) para 8 <https://www.universal-rights.org/wp-content/uploads/2019/07/NV-199-19-Brazils-Voluntary-Pledges-and-Commitments.pdf>.

¹¹⁵ A/74/159 para 61.

¹¹⁶ Brazil Government (2019) <https://www.ohchr.org/Documents/Issues/Defenders/GA73/states/Brazil.pdf>.

¹¹⁷ Id.

¹¹⁸ A/74/159 para 61 – 68.

¹¹⁹ Id.

¹²⁰ Id.

VI. Right to information

70. Prevention, expression and participation, truth, justice and remedy all depend on information. Only with adequate information can individuals and communities secure a clean and healthy environment and interrelated rights.¹²¹ Health and safety information must be available and accessible, and not under any circumstances be considered confidential.¹²²

71. Brazil has made various strides in this regard, including through federal access to information laws, and institutions including the National Environmental Information System (SINIMA), and the Brazilian Geographical and Statistical Institute (IBGE).¹²³ Positive developments in air quality monitoring in Brazil include establishment of monitoring stations in the 1970s in urban areas, and over time the increase of such stations in other parts of the country.¹²⁴ The Health Surveillance Program for Populations Exposed to Pesticides (VISPEA) provide data on pesticide exposure,¹²⁵ and the Guidelines for Diagnosis and Treatment of Pesticide Poisoning support detection and registration of poisoning incidences.¹²⁶ Fiocruz has been instrumental in presenting interdisciplinary information that has helped strengthen the Unified Health System,¹²⁷ and collaborating with the PACS Institute and communities on air and water pollution, exchanging information with other organisations and participating in political mobilisation for action.¹²⁸

72. Data collection and dissemination processes should be independent to instil trust, protect the integrity of institutions and ensure concerns are acted upon.¹²⁹ The reliance on company-reported data in the Brumadinho disaster led to the Government's failure to identify the risk of collapse.¹³⁰ Various technical reports produced for Vale from 2003, in 2017 and 2018, only months before the collapse, identified the need to adopt risk mitigation measures.¹³¹ Vale is believed to have kept secret health and safety studies concerning the toxicity of the mud, such as those of contaminated search dogs. Similarly, with the Mariana dam collapse, safety information before, during and after the disaster was dominated by the companies leading to an underestimation of potentially affected persons in the environmental impact assessment, inadequate mitigation measures, and a deep distrust among community members regarding virtually every aspect of the disaster.¹³²

73. The communities in Piquiá de Baixo suffered from a lack of independent information.¹³³ The information presented by the companies to the Governments and the public remarkably shows no air quality exceedances, despite clear evidence of pollution and health impacts among the community.

¹²¹ A/74/480.

¹²² A/HRC/30/40.

¹²³ José Antônio TIETZMANN E SILVA and Luciane MARTINS DE ARAÚJO (2018) <https://ojs.imodev.org/index.php/RIGO/article/view/243/389>; UN ECLAC (2018) https://repositorio.cepal.org/bitstream/handle/11362/43302/1/S1701020_en.pdf; Miriam Ventura (Apr. 2013) https://www.scielo.br/scielo.php?pid=S0102-311X2013000400002&script=sci_arttext&tlnq=en.

¹²⁴ Rosa I. Rodríguez-Cotto et al (2014) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4448729/>.

¹²⁵ Ministry of Health, http://bvsmis.saude.gov.br/bvs/publicacoes/diretrizes_vigilancia_populacoes_expostas_agrotoxicos.pdf.

¹²⁶ Conitec, Ministry of Health http://conitec.gov.br/images/Relatorios/2019/Relatorio_DiretrizesBrasileiras_Agrotoxico_Capitulo5.pdf.

¹²⁷ Fiocruz (2018) <https://portal.fiocruz.br/colecao-saude-ambiente-e-sustentabilidade>.

¹²⁸ Villarreal Villamar et al (2018) <https://www.aacademica.org/maria.del.carmen.villarreal.villamar/22.pdf>.

¹²⁹ Articulação Internacional dos Atingidos e Atingidas pela Vale (AIAAV) (2019).

¹³⁰ CIAEA (2020).

¹³¹ Id.

¹³² Conectas Human Rights et al (2016) https://www.upr-info.org/sites/default/files/document/brazil/session_27_-_may_2017/js22_upr27_bra_e_main.pdf.

¹³³ FIDH, JnT (May 2019) <https://www.fidh.org/IMG/pdf/bresil734anglaisweb2019.pdf>.

74. Across various sectors and key cases, unavailability of information was a recurrent concern. In the extractives industry there is an apparent lack of reliable information on hazardous substances with respect to mining operations. Inadequate information was available about the toxicity of the waste after the Mariana disaster, the companies insisted that it was non-toxic, and rejected calls for precaution. Only three weeks after concerns were raised, including by this mandate, was information availed. When health impacts in Barra Longa emerged years later, Renova sought to exert ownership of epidemiological and toxicological studies by Ambios to suppress disclosure. In September of 2018, the CIF revoked Renova Foundations determination of intellectual property on the studies and no ownership clause allows the Renova Foundation to omit the studies data.

75. The August 2019 oil spill, reaching Northeast and Southeast Brazil, has been termed the worst oil spill in Brazil's history.¹³⁴ Calls for transparent, independent and comprehensive investigation into the cause and consequence of the spill ensued.¹³⁵ Still without reliable information, affected communities struggle in the face of reputational impacts, unable to sell their produce at the markets, forced to consume fish they fear is contaminated, suffering severe distress from the impact on their livelihood and possible future health consequences.

76. There is a consistent pattern of not providing advance notice of spraying or information about pesticides used. For example, landless workers decried that the only 'notice' received is a cloud of chemicals above their encampments.¹³⁶ Underreporting of pesticide poisoning is a major concern, where for each case notified, 50 remain unreported.¹³⁷ Medical professionals are inadequately trained to diagnose pesticide poisoning. In several places, particularly rural areas, access to the health system and viable laboratory tests for exposure studies is limited or non-existent. In some instances, respondents reported that the health system is not prepared to facilitate registration of poisoning. Consequently, there is no registration of a vast majority of acute incidences.¹³⁸ For those reported, there is a lack of transparency hindering public health analyses.

77. The absence of hazard and use information on industrial chemicals is another violation of the right to information, impeding realization of various other human rights. Tens of thousands of industrial chemicals lack basic health information. As mentioned, in 2019 the new administration unfortunately abandoned significant work to develop systems equivalent to OECD members.

78. There remains inadequate capacity and resources with the various institutions tasked with monitoring and enforcement. Imposing cost recovery systems on regulated industries to increase capacity is needed. Monitoring of pesticide use in Brazil is grossly inadequate considering consumption, with aforementioned consequences. Brazil's Ministry of Health program (VIGIÁGUA), created in 2011 to regulate and monitor drinking water quality only monitors 27 pesticide active ingredients, even though over 2000 active ingredients are permitted for use.¹³⁹

79. Where it is not ignored, science is under attack in Brazil. Instead of building capacity, the Government is defunding institutions responsible for identifying environmental and health problems. Various public institutions in need of capacities to conduct studies on toxics and their health effects, already faced challenges such as funding cuts and other undermining efforts.¹⁴⁰ Support to community members for active participation in research can contribute

¹³⁴ Paulo Gilvane Lopes Pena et al (2020) https://www.scielo.br/pdf/csp/v36n2/en_1678-4464-csp-36-02-e00231019.pdf.

¹³⁵ Special Rapporteurship on Economic, Social, Cultural and Environmental Rights (SRESCER) of IACHR (11 Nov 2019).

¹³⁶ Movimento dos Trabalhadores Rurais Sem Terra (MST) (2019).

¹³⁷ Wanderlei Antonio Pignati et al (2017) https://www.scielo.br/scielo.php?pid=S1413-81232017021003281&script=sci_arttext&tlng=en.

¹³⁸ Juliana Dalbó et al (July 2019) <https://doi.org/10.1590/1413-81232018247.19282017>.

¹³⁹ Aliança pela Alimentação (2019); Auria M. C. Barbosa et al (2015) doi: 10.3389/fpubh.2015.00246.

¹⁴⁰ João Paulo Amorim de Lacerda (January 2019) <https://www.sciencedirect.com/science/article/pii/S0160412018320105>.

to improved public participation,¹⁴¹ adopting inexpensive methods and equipment, to bridge the gap where minimizing exposure has been lacking.¹⁴²

80. Troubling are reports of political interference at various levels to suppress collection, sharing, or publication of health data. A recent example is taking offline the health ministry's COVID19 website, and discrediting statistics of COVID19 cases, already impeded by low capacity to conduct testing and slow roll-out of testing kits,¹⁴³ obscured health data, particularly regarding favelas and rural areas.

VII. Access to justice and right to an effective remedy

81. Everyone in Brazil has the right to an effective remedy for violations and abuses of human rights from exposure to hazardous substances. This is principally the duty of the State. However, when such abuses occur, businesses have corresponding responsibilities.¹⁴⁴

82. Brazil has made progress in ensuring fulfilment of the right to remedy. Human rights institutions, including the strengthened Federal Public Defender's Office for Citizens' Rights, and public prosecutors, have contributed to improving access to justice.¹⁴⁵ For example, the Public Defender's and Public Prosecutor's office have been instrumental in advocating for victims affected by the Brumadinho dam collapse, and the communities in Piquiá de Baixo. There have also been notable efforts at improving health services to address health impacts of toxic exposure, as explained earlier in the report.

83. In addition, a good practice in Brazil is the concept of indirect liability. This equitable doctrine can help ensure accountability of investors and other beneficiaries for human rights abuses.¹⁴⁶ Brazil notably improved remediation processes to address the Brumadinho disaster relative to the Mariana disaster, described below.

84. Whether for illnesses arising from chronic exposure to toxic substances with some level of scientific uncertainty, or the remediation processes, Brazil faces challenges in upholding its obligations to ensure that victims of toxic exposure realise their right to access to justice. For example, the people of Piquiá de Baixo continue to suffer from the 1970s to date, with uncertainty as to if and when their promised remedy will finally materialize.¹⁴⁷

85. Accountability and reparations for victims is wanting, where in many cases nobody is held accountable for unquestionable environmental crimes, attacks, and murders. For example, investigations and prosecutions failed to hold accountable the perpetrators of the murder of José (Zé) Maria do Tomé, who advocated for protection against poisoning by aerial spraying of pesticides.¹⁴⁸ Following the Mariana and Brumadinho disasters, no corporate executive of Vale, BHP or Samarco stands convicted of criminal conduct, a travesty of justice suggesting some in Brazil are indeed above the law.

86. An effective remedy includes access to healthcare. While the Unified Health System enables such access, challenges exist. Healthcare service provision in rural areas, acknowledging efforts including AMBIU ambulances, still is lacking.¹⁴⁹ Various examples exist including in the oil and gas industry, where there is a lack of regard for healthcare provision as part of accountability and reparations for victims. For example, in Piquiá de

¹⁴¹ Carvalho, LVB, Rocha, F, Finamore, R. (2019 / Dec)

<http://www.cienciaesaudecoletiva.com.br/artigos/vigilancia-popular-ambiental-e-siderurgia-as-experiencias-de-piquia-de-baixo-ma-e-santa-cruz-rj/17475?id=17475>.

¹⁴² Angélica B. Ferreira et al (20 September 2017) <https://doi.org/10.3389/fpls.2017.01575>;
<https://www.frontiersin.org/articles/10.3389/fpls.2017.01575/full>.

¹⁴³ Mediciens Sans Frontieres (17 June 2020) <https://www.msf.org/coronavirus-covid-19-nightmare-continues-brazil>.

¹⁴⁴ A/74/480.

¹⁴⁵ IACHR (2018) <https://www.oas.org/es/cidh/prensa/comunicados/2018/238OPeng.pdf>.

¹⁴⁶ <https://www.lexology.com/library/detail.aspx?g=c1e1fda7-68f2-4572-8a53-ec02e4869488>.

¹⁴⁷ FIDH, JnT (May 2019) <https://www.fidh.org/IMG/pdf/bresil734anglaisweb2019.pdf>.

¹⁴⁸ Aliança pela Alimentação (2019) ; State of Ceara by State Law N. 16.280 of January 20, 2019.

¹⁴⁹ Carol Davy et al (2016). <https://doi.org/10.1186/s12939-016-0450-5>.

Baixo, community members reported that when children are taken to a health centre, insufficient diagnoses carried out, and general medication given for cases suspected to be air pollution impacts. Heightened vulnerability of the community members including chronic respiratory diseases places them in a situation of particular concern of susceptibility to COVID19.¹⁵⁰ Moreover, mental health needs remain unsatisfactorily addressed among community members who suffered the intense trauma of the Brumadinho and Mariana disasters.¹⁵¹

87. The inability to provide an effective remedy to the victims of the Mariana disaster is emblematic of what confronts those who seek justice and remedy against extractive industries.¹⁵² Since 2016, the Special Rapporteur met with BHP and Vale on numerous occasions to discuss the many problems with their approach to remedy. In the aftermath of the disaster, BHP and Vale rushed to create the Renova Foundation to provide the affected communities an effective remedy. Unfortunately, the true purpose of the Renova Foundation appears to limit liability of BHP and Vale, rather than provide any semblance of an effective remedy. Institutional shortcomings are well-documented in literature and litigation. Today, none of 42 projects are on track. Over 200,000 affected indigenous and other community members, and others have sought legal recourse against BHP and Vale in other countries including the United Kingdom,¹⁵³ to secure an effective remedy.

88. While lessons were learned from the problematic Renova model, the occurrence of a dam disaster of such magnitude involving the same company, Vale, is evidence of the State's failure to guarantee non-repetition. Further, concerns still persist among victims of the Brumadinho disaster regarding remedies provided and how latent health effects that may manifest over time from exposure to toxic elements in the mud would be addressed.

89. Insult to injury is how victims bear an unjust burden of proving causation. Challenges in linking pesticide exposure with health impacts are further compounded by repeated exposure of agricultural workers to a mixture of pesticides, at times in low doses where symptoms may not be apparent in the short term, for different crops on various properties, further confounded by the unavailability of lab tests especially in rural areas.¹⁵⁴

90. State-owned enterprises have higher responsibilities to respect human rights.¹⁵⁵ With the August 2019 oil spill, amidst calls for transparency and comprehensive inquiries on the precise cause of the spill,¹⁵⁶ accurate accounts of the role of Petrobras to support such investigations would significantly improve capacity for victims of the spill to access remedy.

91. Companies responsible for the blatant disregard of the Piquiá de Baixo community's dignity and right to life and health, made insufficient effort to provide any remedy for over 30 years until civil society and the local community heroically raised international awareness.¹⁵⁷ Neither resettlement nor mitigation measures, among other elements were implemented by the companies.¹⁵⁸ Vale has a responsibility to remedy the harms inflicted on the community although it does not own the steel production facilities. The absence of Government involvement for decades was notable in this ongoing violation of human rights.¹⁵⁹

¹⁵⁰ FIDH, JnT and Associação Comunitária dos Moradores de Piquiá (March 2020); FIDH (29 April 2020) <https://www.fidh.org/en/region/americas/brazil/brazil-pandemic-disproportionately-impacts-communities-affected-by>.

¹⁵¹ Carlos Machado Freitas and Mariano Andrade da Silva (2019) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7138502/>.

¹⁵² Cáritas Brasileira Regional Minas Gerais (Cáritas/MG (2019).

¹⁵³ <https://www.spglaw.co.uk/bhp-billiton-facing-5bn-lawsuit-from-brazilian-victims-of-dam-disaster/>; <https://www.wsj.com/articles/german-prosecutors-open-probe-into-tuv-sud-which-certified-failed-brazil-dam-11576159293>.

¹⁵⁴ Bendetti D, Alves J, Silva FRD and Silva JD (2014) doi: 10.4172/2329-6879.1000170.

¹⁵⁵ UNGPs.

¹⁵⁶ SRESCER of IACHR (11 Nov 2019).

¹⁵⁷ AIAAV (2019).

¹⁵⁸ Id.

¹⁵⁹ Id.

92. States have an obligation to ensure safety and security of all persons, and that no life is arbitrarily deprived. Yet, as mentioned above, even during the visit the Special Rapporteur received reports of murders of indigenous human rights defenders in the context of land disputes. It is no excuse that lack of robust investigations is due to remoteness of police presences; rather this illustrates a deficiency in ensuring accountability.¹⁶⁰ For example, activism opposing aerial spraying of pesticides has come at the unfortunate high cost of many lives.¹⁶¹ For example, José (Zé) Maria do Tomé, a community member actively involved in drawing attention to pesticide poisoning through water, was shot 25 times and killed under mysterious circumstances, five months after a bill banning aerial spraying of pesticides was passed into law.¹⁶²

93. Brazil is not doing enough to ensure that where human rights defenders are killed, threatened, or coerced, those responsible are brought to account. Criminal syndicates including those connected with exploitation on indigenous lands and territories carry on their activities with impunity, and perpetrators instead are glorified as those bringing about development.¹⁶³ For example, reports abound of harassment and deaths of indigenous leaders of the Yanomami community, among other indigenous communities agitating for cessation of activities carried out without their FPIC, and with political backing with the excuse of bringing development to the region. Over 300 people have been murdered from 2009 to 2019 in relation to land and resource conflicts in the Amazon, many by perpetrators of illegal logging, yet only 14 cases have gone to trial.¹⁶⁴ Failing to address this impunity entrenches a notion that such human rights violations can be condoned.¹⁶⁵

VIII. Conclusions and recommendations

94. **Brazil was for many years a leader in the recognition of environmental rights. For example, Brazil was among the first countries to secure such rights in its constitution, collectively enshrining the right to a healthy environment. Over the years, enactment of environmental health laws, the establishment of IBAMA and the concentration of ANVISA on environmental health issues have supported the realization of these rights for the general population and additional protections for vulnerable groups.**

95. **Despite positive advancements in recent decades, Brazil is in a state of deep regression from human rights principles, laws, and standards, in violation of international law. To support its actions and inactions, the Government continues to deny incontrovertible scientific truths, and unjustifiably introduce uncertainties and mythical arguments. From the burning of the Amazon, to the insidious threats of toxic pollution and infectious diseases, it appears Brazil has absconded from its duty to prevent and protect, eviscerating necessary institutions and clamping participation and expression by intimidating those who dare speak against current trends, whether activists, scientists, international leaders, or Ministers.**

96. **Private actors are signalled to disregard laws designed to safeguard the global commons and the rights of indigenous peoples and persons of African Descent. Corporate crimes against workers and communities are perpetrated with impunity, and the rights to information and participation scaled back drastically. Various judicial and parliamentary decisions are unimplemented where unfavourable to private interests. Inflammatory rhetoric, a rejection of sustainability, and failure to prosecute has flamed another epidemic, one of intimidation, attacks, and murder of human rights defenders.**

¹⁶⁰ HRW (17 September 2019).

¹⁶¹ Aliança pela Alimentação (2019).

¹⁶² Id. ; State of Ceara by State Law N. 16.280 of January 20, 2019.

¹⁶³ Movimento pelas Serras e Águas de Minas, Movimento pela Preservação da Serra do Gandarela (2014).

¹⁶⁴ HRW (17 September 2019).

¹⁶⁵ A/74/159 para 2 – 4.

97. For these and more resultant human rights issues, solutions are at hand. Brazil has the technical and economic capacity to transition to a greener, healthier future. However, Government leaders are now using the COVID-19 crisis to further accelerate deregulatory and private sector agendas that threaten our common future and the human rights around the world, instead of recognizing and rectifying an unquestionable national crisis with global ramifications.

98. Brazil's separation from international solidarity, and regression from its human rights obligations, require urgent attention and recalibration. If left unchecked, the situation in Brazil stands to spiral into not only a national catastrophe, but also one with phenomenal regional and global repercussions, including the destruction of our climate. International cooperation is required to help turn Brazil back toward a path of progression. The Special Rapporteur sincerely hopes that the tide will turn – that Brazil will return to the path of sustainable development – with human rights at its heart.

99. In this context, the Special Rapporteur recommends that the UN Human Rights Council:

(a) Hold an inquiry into the current human rights situation in Brazil with a special focus on environmental, public health, and labour protections, and human rights defenders, drawing in particular on the expertise of Special Procedures;

(b) Hold a special session on the protection of the Amazon rainforest and human rights, ensuring the active participation of all stakeholders.

100. The Special Rapporteur recommends that the Government:

(a) Establish permanent bodies of fully independent experts to help:

(i) Decouple economic growth from environmental degradation, in particular reducing reliance on industrial agriculture and extractive industries;

(ii) Advise on all natural, physical and social, scientific matters relating to environmental and occupational risks;

(iii) Ensure decision-making regarding hazardous substances is grounded in evidence, or lack thereof, and principles of international law such as prevention and precaution;

(iv) Create safeguards against corporate capture, corruption and conflicts of interest within Government, including investigation of such allegations and enhanced protection of whistle-blowers.

(b) Urgently mobilize resources and capacity to monitor and enforce all environmental and occupational protections, collecting fees from responsible industries and eliminating self-monitoring by any regulated industries or entities chosen by business enterprises;

(c) Implement the principles on protection of workers from exposure to toxic substances as encouraged by the Human Rights Council¹⁶⁶

(d) Elevate standards of environmental and occupational protection to equal or greater than all trading partners to stop the abuse of Brazil's people and their lands;

(e) Align the National Council for Human Rights with the Paris Principles;

(f) Ratify the ILO conventions on occupational safety and health, and the Ban Amendment to the Basel Convention, while reaffirming Brazil's international solidarity and commitment to international laws, including the Paris Agreement;

(g) Require mandatory human rights due diligence of all business enterprises in Brazil, including for abuses due to toxic exposures and pollution;

¹⁶⁶ A/HRC/RES/42/21.

(h) **Implement timely, well-coordinated and effective emergency response mechanisms for environmental and occupational disasters, including forest fires, oil spills, and industrial accidents;**

(i) **Review all legislation relating to hazardous substances and wastes to ensure best interests of the child are the primary consideration (per UN CRC);**

(j) **Ensure environmental and occupational health and safety information is available, accessible and in a form that considers the needs of the most vulnerable, ensuring *inter alia*:**

(i) **Complete information about which pesticides were applied when and where, with advance notice to local communities and records of workers;**

(ii) **Assessments of safety and pollution from extractive industry activities are generated and verified completely independently of operators, including health-related information;**

(iii) **The principle of no-data, no-market is rigorously applied for all chemical products, and industry is compelled by law to generate health and safety information for all industrial chemicals produced, used and imported in Brazil above 1 tonne per year by 2030.**

(k) **Respect the fundamental role of public participation in democracy and good governance, including the priceless role of human rights defenders, and fully protect this engagement by:**

(i) **Decriminalizing and securing the release of civil society actors, including environmental, indigenous and occupational rights defenders;**

(ii) **Securing public participation in all areas of governance and especially participatory processes relating to protection from toxic exposure;**

(iii) **Engaging in meaningful dialogue with civil society representatives.**

(iv) **Expansion of government programmes for the prevention and investigation of threats, attacks and killings**

(v) **Conducting robust investigations and prosecutions of those who threaten, attack or kill defenders to address impunity apparent among perpetrators.**

(l) **Fully implement judicial decisions, including closure of the last existing asbestos mine and implementation of a full ban on the mining, production, use, import and export of asbestos, and strengthening legal and institutional measures relating to the full lifecycle of asbestos products.**

(m) **Improve accountability, access to justice and an effective remedy for victims by:**

(i) **Establishing a truth and reconciliation committee for those killed or harassed for protecting their human rights, including to a healthy environment and safe work;**

(ii) **Institute reforms to enhance the ability of victims of hazardous substances and wastes to access justice and an effective remedy, including challenges such as causation, timeliness, costs and technical assistance, among others;**

(iii) **Identifying and implementing necessary reforms to ensure corporate executives are always held accountable for environmental and occupational crimes, including Vale, BHP Billiton, Samarco, Tuv Sud, and other related companies for their inaction leading up to the Brumadinho and Mariana disasters;**

(iv) **Reforming the governance structure of the Renova Foundation to replace all influence of Vale, BHP and Samarco with independent experts free of conflicts;**

- (v) Ensuring in coordination with Vale and other companies implicated the necessary resources are made available for the Piquiá de Baixo community's resettlement, and formal issuance of an apology by the Government, Vale and other companies;
 - (vi) Commissioning an independent and transparent investigation into the role of Petrobras in the August 2019 oil spill.
 - (vii) Providing an effective remedy for fisher folk who continue to suffer from loss of livelihoods and mental and physical health impacts of the August 2019 oil spill.
 - (n) Develop time bound plans to urgently reduce pesticide and toxic industrial chemical use and exposure, including:
 - (i) Ban aerial spraying especially over inhabited areas;
 - (ii) Phase out the use of highly hazardous pesticides, including glyphosate and atrazine, and toxic industrial chemicals, prioritizing those already banned or restricted in OECD countries;
 - (iii) Enforce buffer zones and installing mandatory monitoring devices around schools and residences and on spraying vehicles;
 - (iv) Abandon de-regulatory legislative proposals including the "poison package," and embed a hazard-based approach to pesticides in law;
 - (v) Align regulatory framework with OECD standards and best practices, including performance of monitoring and review;
 - (vi) Phase-out the import of hazardous substances forbidden from use in the country of export.
 - (o) Ensure all tailing dams are safe, and every community living downstream from a tailing dam is consulted on plans to eliminate the risks, and each individual is fully supported should they wish to relocate;
 - (p) Mitigate climate change and air pollution by:
 - (i) Taking comprehensive measures to stop deforestation including addressing forest fires, and creating a targeted plan to transition to renewable energy sources other than large scale hydroelectric dams;
 - (ii) Mapping socio-economic data against independently generated pollution data, to reduce disproportionate health impacts on poor, indigenous, Afro-Brazilian and other marginalized communities from pollution.
 - (q) Protect indigenous peoples, minorities and the poor by:
 - (i) Respecting the right of indigenous peoples to self-determination, including the implementation of UNDRIP in national laws;
 - (ii) Refraining from legalizing natural resource extraction indigenous lands without their consent, and ensuring criminal sanctions are issued for land grabbers and polluters;
 - (iii) Providing sufficient funding and resources to protect the Yanomami and other indigenous communities from toxic impacts of ASGM, pesticides, mining, and other sources of exposure, as well as covid-19;
 - (iv) Addressing deficiencies in ensuring equality under the legal framework to prevent exposure, including indigenous peoples, Afro-Brazilians, *quilombola*, and other marginalized communities at risk.
101. The Special Rapporteur recommends that businesses:
- (a) Eliminate investments or linkages in their supply/value chains to areas of Brazil where human rights defenders are under attack or abuses of rights are documented among individuals or communities;

(b) **Establish and implement human rights due diligence processes including in relation to exposures to hazardous substances and wastes;**

(c) **Guarantee meaningful consultations with communities impacted by the lifecycle of production and consumption.**

(d) **Engage in efforts towards ensuring access to justice, including adhering to legislative and judicial provisions concerning providing remediation. Specific recommendations in this regard include an urge for Samarco and the Renova Foundation to facilitate release of pertinent information to the public concerning research activities and their health and environmental impacts; and for Vale and related companies to cooperate with judicial authorities in remediation processes for the Brumadinho disaster, as well as the Piquiá de Baixo case.**
