una amazonía

Understanding the health of people and ecosystems from an Amazonian health perspective

Main findings of the One Amazon project

1 One Amazon, many Amazons

Since 2021, in Colombia, Ecuador and Peru, a consortium of academic institutions and NGOs, together with peasant, Indigenous and Afro-descendant peoples and communities and their representative organizations, has been implementing the project *One Amazon, Many Amazons: A One Health assessment of emerging epidemic threats and resilience among Amazonian Indigenous peoples, in response to the COVID-19 pandemic.*

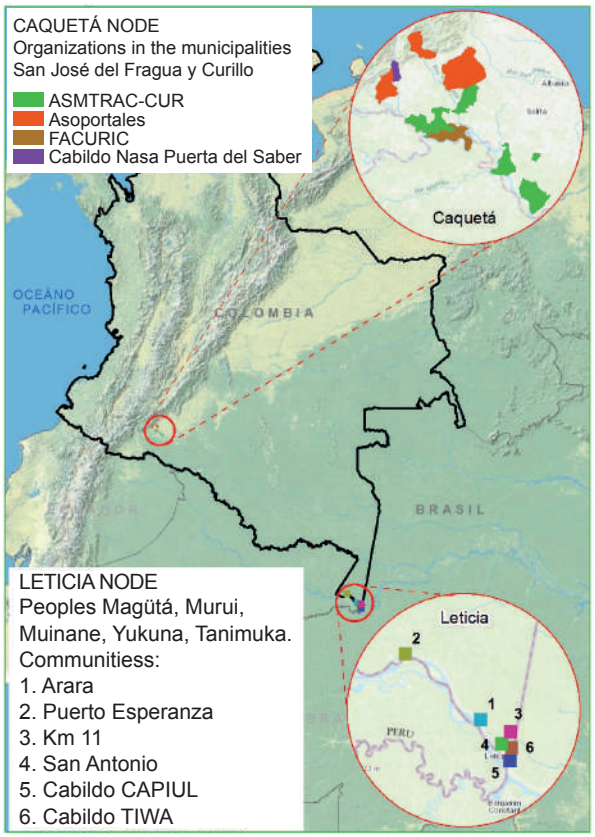
The project is led in Peru by Instituto del Bien Común (IBC) and Consorcio por la Salud, Ambiente y Desarrollo (ECOSAD); in Ecuador, by Fundación Salud, Ambiente y Desarrollo (FUNSAD) and Universidad Andina Simón Bolívar (UASB). The Universidad del Valle (Univalle), Universidad Nacional (Unal - Amazonía Campus) / Instituto Amazónico de Investigaciones (IMANI) and Gaia Amazonas lead the project in Colombia. The University of Brasilia (UnB) is a Brazilian consortium member. Canada's International Development Research Centre (IDRC) provides funding.

The One Amazon, Many Amazons project strengthened collective reflection and highlighted the organizational, therapeutic, food and community resources, as well as the creativity of Indigenous, Afro-descendant and peasant peoples and communities and their organizations in the Amazon of Colombia, Ecuador and Peru during and following the COVID-19 pandemic. The findings highlight their resilience and capacity to care for themselves in future epidemics or life-threatening socio-environmental changes.

Indigenous, peasant, and Afro-descendant organizations and communities participating in the project

Figure 1. Participating Communities and Organizations

Map 1. Participating Communities and Organizations in Colombia



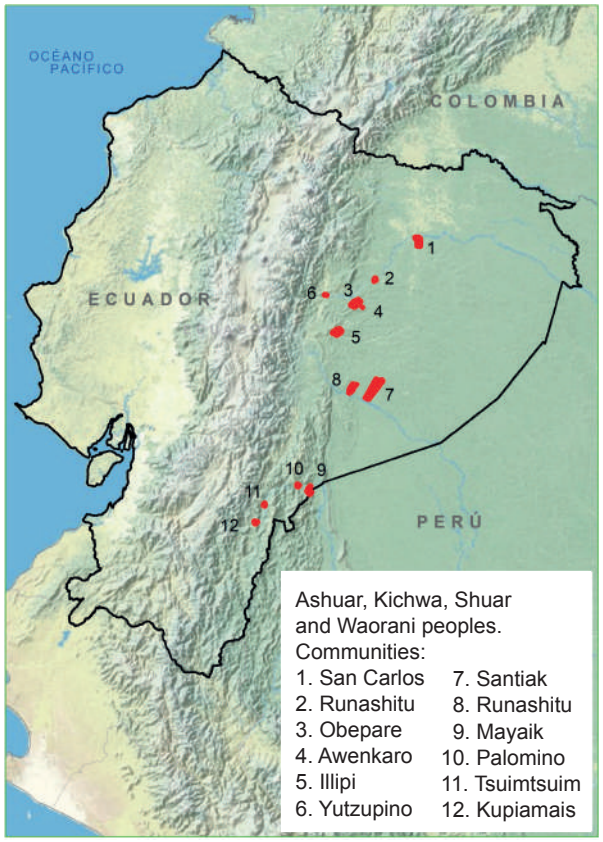
The project implemented participatory action research with a diverse group of peoples and communities. While they share common problems, they are expressed differently in each territory.

In **Colombia**, in the Caquetá Node, peasants and Afro-descendant populations from two municipalities participated, represented by the Caquetá Departmental Coordination Office of Social, Environmental and Peasant Organizations (COORDOSAC) and the Nasa Puerta de Saber Indigenous Council. In the Leticia Node, which covered the Amazonian Trapeze south of Amazonas Department, the project worked in six communities represented by organizations of Indigenous authorities such as AZCAITA, ACITAM, ATICOYA and Indigenous councils such as TIWA and CAPIUL, representing more than 25 peoples, including the Magütá, Murui, Muinane, Miraña, Yukuna and Tanimuka.

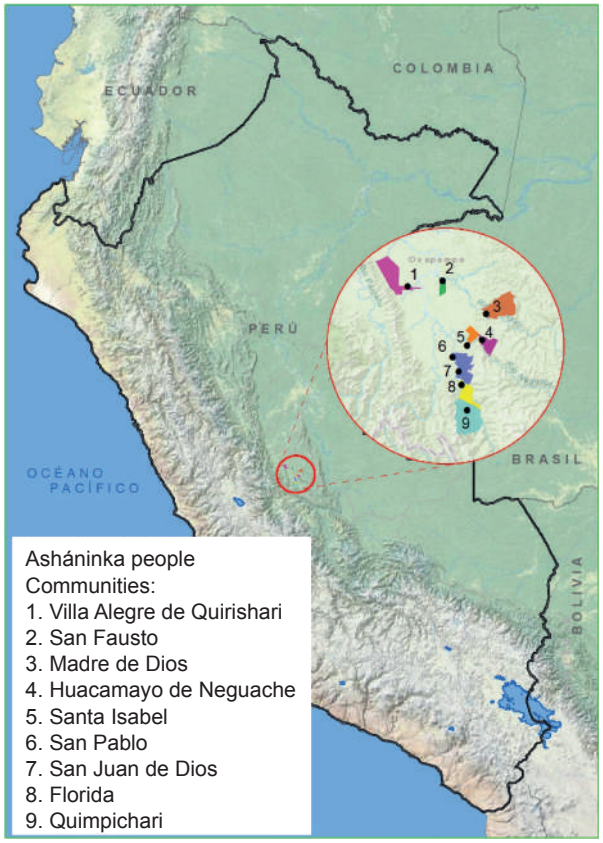
In **Ecuador**, the project was implemented in 12 communities inhabited by the Waorani, Kichwa, Achuar and Shuar peoples, represented by the Confederation of Indigenous Nations of the Ecuadorian Amazon (CONFENIAE), the Shuar Arutam People (PSHA) and the Interprovincial Federation of Shuar Centers (FICSH).

In **Peru**, the project worked in nine Asháninka communities represented by the Association of Asháninka Peoples of the Pichis Valley - ANAP (Apatyawaka Nampitsi Ashaninka Pichis).

Map 2. Participating Communities and Organizations in Ecuador



Map 3. Participating Communities and Organizations in Peru



2 Main messages

- The practices and knowledge systems of the Indigenous, Afro-descendant and peasant peoples and communities of the Amazon helped reduce the spread of COVID-19.
- As part of their struggles, the Amazonian organizations reclaimed the health practices and knowledge that proved effective during the COVID-19 pandemic, although the public health care systems did not formally incorporate them.
- Collective memory, community organization and ancestral health care practices made it possible to overcome misinformation and fear of infection and death from COVID-19.
- The Amazonian cosmovision of respect and care for life, centered on relationships between humans, other beings and the territory, does not align with utilitarian and instrumental worldviews of nature.
- The historical struggle of Indigenous, peasant and Afro-descendant organizations for territory is exacerbated by a struggle for the care of life and for their self-determination.
- Health care systems and One Health must address interculturality by recognizing the contributions of Amazonian organizations and communities.
- The extractivist development model promoted in the Amazon fragments territories and wild ecosystems, increasing the risk of new zoonotic diseases.
- The urbanization model of the Amazon not only aggravates health problems, zoonoses and food insecurity, but also obscures the diversity and vulnerability of the migrant population and hinders their ways of life.
- Urbanization, extractivism and fragmentation of territories are expressed in an urban-rural gradient that demonstrates the differentiated impacts of the development model on the health and nutrition of Amazonian communities.
- The food networks of Amazonian Indigenous communities contribute to guaranteeing food security and sovereignty and the resilience of their food systems in the event of disturbances.
- The territorial and food sovereignty of Amazonian communities contributed to reducing the risk of periods of food insecurity and of developing COVID 19-like symptoms.
- Women, households with less formal education and victims of the armed conflict living in Indigenous, Afro-descendant and peasant communities face greater risks of food insecurity.
- Having land does not guarantee availability or access to food, for which reason it is necessary to address food sovereignty from a multidimensional perspective.

3 Main results and findings

The One Amazon project shows that Amazonian territories are home to highly diverse habitats and ecosystems, peoples and communities, languages and cultures, which is why this project was renamed **One Amazon, many Amazons.**

The enormous diversity of the Amazon confronts territorial occupation associated with extractive activities and a growing urbanization based on an extractivist, urban-development model, which is often implemented with violence in the different countries in the Amazon region.

If it is not possible to consider that One Amazon exists, neither is it possible to promote One Health as the global health response to the myriad problems affecting the people of the Amazonian territories. Project results demonstrate that the Amazonian, Afro-descendant and peasant peoples and communities responded effectively to the COVID-19 pandemic, strengthening community organization and participation, food and territorial sovereignty and care for life.

The relationship between a hegemonic model of extractivist and urban development and the health of Amazonian peoples and ecosystems is complex and is manifested in a context of structural violence in which numerous conflicts over natural resources (global assets) erupt as part of a model that has accentuated urban/rural gaps.

In the first quarter of the 21st century, Amazonian communities also face changes in the patterns of illness and death, with an alarming increase in external injuries and chronic diseases; the loss of territories owing to the unchecked growth of extractive activities - legal and illegal - implemented in an increasingly violent manner and with less control by national and subnational governments; an increase in urbanization with a growing number of people living in communities without drinking water and sanitation; a growing risk of zoonoses associated with the impacts of extractive activities and urbanization on the distribution of the Amazonian population; an increase in urbanization with a growing number of people living in population centers without drinking water and sanitation; and a greater risk of zoonoses associated with the impact of extractive activities and urbanization on the distribution of wildlife species, which threatens food sovereignty and the health of people and ecosystems.

The development of alternatives to favour a transition towards a sustainable future and the reduction of health gaps requires the collective development of strategies based on local capacities. The Amazonian peoples have continued activities of resistance promoted by Indigenous, peasant and Afro-descendant organizations with proposals ranging from the creation of health care systems that recognize local knowledge and practices to the strengthening of food and territorial sovereignty with autonomous local production and supply processes.

The One Health approach can contribute to this goal, but to do so, in addition to offering a comprehensive vision of human and animal health, it must strengthen the health of ecosystems, going beyond the biomedical model, overcoming risk factors and promoting traditional lifestyles. In addition to the necessary integration proposed by One Health, it is necessary to have a historical understanding of the local territories that incorporates ancestral knowledge and health and food practices. Research must begin with local realities, develop legitimate processes of participation, and challenge a vision of development centered on individuals and the instrumentalization of nature to develop alternatives for healthy living as a collective commitment that recognizes the intrinsic value of all beings that coexist in the Amazon region.

The results and findings of the project contribute new scientific and social knowledge to rethink the way in which health, food, land occupation and the Amazonian development model are expressed in the territories studied, strengthening collaboration among the Indigenous, peasant and Afro-descendant communities and organizations that inhabit the territories, as well as among academic researchers and their institutions.

3.1 Own health (salud propia) knowledge and practices associated with reducing the spread of COVID-19

3.1.1 The practices and knowledge systems of the Indigenous, Afro-descendant and peasant peoples and communities of the Amazon have helped reduce the spread of COVID-19

The governmental health response during the COVID-19 pandemic did not reach all Amazonian communities, as evidenced by the insufficient health care services in the territories and governments' poor response capacity to health crises. Although this is not a new situation, it underscored the consequences of health inequalities, including urban/rural gaps and the problems of health care systems based on disease and individual insurance models that do not respect the right to health. For Amazonian peoples, every disease has an origin and a cure. The communities responded by drawing on ancestral knowledge, traditional practices and community organization Indigenous guards sealed off the territories, and communities isolated probable COVID-19 cases, providing solidarity care using traditional medicines, which they applied through incense burning, steam inhalation, healing beverages, rubs and prayers to protect people and territories. As a result, although some members of the project communities developed COVID 19-like symptoms, few of them died.

• In **Caquetá, Colombia**, during the pandemic, 82% of people surveyed in two communities with peasant, Afro-descendant and Indigenous populations reported they had not received any formal assistance, even though 59% stated that at least one member of their families had COVID 19-like symptoms. Only 12% were diagnosed at a health care facility. Seventy-five percent of the affected persons used home remedies to treat their symptoms. This was possible thanks to their extensive knowledge of medicinal plants, particularly among women. Vaccination coverage was low due to both limited access to health care services and vaccine refusal associated with distrust of the government. Only 35% of households vaccinated all their members but frequently did not complete the immunization schedule.

• In the **Amazonian Trapeze in Colombia**, some people interviewed reported a COVID 19-type illness between December 2019 and January 2020. Reports from the epidemiological surveillance system confirm that the first peak of COVID-19 cases in the country was recorded there, which exceeded the national case fatality rate by 7.8 times, rapidly overburdening the limited health care services in the region. This early and accelerated rate of infection occurred because Leticia is a tourist destination connected by air with Bogota and by the Amazon River with Manaus and Iquitos, where the world's highest COVID-19 seroprevalences were recorded and where more lethal variants of SARS-CoV-2 emerged. Many of the families interviewed were vaccinated because vaccination was mandatory for river travel or work. The role of women as nurturers and medicinal plant experts was decisive. In the face of the collapse of the

health care system, traditional health care networks developed within and outside the communities to study widely circulated plants such as abuta (***Abuta grandifolia***) and beehive (unidentified), and to exchange practices to protect themselves and treat COVID-19, including steam baths and special diets. They also used other plants, drawing on the knowledge of each household, including sacha ajo (***Mansoa alliacea***), botoncillo (***Cephalantus salicifolius***), remocaspi (***Aspidosperma exelsum***) and non-native plants such as ginger (***Zingiber officinale***), garlic (***Allium sativum***) and lemongrass (***Cymbopogon citratus***).

• In the **Ecuadorian Amazon**, during the pandemic, communities with the highest number of positive cases per inhabitant included Washintza, with 76 people infected out of the population of 105 (72%) and Awenkaro, with 19 out of 25 inhabitants infected (76%). Very few died, however. The wise men and women recovered and shared ancestral knowledge and practices that had been used successfully in similar situations. Believing that the disease came from outside to affect them, the communities did not allow outsiders to enter and established measures to isolate communities and possible cases. They used ancestral medicine and practices to treat the sick and the entire community. The Indigenous communities prepared medicinal plants such as guayusa (***Ilex guayusa***), cat's claw (Rubiaceae) and dulcamara (***Solanum dulcamara***). Vaccination and other measures such as isolation were mandatory to be able to work and access various services. However, only 50% of the population surveyed in the communities reported having been vaccinated. Although the communities managed to contain the disease thanks to their ancestral knowledge and practices, it is possible that they underreported deaths as part of a strategy of Indigenous resistance and defense against the Ministry of Health's provisions that violated their cultural and health practices.

• In the **Pichis River basin, Peru**, during the first two years of the pandemic, official data from the Ministry of Health reported 24 deaths from COVID-19, only three of which were Asháninka peoples who came from other districts or provinces. Sixty-two percent of the people interviewed in five Asháninka communities reported having suffered COVID 19-like symptoms, although only three were diagnosed by a public health care service. The communities mainly used kepishiri or amargón (unidentified) in a medicinal plant mixture applied in different ways (baths and vaporizations). All communities also consumed amargón as a collective preventive measure. In Quirishari, the community closest to an urban area (Puerto Bermúdez), a larger number of people did not use any natural remedy and resorted to conventional medicine when they experienced symptoms. The interviews conducted showed that the immunization schedule applied in the communities was incomplete and that many people, mainly men in the communities farthest from the urban area, refused to be vaccinated due to distrust or because they did not want any more vaccinations owing to the fever and discomfort caused by the first dose.

3.1.2 As part of their struggles, the Amazonian organizations reclaimed the traditional health practices and knowledge that proved effective during the COVID-19 pandemic, although the public health care systems did not formally include them

With the onset of the pandemic, Amazonian communities strengthened their knowledge, promoted the use of ancestral medicines and revalorized medical knowledge and community care, with women's active participation. Although health care systems did not formally include the knowledge and practices of Amazonian peoples and communities, wise men and women, elders, therapists and healers researched and shared their knowledge and practices, encouraging their organizations to incorporate health care as part of their efforts.

- In **the Leticia Node, Colombia**, COVID-19 arrived just as the Intercultural Health Technical Commission (CTSI) was organizing meetings to develop the Indigenous System of Indigenous and Intercultural Health (SISPI). However, authorities did not use this commission to coordinate the institutional response with the communities. Following the pandemic, communities and organizations continued to reclaim their capacity to prevent, protect and care for life, giving new impetus to the development of the SISPI based on the lessons learned from their pandemic response.

- In the **Ecuadorian Amazon**, historically, the Indigenous movement focused its political demands on the rights to territorial sovereignty, access to water, recognition of Indigenous justice systems and their bilingual intercultural education systems. Prior to COVID-19, demands for full recognition and inclusion in intercultural health systems were specific and isolated, mainly linked to intercultural childbirth practices. Following the pandemic, Indigenous organizations incorporated Indigenous health into their program agenda and strengthened their leadership to demand that government authorities promote the transition to an intercultural health system.

- In the **Pichis river basin, Peru**, the Asháninka communities' knowledge and practices applied in response to COVID-19 have not been formally recognized by the public health care system. However, the pandemic generated a local process of revaluation of local knowledge and practices that enabled ANAP to recover the defense of Asháninka health. Examples of this action included a collective process of evaluation and validation of Asháninka practices led by ANAP, the systematization of medicinal plants used during the pandemic and the creation of a registry of traditional medicine experts.

3.1.3 Collective memory, community organization and ancestral health care practices helped overcome misinformation and fear of infection and death from COVID-19

The way in which governments and health services dealt with death and mourning ignored ancestral practices and caused Amazonian communities to reject Western medicine. Various media, including those belonging to the ministries of health, promoted messages that generated fear and paralyzed collective action. The fear that accompanied the food and health response to the pandemic affected all spheres of life in Amazonian communities. For Amazonian ontologies, fear is a substance or material that can transform and make bodies more vulnerable, predisposing people to a deadlier case of a disease such as COVID-19. This is why 'fighting the disease of fear' is not a metaphor but a strategy for prevention and bodily protection and care for life. The communities overcame fear and misinformation by evoking their ancestral experience based on collective memory, sharing knowledge and practices, performing collective protection rituals, organizing to care for the sick and ensuring that the entire population had access to traditional medicines and care.

• In **Caquetá, Colombia**, barriers that deepened rural communities' distrust of the health care system included fear and misinformation, difficulties in implementing national protocols and a health care system focused on members rather than on territories. Instead of fostering social isolation as promoted by the national health policy, communities came together and strengthened solidarity ties to share practices, medicines and food in a practice they called "community care." Women were the main caretakers and maintainers of spaces for community consumption and played a key role in care by providing food and medicinal plants. Many people who lived in urban areas came to the communities seeking to reduce the risk of infection, to improve their food access and to use medicines prepared by the wise men and women.

• In **Leticia, Colombia**, when the pandemic hit and the health care systems could not cope, official communication and messages circulating on social media generated considerable fear. The initial deaths in hospitals and the lack of respect for the funeral practices of each Indigenous people for biosecurity reasons led communities throughout the Colombian Amazonian Trapeze to close off their territories to isolate themselves from outsiders. Within communities, however, there was no isolation. Community members recalled what their ancestors had done in previous epidemics and shared their experiences and knowledge in the use of

plants and prayer for protection and collective treatment. Elders and community organizations collectively protected and cared for the sick, both from their communities and from others, even caring for non-Indigenous people from the city. The response based on knowledge and the community led them to view their own health care models as a contribution to the development of the Intercultural Indigenous Health System (SISPI).

- In the **Ecuadorian Amazon**, the official and social media communication about deaths from COVID-19 triggered fear in the communities. Community death and funerary rituals contrasted with the practices carried out by the authorities. The demand for cremation did not respect community burial and wake practices and the situations of agony and death in isolation did not allow families to accompany and say goodbye to their relatives. The Amazonian peoples demand the right to a "good death," which means dying in community, accompanied by loved ones and the spirits of the rainforest. The people interviewed commented that in the hospitals, they always feel the cold, the silence and also suffer because their Indigenous languages and cultural practices are not understood. Death, as well as birth, should take place in the warmth of the community, with music, ceremonies and meals that respect the culture of each community. In some cases, they combined their practices with western medicine. Inhabitants of nearby urban areas often requested these practices and medicines.

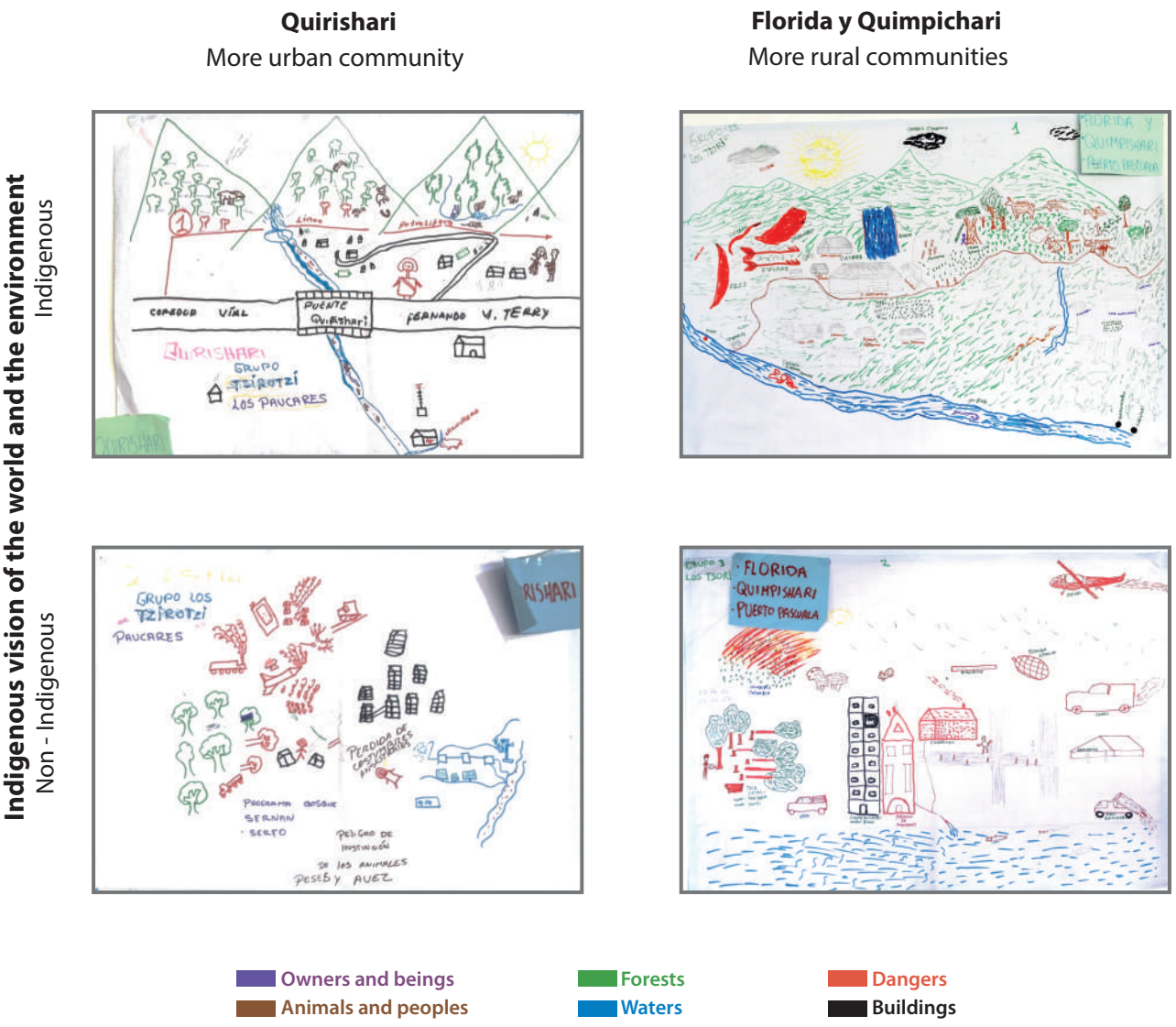
- In the **Pichis river basin, Peru**, communities recalled that the COVID-19 pandemic generated feelings of uncertainty and fear associated with the risk of infection, disease spread and dying. The recovery and dissemination of ancestral knowledge and practices ensured treatment for the entire Asháninka population. The project planted medicinal plant gardens to guarantee their access and use in disease treatment and prevention. Fear had a strong impact on family nutrition. At the beginning of the pandemic, the fear of meeting other people who might be infected limited food exchanges between neighbors and families and limited the scope of food aid programs for fear that the products delivered would be contaminated by the virus. Fear of moving to urban centers affected access to food because community members were afraid of becoming infected in markets or contaminated with the food purchased. In more rural communities, some households reported eating less during the pandemic because their appetite diminished due to anxiety, stress, worry and fear of illness. Similarly, fearing infection, many families took their children out of school. Fear mainly affected the more urban Asháninka communities, while more rural communities far from urban centers did not report feeling as frightened about the pandemic given that they were protected by outdoor and community life, natural food and the use of Asháninka medicine.

3.1.4 The Amazonian cosmovision of respect and care for life centered on relationships between humans, other beings and the territory, which does not align with utilitarian and instrumental worldviews of nature

For Amazonian peoples and communities, everything is endowed with life and has an 'owner'. Human health does not depend on the ecosystem services provided by nature, but rather on norms and practices based on respect and care for the relationships established between humans, entities ('more than human' beings) and other living beings that coexist in the territories. Diseases are associated with predatory practices, carelessness, disobedience, or mismanagement of relationships among all beings. For some peoples and communities, the way people behave determines the form they will assume in a new life. This way of seeing life questions the cultural logic of global capitalism based on a utilitarian and instrumental perspective that views nature as a provider of services and resources.

• In **Amazonas Department, Colombia**, Indigenous peoples believe that the relationships that humans establish with other living beings and the owners of the territories are the basis for preventing and protecting themselves from disease. The 'care of life' by elders involves the management of all these relationships for the well-being not only of humans, but for the whole territory. Neglect, ignorance or infringement of relationship rules or 'diets' can result in illness. This happens, for example, when mining activities release hazardous substances from the subsoil. For many peoples, ancestors kept the diseases or 'heats' of the world in the subsoil, which, when extracted by mining, bring diseases that the wise men and women cannot always treat, increasing the risk of human extinction.

Figure 2. Talking maps demonstrating the Indigenous view of the world and the Indigenous and non-Indigenous environment of Asháninka communities in the Pichis river basin, Peru



• In the **Ecuadorian Amazon**, all Indigenous communities believe in a superior being, a giver of life, projected with different faces and voices that, for the Shuar people, is the Arutam. For the Kichwa, the wise men and women possess a paju, or power to heal and to plant, which passed down from the ancestors or masters with the blessing of the creator through ceremonies that involve knowledge transmission in a waterfall or through tobacco, ayahuasca and other powerful plants. The health of the body and mind must be in balance with nature and the ancestors. Being healthy is synonymous with being in harmony and living with joy. Kichwa people have three basic principles for good living: ama killa, ama llulla, ama shua (do not lie, do not steal, do not be idle). Women transmit these principles through the consumption of guayusa (Ilex guayusa) in the family and in the community, respecting the teachings of the elders and preparing the food provided by the farm plots and the rainforest.

• In the **Pichis river basin, Peru**, the Asháninka vision of the relationships that human beings establish with nature connects the Indigenous territories with the non-Indigenous world through dangers originating from western societies, which are mainly associated with extractive activities, the dominant development model and institutional violence. The Asháninka use the term *Kametza Aseike* to define well-being (being well), which refers to the harmony that human beings should have with the environment (including the beings that inhabit it), culture (complying with cultural rules and norms), society (including the family, the community and politics), territories (as spaces for reproduction), healthy eating (related to the care of nature and ecosystems) and the environment in general. They believe that diseases are a manifestation of the rupture of *Kametza Aseike.*

3.1.5 The historical struggle of Indigenous, peasant and Afro-descendant organizations for territory is exacerbated by a struggle for the care of life and for self-determination

For the Indigenous, Afro-descendant and peasant peoples and communities that participated in the project, caring for life implies caring for the territory that precedes and goes beyond caring for health. Therefore, the struggle against land grabbing, dispossession or the imposition of extractive activities is a struggle for the health of the Amazonian peoples.

• In **Caquetá, Colombia**, peasants and Afro-descendants link their struggles to the care of life, establishing decolonial and biocentric relations of cooperation with other social movements and non-human beings. Central to the discourse and agendas of the Caquetá organizations is peacebuilding that goes beyond the absence of violence in a context of armed conflict and includes guaranteeing the necessary conditions for the well-being of communities and territories. With their practice, the organizations counterpose actions that prioritize the care of life over exclusion, violence and death. Also, for the Nasa Puerta del Saber Indigenous Council, the conservation and transmission of ancestral knowledge with respect to medicinal plants and foods occupies a central place in their political struggles and collective activities, recognizing that the care of human life and nature is only possible through collective practices. Community organization fills the gaps left by the government with health care networks and organizational workspaces in which both men and women participate. As part of this community and family work, women assume many responsibilities such as food preparation, maintenance of household gardens, care of animals for consumption by the household, housekeeping and care of the sick.

• In the **Ecuadorian Amazon**, Indigenous organizations link the improvement of health to the defense of their territories and nature. The health of the people is associated with the health of the forest. In the same way that a person or a household takes care of their farm plot, the farm plot takes care of the household by providing them with food and medicine, reclaiming a perspective of health for the people, the collective and the territories.

• In the **Peruvian Amazon**, the main purpose of the ANAP Indigenous organization is to defend the land, which is viewed as living territory, where the Indigenous populations and all the beings living in the forest, the farms and the rivers are related to ensure a full existence that respects ancestral knowledge and the right to self-determination. Communities' main strategy is to revaluate the knowledge of wise men and women with respect to food, medicinal and utilitarian plants, thereby contributing indispensable knowledge and practices to foster food sovereignty and resilience in response to epidemics and new health risks.

3.1.6 The way in which the health systems and One Health address interculturality must recognize the contributions of Amazonian organizations and communities

The struggle to promote interculturality in the educational system to defend Indigenous cultures and languages gave way to a struggle for interculturality in health, for which a legal and institutional framework is being developed. However, not all Amazonian countries promote critical interculturality in health. In many cases, the vision and, above all, the intercultural practice in health is limited to the translation of messages into Indigenous languages and the acceptance of some health care practices such as vertical childbirth, ignoring other Indigenous knowledge and practices. Convention 169 of the International Labor Organization (ILO) recognizes the right of Indigenous peoples to their ancestral health practices and to health care that respects them. This is one of the main political demands of Amazonian organizations today.

- **Colombia** has a solid legal and regulatory framework that recognizes and regulates the need to adopt an intercultural approach to health and cultural autonomy, which includes the coordination of plans and services with the Indigenous governments recognized by law. The decree that regulates the Intercultural Indigenous Health System (SISPI), is the result of several decades of Indigenous mobilization. It proposes both a mechanism of interculturality in health and autonomy of the Indigenous governments to decide the forms of health care in their territories, including the adaptation of health care services, as part of the constitutionally recognized cultural pluralism. Despite this progress, health institutions are largely unwilling to recognize the right of Indigenous peoples to their own prevention and healing practices, as is the case with the prohibition of the entry of traditional healers, the consumption of medicinal plants in hospitals, and the imposition of prevention programs that are not adapted to the realities of each community.

- In **Ecuador**, although there is an Intercultural Health Directorate within the Ministry of Public Health, the wise men and women and leaders of Amazonian organizations report that the services they receive in health care centers is not culturally appropriate. Almost none of the health care centers have health care practitioners who speak the Indigenous languages, limiting care services because many people, especially those who live in the most remote communities, have little or no command of Spanish. Although health promoters exist, neither the resources available to them nor their salaries are adequate for the tasks they perform, for which reason there is no comprehensive intercultural follow-up of people who are ill.

- In **Peru**, Indigenous organizations have limited participation in developing intercultural public health policies. For example, when the 2016-2021 Sectoral Plan for Intercultural Health was developed, the commission responsible convened Indigenous organizations, NGOs and other institutions "as guests for collaboration" and their contributions were not always taken into account. Additionally, 26 criteria are applied to evaluate and qualify primary health care facilities. Although several of these criteria are met, significant gaps remain in terms of cultural relevance, language and participation, which limit the application of regulations and the implementation of intercultural policies in the Peruvian Amazon.

3.2 The hegemonic model of development in the Amazon undermines the health of people, other living beings and ecosystems

3.2.1 The extractivist model of development promoted in the Amazon fragments territories and wild ecosystems, increasing the risk of new zoonotic diseases

The Amazonian development model based on extractive productive enclaves, dispossession and violence degrades ecosystems and impoverishes communities, increasing the risk of zoonoses. Amazonian Indigenous communities are rapidly changing many of their ancestral ways of life because of pressure to adopt the Western way of life demanded by extractive companies and government institutions. In the past five years, overall deforestation throughout the Amazon has increased in association with the proliferation of monocultures, increased urbanization and the expansion of legal and illegal extractive activities. As a result, many wild species previously hunted have disappeared from the territories near the communities. Today, people living in the Amazon are forced to hunt smaller animals that are more likely to transmit diseases to humans, or to move to increasingly remote areas. Zoonotic disease transmission involves complex interactions and patterns, for which reason this rearrangement of wildlife species and humans in the territories may increase the risk of new disease transmission.

• In Caquetá, Colombia, possible scenarios for the emergence of new epidemics were identified. A multi-criteria ecosystem analysis identified hotspots where the risk of emergence of new zoonotic diseases increases due to high environmental pressure (increased deforestation, mining and oil activities) in areas of high biodiversity.

Umbrella species, such as the jaguar (*Panthera onca*), puma (*Puma concolor*), peccary (*Pecari tajacu*), woolly monkey (*Lagothrix lagotricha*) and tapir (*Tapirus terrestris*), are representative of biodiverse, better preserved ecosystems in territories highly impacted by extractive activities. The analysis of the spatial distribution of these species reveals a more limited presence compared to smaller species, which are potentially more prone to transmit diseases to humans.

Figure 3. Multicriteria analysis to identify risk scenarios of new epidemics in Caquetá, Colombia

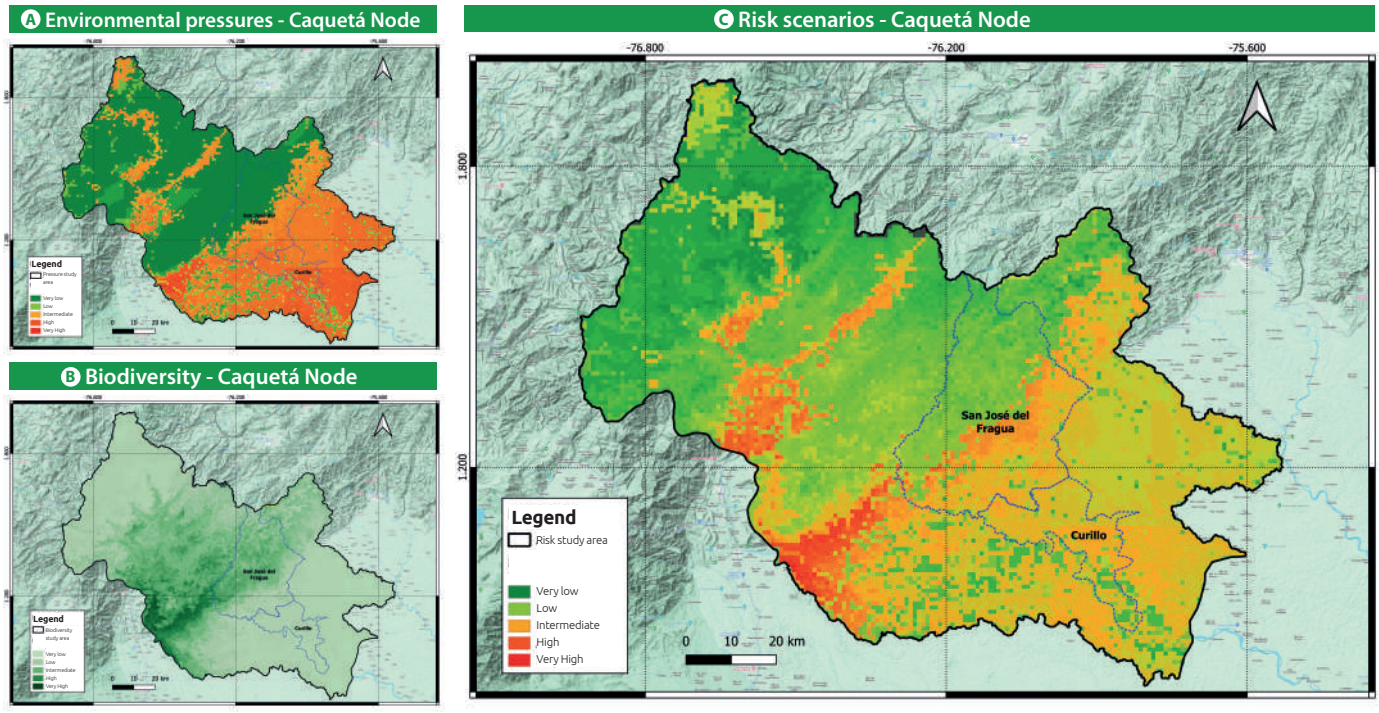
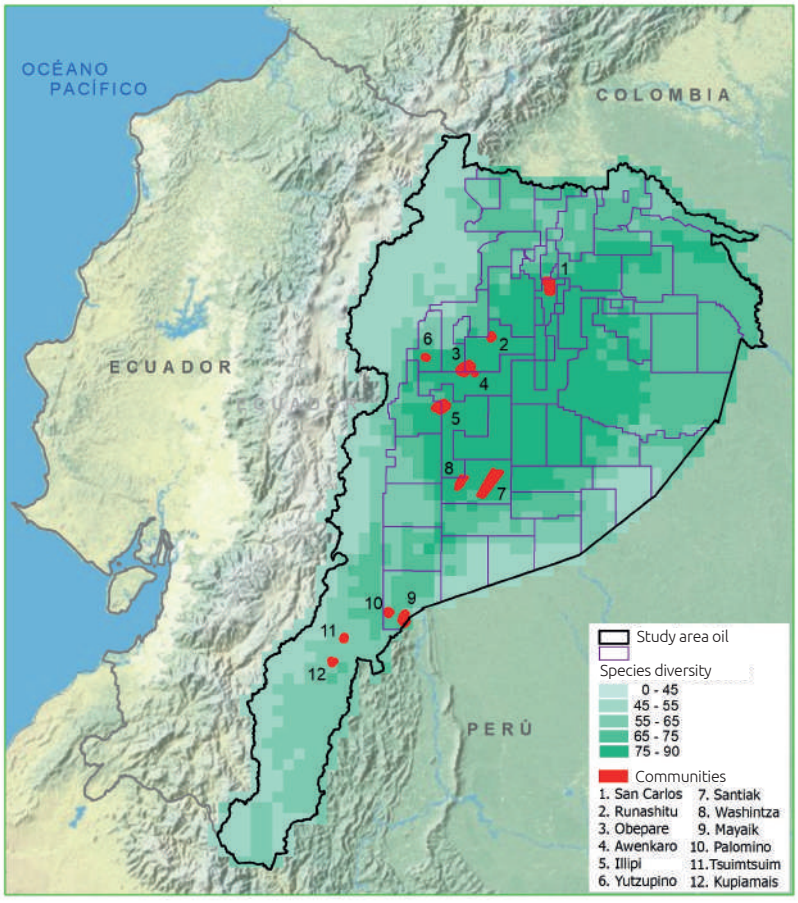


Figure 4. Concentration of animal species and communities in Ecuador



• In the **Ecuadorian Amazon**, larger species are migrating to higher elevations with cooler temperatures, abandoning the forests that once served as refuges. The loss of habitats underscores the need to mitigate the impacts of climate change and preserve the biodiversity of the Amazon region. Oil production takes place in much of the territory inhabited by several game species. Although these activities are concentrated in specific areas, the pollution and deforestation they generate extend beyond their direct areas of operation.

3.2.2 The urbanization model of the Amazon not only aggravates health problems, zoonoses and food insecurity, but also obscures the diversity and vulnerability of the migrant population and hinders their ways of life

Of the nearly 50 million people living in the Amazon today, an estimated 80% reside in urban areas. The main problems of accelerated, unplanned urbanization include the lack of basic services, soil, water and air pollution, as well as transportation, communication and connectivity difficulties. Additionally, urbanization aggravates coexistence because it ignores differences, especially those of peasants and Indigenous and Afro-descendant peoples. Institutions and the government ignore practices of care of life and cultural and food self-determination of Amazonian populations living in cities. One Health in the Amazon must consider urbanization as a leading emerging problem because it not only increases the risk of zoonosis and infectious diseases, but also increases the rate of non-communicable diseases such as metabolic diseases and cancer and mental health issues.

- In the **Ecuadorian Amazon**, the population in small settlements has increased, which encourages migration from communities to population centers. This process, combined with extractive activities, displaces wildlife species, increases interactions between wildlife and humans and significantly raises the risk of zoonosis. This risk is not only associated with household breeding areas, and household or community small animal production enterprises. Currently, the greatest risk appears to be associated with the expansion of intensive production systems for small animals, particularly pigs and poultry. These types of farms have a high animal density and an increasing interaction with humans, raising the risk of zoonotic diseases.

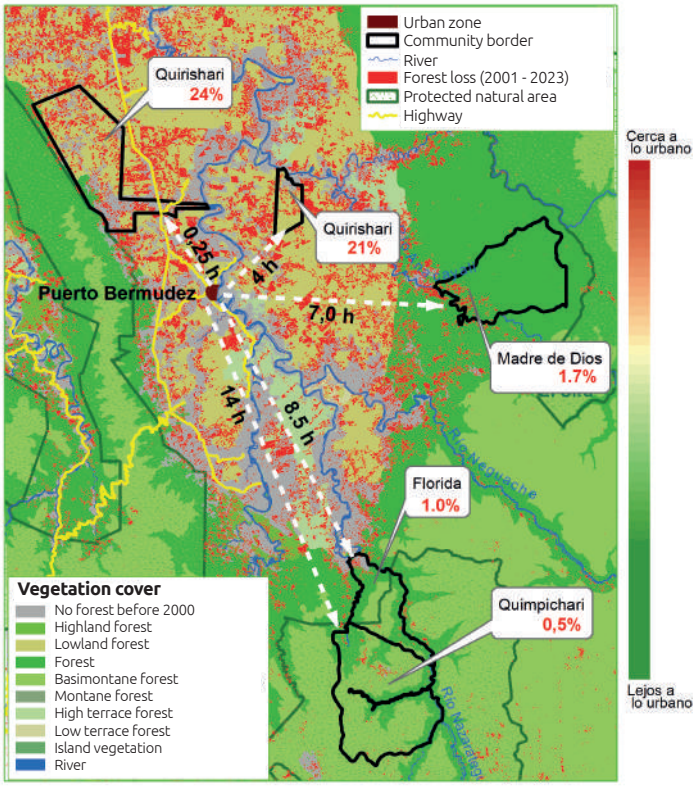
- In **Caquetá, Colombia**, extractive activities have led to the establishment of towns throughout the region. However, even within these small settlements, the economic model has proven incapable of generating conditions conducive to the well-being of local communities and to achieving substantive advances in health. With respect to sanitation, 67% of households have basic or unimproved facilities. The project's water quality analysis demonstrated that no household meets the minimum standards for safe access to drinking water, with Escherichia coli found in 100% of the samples collected, as well as deficiencies in the percentages of oxygen saturation, phosphates and other microbiological parameters. Although an analysis for heavy metals and pesticides in water and fish did not reveal significant results, these sources of contamination require further monitoring.

- In **Leticia, Colombia**, located on the border between Colombia, Peru and Brazil, the Colombian government (as well as the governments of Brazil and Peru) promoted a process of occupation/urbanization associated with the defense of national sovereignty. The migration of the Indigenous population to the capital of Amazonas Department resulted from the concentration of infrastructure, education, commerce and most of the health care facilities in the city. Although social, cultural, environmental and health activities have a cross-border dynamic, the responses from the different governments are fragmented, autonomous and uncoordinated. Indigenous populations living in cities are often invisible to public policies. For this reason, Indigenous struggles to maintain their knowledge systems, as well as their forms of organization and care for life are expressed in the SISPI.

3.2.3 Urbanization, extractivism and fragmentation of territories are expressed in an urban-rural gradient that demonstrates the differentiated impacts of the development model on the health and nutrition of Amazonian communities

The hegemonic development model in the Amazon, based on extractive enclaves (oil, gas, timber, minerals), monocultures (African palm, cacao, achiote) and rapidly growing urbanization, puts pressure on natural ecosystems and territories, affecting the livelihoods that guarantee the health and nutrition of many communities. The profound transformations of Amazonian territories are illustrated in urban-rural socio-ecological gradients, which show that communities farthest from urban centers still maintain rural livelihoods, based on subsistence agriculture, hunting, fishing and gathering, which contribute to the development of sustainable food systems based on interaction and feedback between traditional knowledge and highly biodiverse ecosystems. The transition from natural to urban systems shifts interactions between humans and the environment, leading Amazonian food systems to become increasingly dependent on the global agrifood system. This development model, which favors the availability of ultra-processed foods and goods, not only does nothing to prevent historical health problems such as dengue fever and malaria in the Amazon; it also increases the risk of death due to the emergence of new health problems such as motorcycle accidents and diabetes.

Figure 5. Deforestation of the territories of five Asháninka communities, distributed along an urban-rural gradient in the Pichis river basin, Peru, in the period 2001-2020

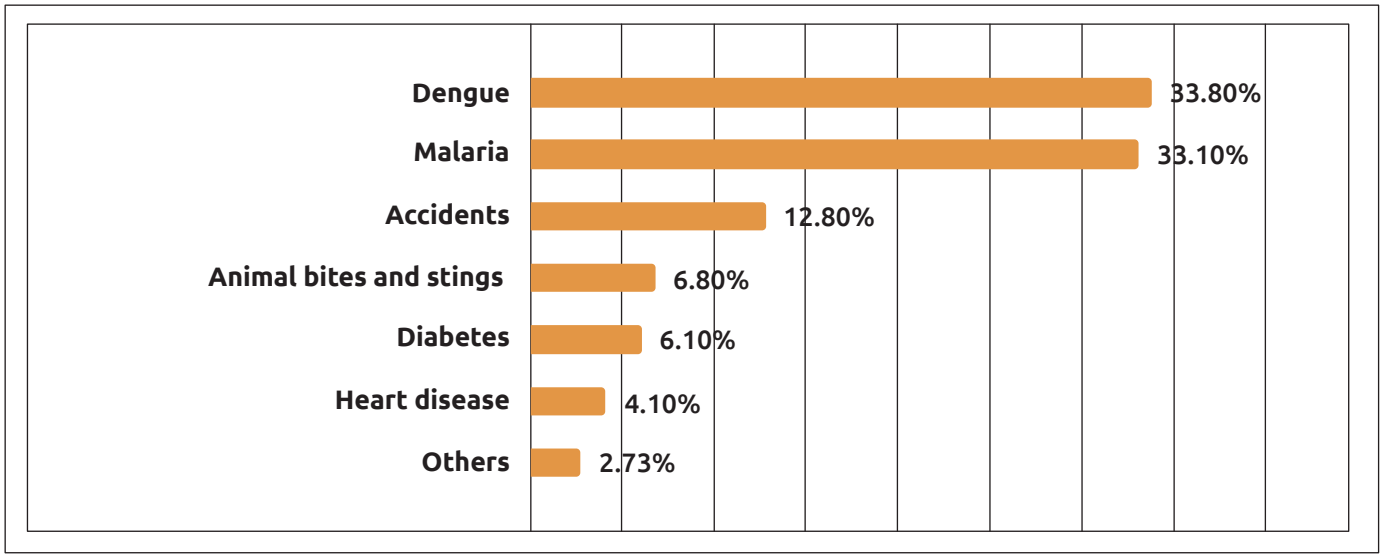


The urban-rural gradient was defined by the travel time from each community to the urban center of Puerto Bermudez (indicated by the arrows in hours). Forest loss (%) is shown in red next to the community names.

• In the Pichis river basin, Peru, the territories of five Asháninka communities were distributed along an urban-rural gradient by the amount of travel time between the communities and Puerto Bermúdez, the main urban center in the region. Between 2001 and 2020, deforestation reached 24% of the territory of Quirishari, the closest community to Puerto Bermúdez, and progressively decreased in the more rural communities, being only 0.5% for Quimpichari, the furthest community from the urban center (Figure 5). The environmental degradation of the Asháninka territories along this gradient is associated with a progressive decrease in the number of areas available for hunting and the number of wild animal species consumed. After fish, wild animals (bushmeat) are the main source of protein for communities located in less urbanized environments. In communities with better preserved ecosystems, such as Madre de Dios and Florida-Quimpichari, larger species such as the peccary (*Dicotyles tajacu*), deer (*Mazama americana*) and sachavaca (*Tapirus terrestris*) are consumed. The most consumed species in the communities with the most degraded ecosystems are majaz (*Cuniculus paca*) and añuje (*Dasyprocta sp.*), two small and medium-sized rodents, respectively. The interviews conducted indicated that, in the communities farthest from Puerto Bermúdez, half of households consume bushmeat once a week. By contrast, in more urbanized communities, such as Quirishari, 46% of households never consume bushmeat. The fragmentation of territories and habitats impacts the availability of animal protein from bushmeat, increasing communities' risk of periods of food insecurity.

• In the **Ecuadorian Amazon**, the epidemiological profile of the population studied indicates a high incidence of vector-borne diseases such as dengue and malaria. However, it is traffic accidents, especially those involving motorcycles, that are the third leading health problem. This reveals an emergence of a new health problem in Amazonian communities. These problems affecting people's health are evidence of territorial deterioration and rapid, unplanned urban growth driven mainly by extractive activities. The lack of basic services, together with population development, contributes to the increase of known diseases and raises the risk of emergence of new health problems. The increase in health problems related to malnutrition, such as diabetes and heart disease, reflects changes in the diet, food culture and nutritional intake of communities. Gradually, these communities are adopting Western diets, including the consumption of ultra-processed foods, which affect their cultural identity and food quality.

Figure 6. Morbidity in the Ecuadorian Amazon communities studied



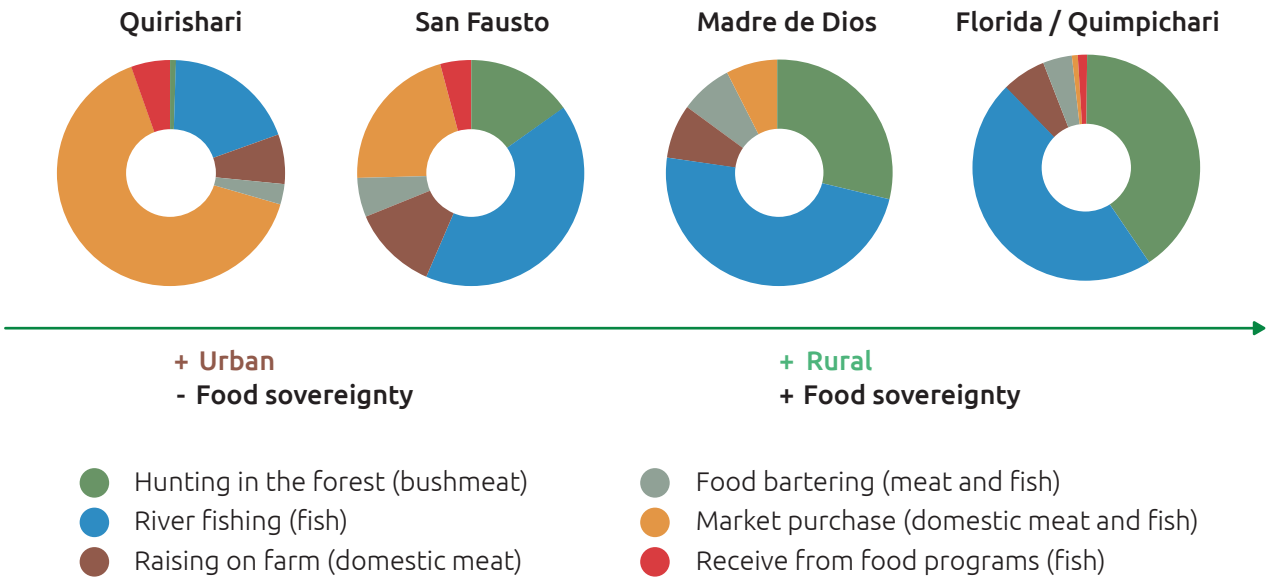
3.3 Territorial sovereignty and food sovereignty

3.3.1 The food networks of Amazonian Indigenous communities contribute to guaranteeing food security and sovereignty and the resilience of their food systems in the event of disruptions

Community food networks influence household food availability and access. Robust and diversified food networks, based on biodiverse territories, Indigenous knowledge and collaboration and mutual trust among households, contribute to: (i) improving food security, providing access to a greater quantity and variety of food sources; (ii) strengthening food sovereignty, providing communities with greater autonomy and control over food systems; and (iii) making Amazonian food systems more resilient, enabling communities to maintain availability and access to healthy food in the event of disruptions associated with extractive activities, different forms of violence and dispossession, future pandemics or the effects of climate change.

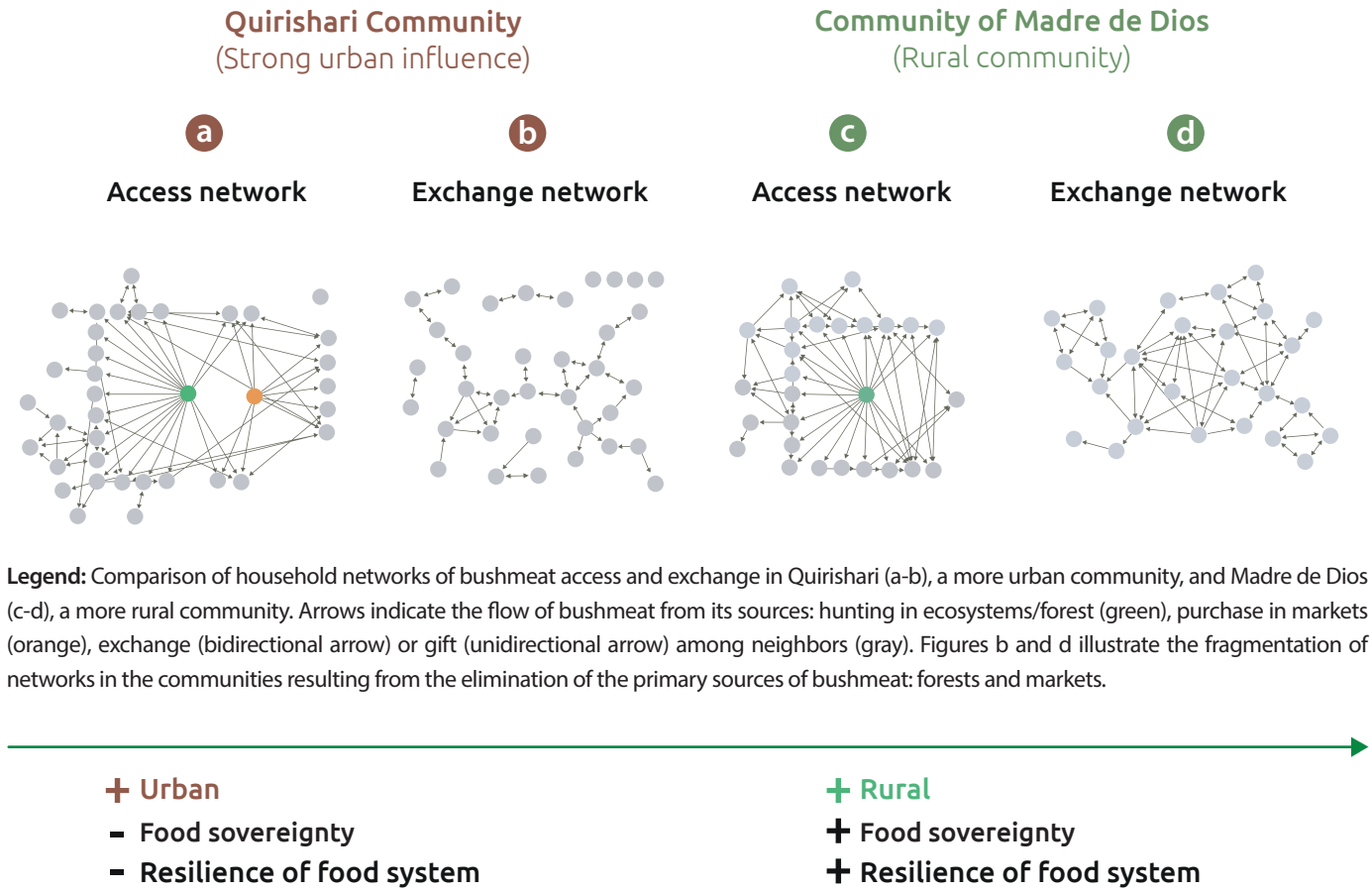
• In the **Pichis river basin, Peru**, the food networks of five Asháninka communities were distributed along an urban-rural gradient to analyze the availability of and access to several food groups (energy, building and protective) from multiple sources. In communities farther away from urban centers, food networks provide families with greater autonomy, ensuring production and access to local food. In Quirishari, access to animal protein from hunting, fishing and farm production accounts for 27% of the total. This percentage increases to 54% in San Fausto, rises to 85% in Madre de Dios and reaches 94% in Florida and Quimpichari. Communities farther from urban centers have greater control over their protein sources (hunting, fishing, animal breeding, exchange networks) and less dependence on industrialized foods (markets and food support programs). The urban-rural gradient contributes to establishing a gradient of food sovereignty among Asháninka communities.

Figure 7. Contribution of diverse animal protein sources to the diet (%) of the five communities of the study located in the Pichis river basin, Peru



For Asháninka families, community networks that sustain food exchanges and gifts are essential to ensure food availability and access. Sharing and exchanging food among neighbors and family members is customary in all communities, although urbanization and globalization processes are altering this practice. The comparison of bushmeat access networks between the Quirishari and Madre de Dios communities illustrates the changes in Asháninka food systems as environmental degradation of the territories advances and economic dependence on processed and ultra-processed food markets grows. The network of bushmeat access and exchange among the inhabitants of Quirishari, a community with a strong urban influence, has few connections and is fragmented (Figures 8a and 8b). As a result, less than 1% of their meals include bushmeat. By contrast, in Madre de Dios, most households hunt and bushmeat consumption is 35 times higher than in Quirishari (Figure 7). Their network of bushmeat access and exchange connects all households, contributing to food security and sovereignty and the resilience of the community food system (Figures 8c and 8d).

Figure 8. Household networks of bushmeat access and exchange in Quirishari and Madre de Dios communities of the Pichis river basin, Peru



Legend: Comparison of household networks of bushmeat access and exchange in Quirishari (a-b), a more urban community, and Madre de Dios (c-d), a more rural community. Arrows indicate the flow of bushmeat from its sources: hunting in ecosystems/forest (green), purchase in markets (orange), exchange (bidirectional arrow) or gift (unidirectional arrow) among neighbors (gray). Figures b and d illustrate the fragmentation of networks in the communities resulting from the elimination of the primary sources of bushmeat: forests and markets.

+ Urban
- Food sovereignty
- Resilience of food system

+ Rural
+ Food sovereignty
+ Resilience of food system

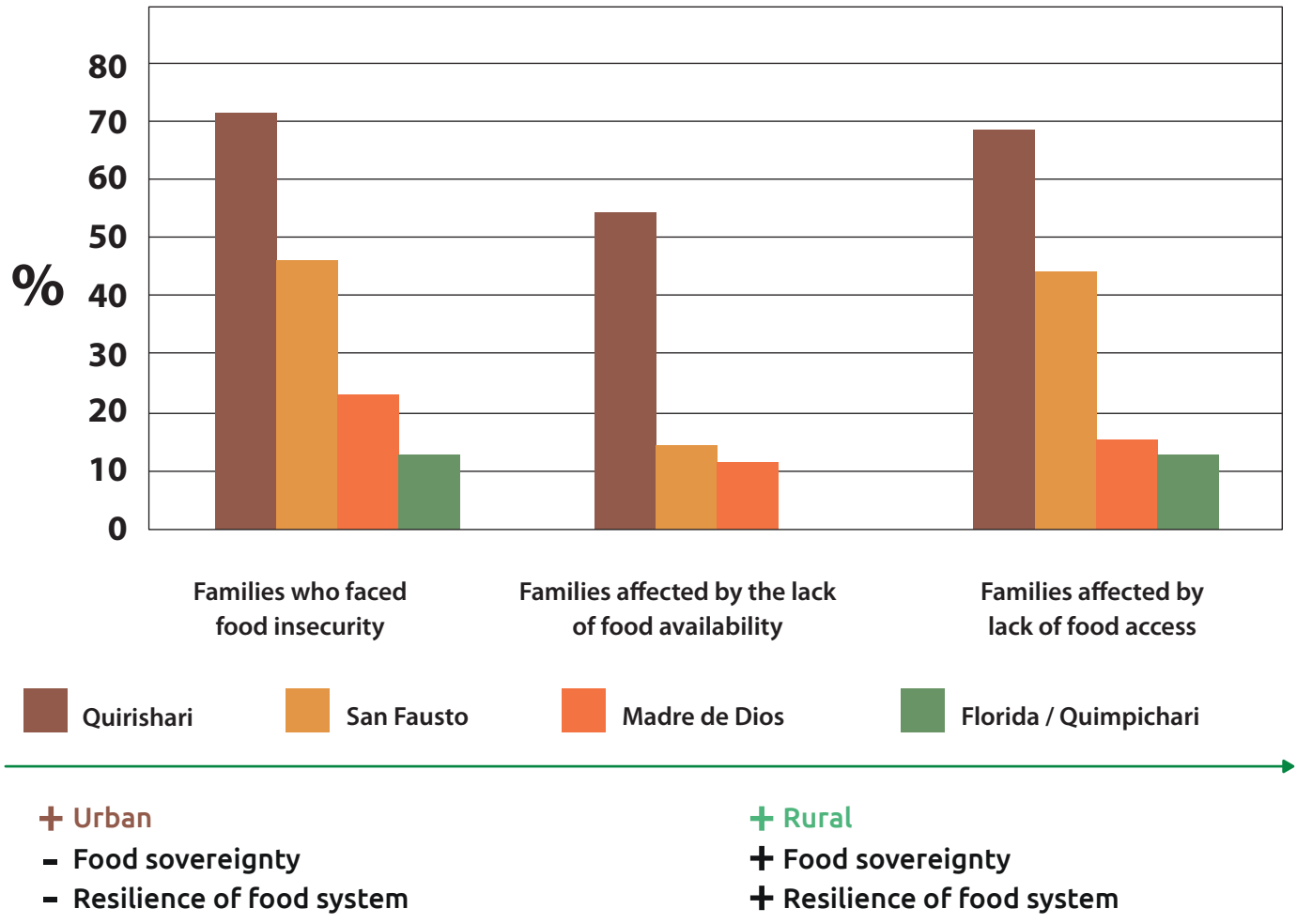
3.3.2 The territorial and food sovereignty of Amazonian communities contributed to reducing the risk of periods of food insecurity and having COVID 19-like symptoms

Communities with better preserved ecosystems and greater territorial and food sovereignty were at lower risk of facing periods of food insecurity compared to those located close to urban areas. The food security approach promoted by governments, which sought to guarantee availability in markets and warehouses and the delivery of food through social programs, did not prevent food insecurity. Moreover, it contributed to increase the risk of COVID-19 infection, due to the arrival of infected people who brought food through social programs or went to local markets to buy it. The food sovereignty of Amazonian communities is associated not only with the ecological integrity of their territories, but also with the territorial sovereignty of the communities through their control over their food systems.

• In the **Pichis river basin, Peru**, communities farther away from urban centers have territories with better preserved ecosystems and more control over their food systems. As a result of their greater food sovereignty, these communities managed to limit the impacts of the pandemic, improving both their diets and their health. Hunting, fishing, agricultural production and diversified exchange networks ensured broad access to food during the pandemic and were crucial for reducing the risk of periods of food insecurity (Figure 8).

Communities close to population centers depended more on food markets and social food assistance programs (Figure 9). In these communities, households that reduced their mobility due to forced confinement, fear of infection and lack of financial resources experienced difficulties in accessing food and greater food insecurity. Households that sent members to markets to buy food were able to reduce their risk of food insecurity but were 13 times more likely to have COVID 19-type symptoms, including high fever, muscle aches, fatigue, headache and loss of appetite.

Figure 9. Impact of the COVID-19 pandemic on food supply in Asháninka communities in the Pichis river basin, Peru



• In Leticia, Colombia, pandemic confinement measures affected the food supply of many urban and peri-urban Indigenous households without farmland or access to fishing or hunting. These households' food supply depended on income obtained in the city from informal jobs, tourism and the sale of handicrafts. In the rural context of the Amazonian Trapeze, in communities such as Puerto Esperanza and Arara located in large reserves, most families have farm plots and access to fishing and hunting, while those living in the TIWA and CAPIUL urban and peri-urban communities experienced greater difficulties in obtaining food. As these families did not have farm plots and had only occasional access to fishing and hunting, they had limited access to both daily and ritual food, which is necessary for preparing special diets for different ages or for those in vulnerable situations in the life cycle (illness, pregnancy). As Indigenous groups in this area view eating as a practice of co-existence of humans and non-humans, the concept goes beyond human health to include the care of all forms of life, with rituals of protection and prevention that include special food restrictions or mandates.

3.3.3 The risk of facing situations of food insecurity is higher among women, households with less formal education and victims of the armed conflict living in Indigenous, Afro-descendant and peasant communities

Forced displacement associated with the armed conflict, the presence of legal and illegal crops and extractive activities, and the dispossession of land to benefit extensive agriculture and mining disproportionately affect Indigenous, peasant and Afro-descendant women living in the Amazon. Women are at greater risk of facing periods of moderate and severe food insecurity, especially the less educated and those displaced by armed conflict. Violence and dispossession aggravate situations of poverty associated with increased disease prevalence and food insecurity. This highlights the enormous importance of living in peace for the care of life.

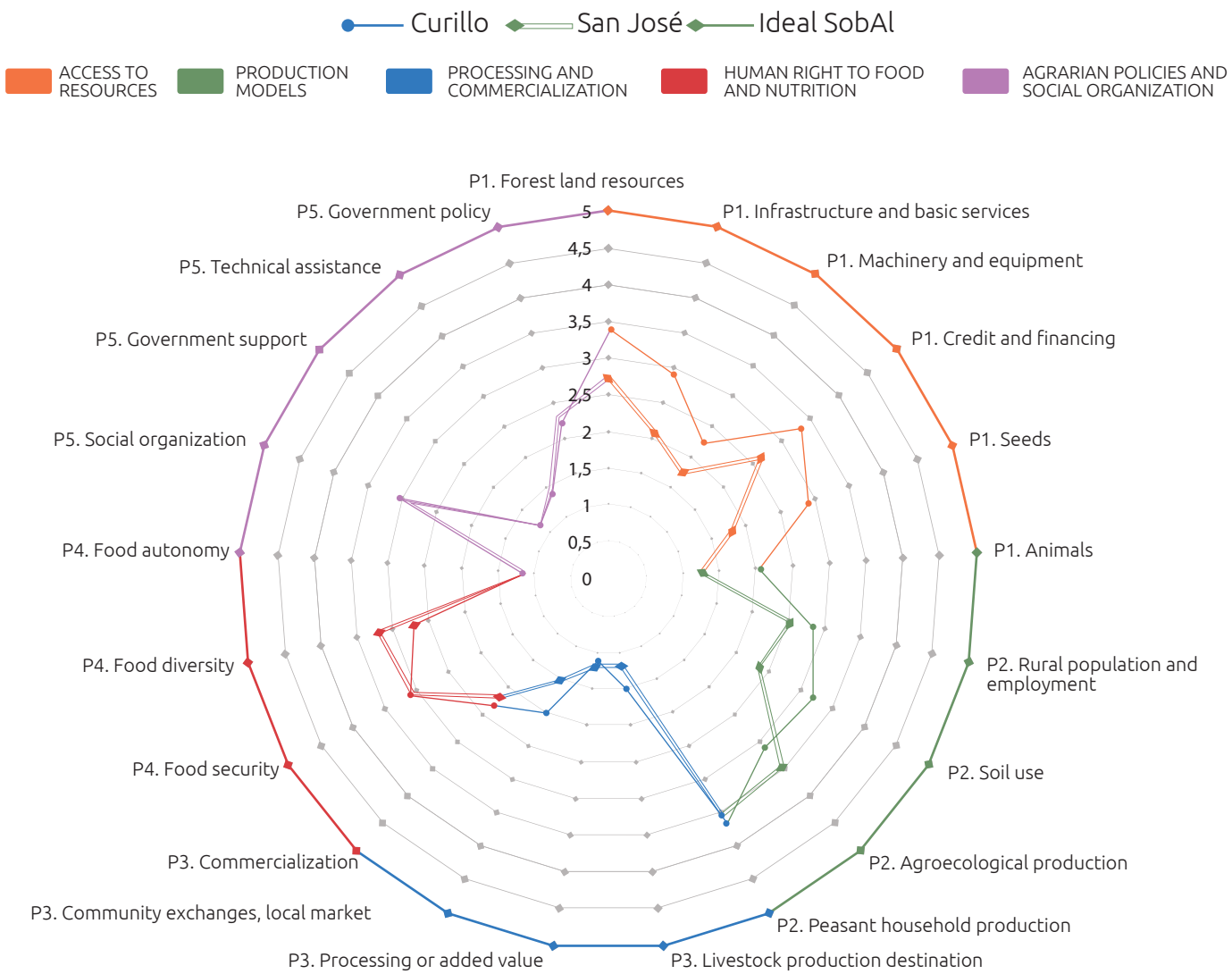
• In **Caquetá, Colombia**, moderate and severe food insecurity affected 30.2% of the Indigenous, Afro-descendant and peasant communities of Curillo and San José del Fragua. Being a victim of the armed conflict was closely associated with facing situations of moderate or severe food insecurity. The most affected were women, households headed by people with less formal education and those with subsidized health care systems. The municipalities studied had a food insecurity prevalence of 77%, which is 22% higher than the national (54.2%) and departmental (55.5%) averages. Local food consumption heavily depends on commercial supply, since four of every five foods consumed are purchased in markets and stores and only 14% come from self-production and exchange.

3.3.4 Having land does not guarantee availability or access to food, for which reason food sovereignty must be viewed from a multidimensional perspective

Having access to land does not guarantee either availability or access to food, which points to the need to shift towards a multidimensional understanding of food anchored in the notion of food sovereignty rather than food security. The findings represent a key opportunity to focus decision making on the achievement of food sovereignty. Recognizing the complexity of this multidimensional process, it emphasizes the need to develop specific strategies that strengthen each dimension identified, promoting a comprehensive approach that progressively guarantees the right to food in the Amazon.

• In **Caquetá, Colombia**, a set of indicators was defined to apply to Indigenous, Afro-descendant and peasant communities that considers the complexity of the Amazonian context. The project analyzed 101 variables related to 36 sub-indicators, grouped into 17 indicators and five pillars that measure the obstacles to achieving food sovereignty in the local context. The most critical dimensions include processing and commercialization, followed by agrarian policies and social organization. The low score in processing and commercialization is due to a marked dependence on intermediaries, precarious production conditions and the lack of product processing capacity. The poor performance of the agrarian policies indicator reflects poor institutionalization and government neglect. Additionally, land access is limited in terms of extension and lack of formalization of ownership. The absence of infrastructure and basic services also significantly limits the rural population's access to adequate food.

Figure 10. Food sovereignty indicators in two municipalities of the Amazonian foothills, Caquetá, Colombia



4 Research, training and political advocacy for change

One Amazon, Many Amazons worked with 31 communities and 11 Amazonian organizations in Colombia, Ecuador and Peru, where transdisciplinary research was combined with community and organizational capacity strengthening to use the results and to carry out political advocacy.

The organizations defined the intervention communities and the Indigenous, Afro-descendant and peasant communities selected the co-researchers and community health and environmental monitors, in collaboration with the team of researchers belonging to the partner universities and NGOs.

Wise men and women, elders, healers and community leaders led the training of co-researchers and community monitors in health and environment, strengthening capacities to implement advocacy actions at the local, sub-regional and national levels.

For One Amazon, Many Amazons research, training and advocacy activities are integrated under a participatory action research approach that combined the One Health approach with the Ecohealth approach, social determinants of health and gender, Amazonian ontologies of health and care of life and Amazonian health knowledge and practices.

The project combined these four different conceptual and methodological frameworks:

- The Ecosystem Approach to Health, Ecohealth and the social determinants of health as a way of understanding health from a critical perspective.
- Participatory action research to study territories, people and problems.
- Amazonian ontologies, practices and knowledge systems to incorporate Amazonian knowledge and perspectives.
- Gender in the context of Amazonian peoples and communities.

In the **Caquetá Node, Colombia**, the project implemented mixed participatory research methodologies to build an initial timeline with community leaders. The implementation of social mapping and the analysis of secondary health information contributed to the design and application of a population survey. These results served as the basis for the implementation of qualitative methodologies such as in-depth interviews and focus groups. Data integration enabled a situated, validated understanding of the Indigenous, Afro-descendant and peasant communities and their organizations.

In the **Leticia Node, Colombia** , the project worked closely with the Intercultural Health Technical Commission of the Amazon (CTSI), composed of the health secretaries of all the Indigenous organizations of Amazonas Department and of health care institutions. Discussion spaces with a gender focus included ***mambeaderos*** (men's areas of community houses), farm plots and bonfire areas. The project promoted participatory action research and anthropological methodologies such as participant-observation and ethnography. It also organized workshops in territories and established timetables based on their questions and methodologies. Feedback from community assemblies and the CTSI ensured that project objectives contributed to strengthening ongoing community activities.

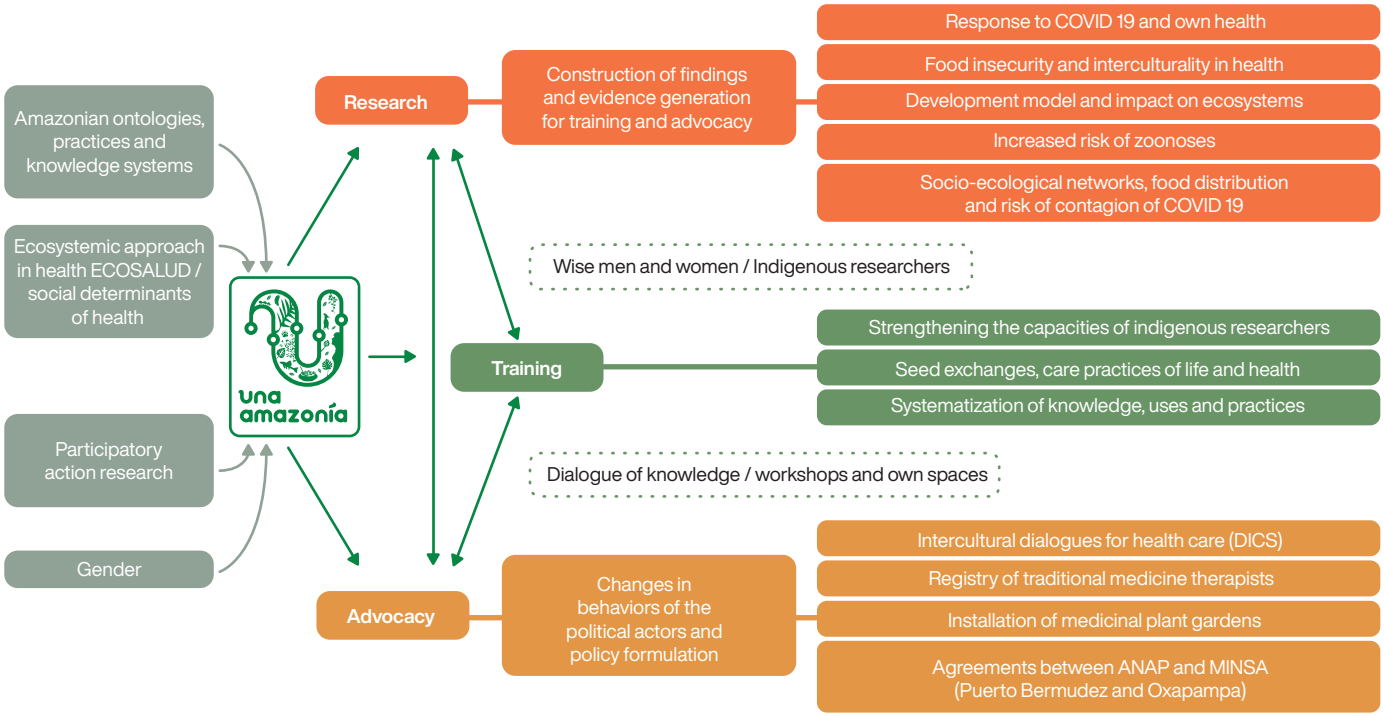
In the **Ecuadorian Amazon**, the project incorporated a dozen wise men and women from the communities, who provided key information on the history of the communities and territories, the main social and health problems and the environmental deterioration caused mainly by extractive processes. The project implemented surveys, interviews and participatory workshops. The wise men and women led training sessions in community health and environmental monitors and managers. The training process emphasized the sharing of the practice of Amazonian ancestral knowledge by applying practical methodologies through workshops and dialogue spaces where ***guayusa*** was consumed, as well as on farm plots.

In the **Pichis river basin, Peru**, the project collected qualitative and quantitative data, developed social mapping and organized discussion workshops and focus groups, semi-structured interviews, 24-hour food reminders and open conversations. Data analysis included the conceptual and analytical framework of socioecological food networks illustrating the relationships that humans establish with nature. Techniques such as thematic analysis, categorization matrix and a comparative analysis of results and cases were also employed. The study of socioecological networks provided a unique perspective of interpretation and analysis of community diets and food dynamics.

The project developed databases common to all countries and conducted a network analysis to demonstrate the evolution of collaboration among the members of the project team. The use of geo-referenced tools and social mapping enabled the preparation of visual languages that function as tools for the social construction of knowledge, management and territorial governance. Wise men and women, elders, Indigenous healers and therapists, co-researchers and community monitors prepared territorial narratives (story maps) to support political advocacy actions and to express the needs, vulnerabilities and potential of the communities and organizations in the territories.

One Amazon, Many Amazons developed a self-reported morbidity study of the 31 communities with which the project worked. This does not constitute an exhaustive epidemiological study of morbidity and mortality, for which reason its results cannot be considered representative and cannot be extrapolated to other territories in the Amazon region. Nor can the findings obtained be applied to the Amazon regions of the three countries of the project. This approach focuses on the localized nature of the analysis and the specific characteristics of the selected communities.

Figure 11. One Amazon, Many Amazons Intervention Model



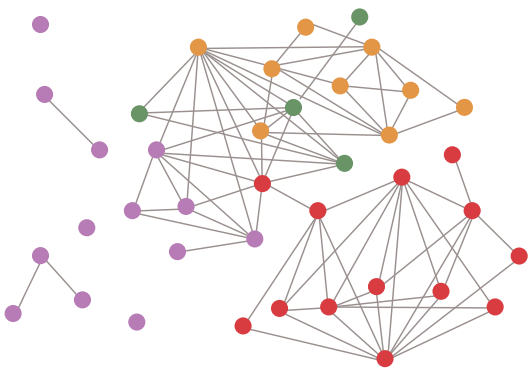
4.1 Collaborative relationships between organizations, academic researchers and Indigenous peoples linked to the project were strengthened and diversified

At the beginning of the project, many researchers, technicians and members of the partner organizations established contact with one another; however, collaboration was weak, and not everyone was equally connected. Once the project began, the coordination team, made up of researchers from the participating countries, began to meet weekly; organized discussion groups and collaborative workspaces by research theme; made visits to all the countries; organized exchanges in the territories; and held regional meetings. Indigenous co-researchers actively participated in the definition of intervention strategies, the production and discussion of knowledge and research results, and the orientation and implementation of training and advocacy processes.

The comparative analysis of the networks shows an increase in the density of collaborative relationships among project members, from 79 relationships before the start of the project to 233 in its last year. This indicates a significant capacity to strengthen pre-established connections and promote new relationships among academic, Indigenous, Afro-descendant and peasant technicians and researchers and their organizations.

Figure 12. Collaborative Network Prior to Project Implementation (2021) and Collaborative Network at Project Completion (2024)

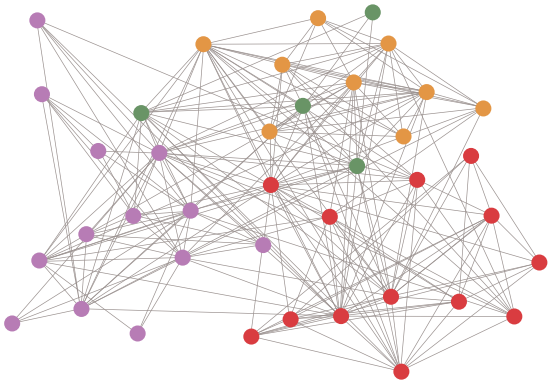
a Collaborative network before **One Amazon, Many Amazons**



Total: 79 connections

Average of **4.1 connections** throughout the network

b Current collaborative network, connections through **One Amazon, Many Amazons**



Total: 233 connections

Average of **11.9 connections** throughout the network

Country of Origin Brasil Colombia Ecuador Perú

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Text: Alain Santandreu
Photos, maps and figures: One Amazon, Many Amazons team
Graphic design and layout: Jorge Polar
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