ACTION AGAINST HUNGER

EL NIÑO PHENOMENON IN COLOMBIA

Perception of community impacts and coping strategies.

Monitoring series (ENP)
Summary Report II
September 2023 - January 2024

Action Against Hunger is an international humanitarian organization that fights the causes and effects of hunger. We ensure access to safe water, food, education and health care. Making it possible for boys, girls, women and men to free themselves from the threat of hunger.

Thanks to all the staff of Action Against Hunger working in the territories, as well as to all the people in the consulted communities; without them this report would not have been possible.

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Action Against Hunger -Colombia.

Study conducted under the direction and leadership of the Information and Knowledge Management Unit (UGI+C).
March 2024

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GLOSSARY

El Niño Phenomenon:
El Niño/Southern Oscillation (ENP or ENSO) is a natural phenomenon characterized by fluctuations in ocean temperatures in the central and eastern part of the equatorial Pacific, associated with changes in the atmosphere and which can manifest itself in heavy rains, floods and droughts. The intensity of the ENP is associated with the degree of warming and the area affected; in this case, it covers parts of Central and South America.

Heath stroke:
Heat stroke occurs when your body temperature rises rapidly and you cannot lower it. It can be life-threatening if it causes damage to the brain and other vital organs. It can be caused by strenuous activity in hot weather or being in a hot place for too long.

Jagüey:
Surface water reservoirs in areas with prolonged seasonal droughts.

Ranchería:
Refers to the Wayúu indigenous communities, located in the department of La Guajira, and relates to the spatial form in which they inhabit the territory in groups of houses inhabited by families belonging to the same maternal line.

ACRONYMS

ADD: Acute Diarrheic Diseases.
ARI: Acute Respiratory Infections.
ENP: El Niño Phenomenon.
GANE (for its spanish acronym): Non-State Armed Groups.
IDEAM (for its spanish acronym): Weather, Climate and Environmental study Institute.
INS (for its spanish acronym): National Health Institue.
INVIAS (for its spanish acronym): National Institute of Roads.
JAC (for its spanish acronym): Community Action Boards.
OCHA: United Nations Office for the Coordination of Humanitarian Affairs.
WFP: World Food Programme.
UNGRD (for its spanish acronym): National Unit for Disaster Risk Management.

PRESENTATION

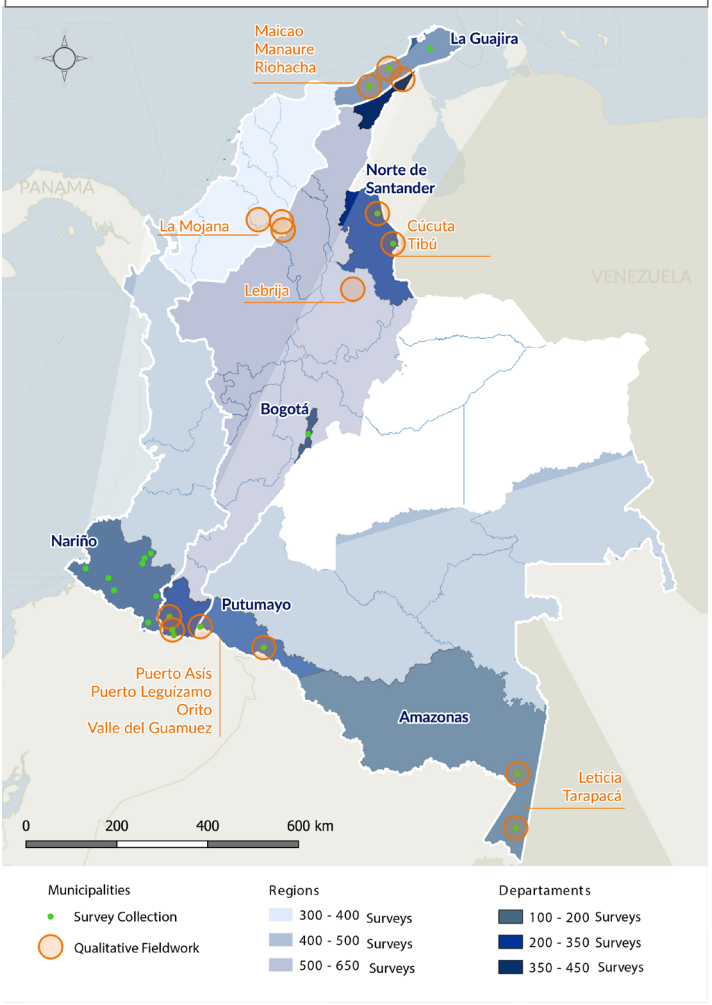
On November 4, 2023, the Colombian government officially declared the presence of the El Niño Phenomenon (ENP) in the country[1]. Projections for the year 2024, according to the Instituto de Hidrología, Meteorología y Estudios Ambientales (IDEAM) climate prediction model, expect a strong probability of occurrence of the ENP for the quarter between January and March 2024, with the most significant social, economic, and environmental impact for the country[2].

The national government's initial prioritization of the areas most affected by the ENP focused on 176 municipalities distributed in 23 departments. Within this general group, 33 towns were identified as being at high risk[3], 78 at moderate risk, 65 at low risk, and 804 at shallow risk . However, t**he recent evolution of the ENP has meant that the focus on the areas of the country impacted by ENP is extended. Historic temperature increases in some parts of the country have led to the declaration of a national fire emergency[4] and a water shortage alert for 190 municipalities[5].**

Through the study "El Niño Phenomenon in Colombia (2023-2024): Perception of impacts and coping strategies from the communities", **Action Against Hunger -Colombia aims to generate updated information from the people and territories affected and at risk that allows the identification of anticipation and response strategies [6].**

We observe that the ENP deepens and interacts with multiple structural problems in the territories in terms of access to essential services, risks due to armed conflict, and high levels of poverty, and this is a critical environment that exacerbates vulnerabilities in many of the territories.

Map. Sample study to El Phenomenon study
Elaborated by: Action Against Hunger, 2024.



[1] Ministry of Environment and Sustainable Development (2023). "National Government officially declares El Niño Phenomenon and alerts to continue preparing". November 4, 2023.
[2] IDEAM (2023). Report on short, medium and long term climate prediction in Colombia. Weather and Climate Modeling Group, Meteorology Subdirection – IDEAM. Ruiz, J.F. & Melo, J. Y., December, 2023.
[3] National Unit for Disaster Risk Management (2023). El Niño Phenomenon National Management Plan. Executive Report.
[4] National Unit for Disaster Risk Management (2024). Government of Change declares national disaster due to forest fires in Colombia
[5] El Espectador (2023). "El Niño Phenomenon: 190 municipalities on alert due to water shortage in Colombia" 31.01.2024.
[6] This study is the second delivery of the strategy for monitoring the development of the El Niño Phenomenon in Colombia by Action Against Hunger, refer to: Action Against Hunger (2023) El Niño Phenomenon: community perception surveys on vulnerabilities and possible effects. Report. Bogota. September 2023.

Giving communities a voice is crucial in anticipating and mitigating the impacts caused by this extreme climate phenomenon. We also consider it vital to work hand in hand with the coping strategies already being developed in the face of the crisis at the local level to build/support a response that integrates and strengthens them.

This report integrates fieldwork in 27 municipalities in 8 country departments, using mixed qualitative (interviews and workshops) and quantitative (surveys) methodologies focused on populations with high vulnerability[7].

The document integrates the analysis of the communities perceptions of the ENP in general knowledge, energy, water, food security, and health. Additionally, the study includes territorial cases that exemplify the impacts from the local level: Water (La Guajira), Energy (Putumayo), health (Norte de Santander), food security (Amazonas), and crisis in development (La Mojana)[8].

STUDY FINDINGS

1	Population
2	Territories
3	Access
4	Coping strategies an capabilities in the communities.
5	Impacts and strategies for coping on water.
6	Impacts and strategies for energy coping.
7	Impacts and strategies for coping with food security.
8	Impacts and strategies for health coping.

1. DIFFERENTIAL IMPACTS ON POPULATION

The population participating in the study already has a generalized perception of the ENP's impact on their homes and communities. As of the last quarter of 2023, 88.3% of the households surveyed observed unusual changes in the climate, such as high temperatures and lack of rainfall; 41.6% stated that variations in the environment had worsened their access to water; 66.4% said that changes in the climate, problems of access to water and lack of food were affecting the health of their households.

The information collected in the communities also reveals gaps in knowledge of the ENP, which are related to frequency factors, which naturalize the phenomenon and access to information about it. Among those surveyed, only 53.7% stated that they were aware of the ENP *(Figure 1)*. However, it can be observed that knowledge of the subject is related to factors such as the type of population, their livelihoods, the region they live in, and their exposure to climatic events in the past. An example of this is that knowledge of ENP in the Colombian population (58.7%) is higher than that of the Venezuelan population (47.3%) or the

[7] In terms of vulnerabilities, a prioritization was established based on geographic criteria, vulnerabilities in relation to the progress of the ENP and the presence of cross-cutting vulnerability factors such as the presence of armed conflict and the presence of high limitations in access to goods and services.
[8] In the case of the departmental level, the study includes qualitative and/or quantitative data from La Guajira, Putumayo, Amazonas, Sucre, Norte Santander, Bogota, Nariño and Santander.

Figure1. General Knowledge regarding the ENP - General.
Elaborated by: Action Against Hunger - Colombia, 2024

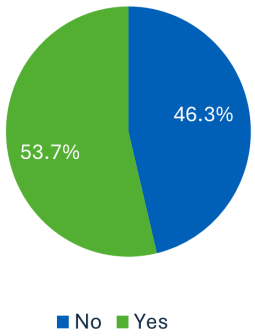
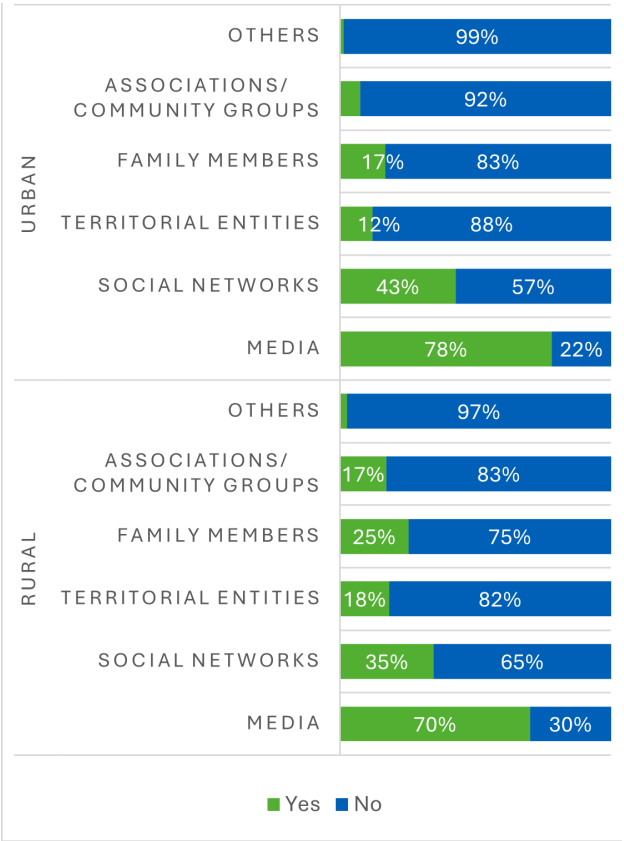


Figure2. Information channels regarding the ENP - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024



population with dual nationality (31.3%). Concerning specific knowledge of the ENP, it is worth noting the challenges involved in identifying this phenomenon in the face of the climate changes already occurring in the territories.

Another element is understanding the channels through which information about the ENP is mobilized. Among the communities surveyed, the media (77% of the total) and social networks (39.5%) are the primary information channels about this climate event. Thus, the media are a central element in identifying impacts that have already materialized and preparing anticipation and mitigation actions by the different actors. It is important to note that specific media consumption formats vary according to populations and territories, ranging from online news television to radio. The use of the media as the primary channel concerning the ENP has increased by about 25 percentage points compared to the last perception survey conducted by Action Against Hunger -Colombia in September 2023, which indicated 52% at the general level[9].

It is also important to note that in rural areas, interpersonal/community spaces (32.4% in rural areas) are much more relevant (Figure 2). This data is exciting given that knowledge about the ENP in these areas is disseminated in the communities through the existing community participation spaces: assemblies, Community Action Boards (JAC), territorial meetings in producers' cooperatives, community action boards, among others. This situation demonstrates the importance of differentiated strategies for disseminating information articulating populations and territories characteristics and capacities.

At the territorial level, **the population in rural areas presents much more marked impacts concerning the advance of the ENP,** which is related to factors such as their high economic dependence on activities such as agriculture (41.1% of the total rural population

[9] Action Against Hunger (2023). El Niño Phenomenon: community perception surveys on vulnerabilities and possible effects. Report. Bogota. September 2023.

consulted), which is the activity most affected by this climatic event, and the limitations in access to goods and services. Thus, the perception of the increase in temperature as the main recent change due to the ENP is more pronounced in rural areas (77.5%) since it affects their main economic activities and exacerbates structural difficulties than in urban areas (61.6%). Similarly, the perception of problems related to recent access to water is more common in rural areas (61.6%) than in urban areas (38.7%) *(Figure 3)*.

Within the population groups, the effects of the ENP significantly impacted ethnic groups. 80% of the ethnic households consulted indicated that changes in climate and access to water and food had affected their children's health in the last quarter of 2023. This is explained in the context of the structural vulnerabilities that many of these communities have regarding food security and access to water.

Other factors increase their sensitivity to the advances and impacts of climate change, like the high dependence on agriculture and fishing activities, their presence in dispersed rural areas that are mainly accessible through rivers and waterways, being one of the main reasons for the ENP's high level of sensibility.

Women are another population group significantly impacted by the ENP. The social construction of gender roles places them, in many contexts, as the main responsible for food and household care activities. Thus, many coping strategies for food consumption in the face of the crisis are assumed mainly by women, increasing the risks of insomnia, thirst, dehydration, permanent fatigue, and hunger. In addition, within the group of women in general, breastfeeding, and pregnant women have specific care requirements, and 72% of households with this population reported the deterioration of their health.

Figure3. Problems related to climate change (last 3 months) - Rural /Urban.
Elaborated by: Action Against Hunger - Colombia, 2024

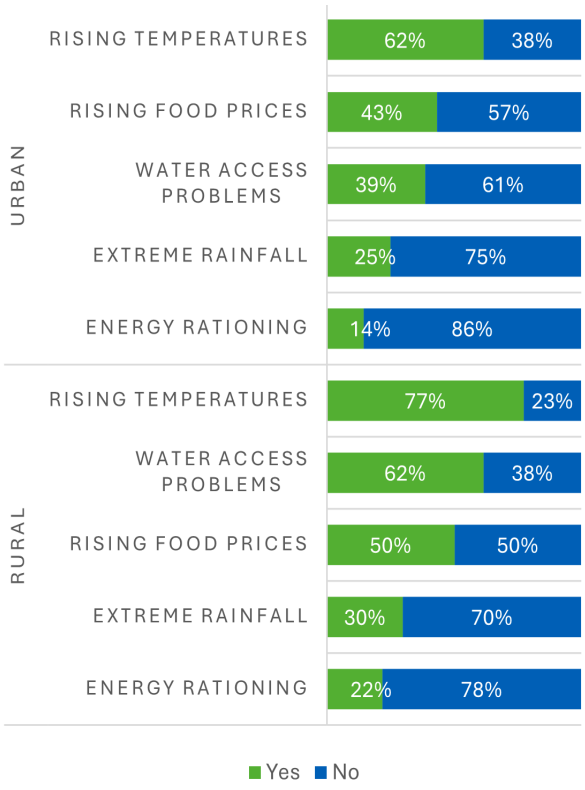
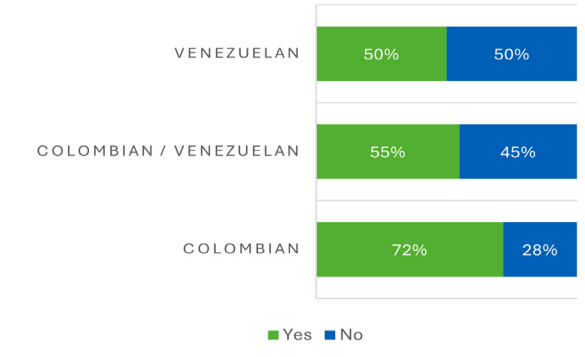


Figure4. Revenue reduction under the last quarter of 2023 - Nationality.
Elaborated by: Action Against Hunger - Colombia, 2024



Their health conditions are due to climate factors and their relationship with the availability and access to food and water.

The impact of the ENP on the migrant population is nuanced. On the one hand, the migrant population tends to be more heavily concentrated in urban areas (81% in this study), and their main economic base is trade and service activities. Some 49.9% of the migrant households surveyed indicated a perception of a decrease in income due to climate factors in the last quarter of 2023, a significant percentage as a group but 24 percentage points below the Colombian population.

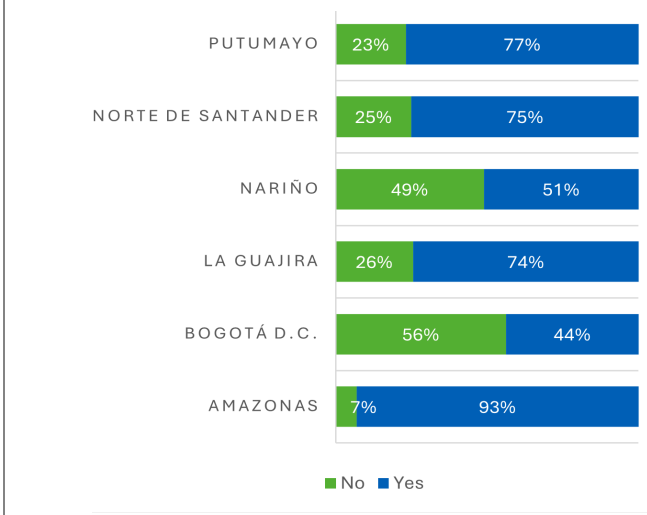
Finally, the ENP also impacts other populations with more significant protection needs, such as children and older people. This population group, which is especially sensitive to health factors, access to water, and food security, experiences changes in the quality and quantity of water for consumption and possible reductions in access to certain food groups due to prices or shortages. High temperatures generate conditions that increase their exposure to risks such as skin diseases, as well as risks related to chronic diseases such as hypertension, mainly in the elderly population.

2. TERRITORIAL IMPACTS

Although there are cross-cutting impacts due to this extreme climate phenomenon, knowledge, vulnerabilities, and impacts vary significantly between regions and departments. **Thus, the ENP must be understood from a territorial dimension with significant asymmetries between the different contexts in which the phenomenon develops.** These factors include differences in exposure, structural vulnerabilities, and socioeconomic characteristics.

At the exposure level, **the departments in this study present different types of physical characteristics that make them more prone to the climatic variability of the ENP.** Thus, factors such as the environment, altitude, and climate, among others, are central to the perception of the impact by the communities themselves. The perception of temperature increase is significantly high in households in the departments of Amazonas (93.2%) and Putumayo (76.8%), followed by Norte de Santander (75%), followed by La Guajira (74.5%) and Nariño (61.0%).

Figure5. Recent perceptions of temperature - Departments.
Elaborated by: Action Against Hunger - Colombia, 2024



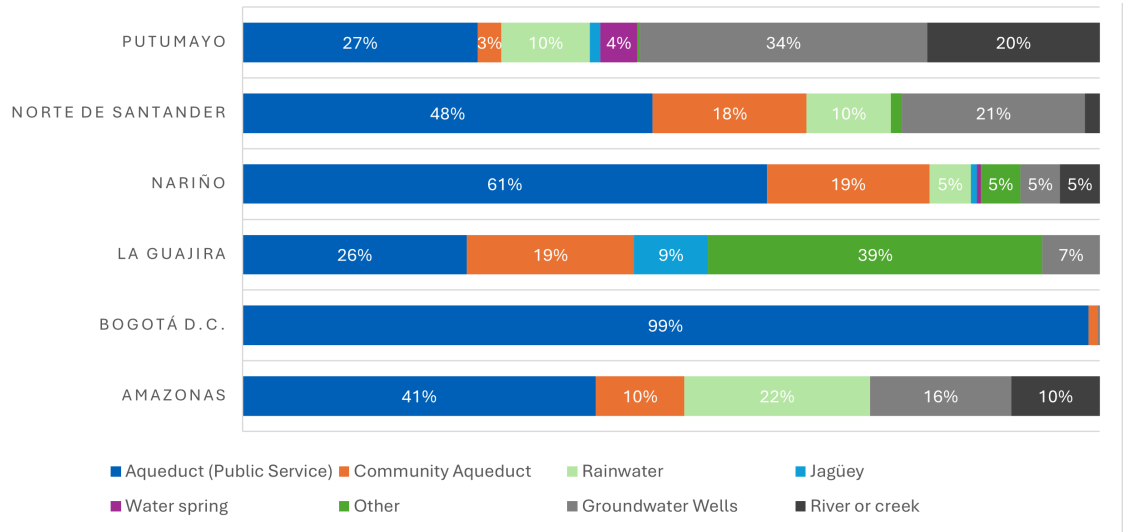
These perceptions can be explained by the fact that most of these households are located in jungle, coastal, or desert contexts, which are highly sensitive to changes due to high humidity and temperatures *(Figure 5)*.

On the other hand, Bogota D.C. (36.2%) has the lowest percentage of households that consider that they have experienced this type of problem, and where factors such as altitude and average temperature can attenuate the recent increase. These differences indicate that, although the increase in temperature is the most relevant temperature increase is the most relevant problem at a general level, perception varies considerably depending on the geographic area.

The ENP also exacerbates vulnerability factors such as environmental degradation of the territories. From the perception of the communities, deforestation processes reduce the thermal regulation capacity of the forests, which in the past controlled the general temperature of the environment for the population, crops, and animals. Likewise, the communities recognize mineral extraction (gold) and economies associated with illicit crops as elements that have reduced the quality and quantity of water available during drought.

Likewise, **the levels of vulnerability and impact of the ENP in the different territories vary significantly regarding population access to goods and services.** One example is the Amazonas department regarding water access, which is particularly critical and sensitive to changes due to the ENP. Sixty percent of households in Amazonas report having a shortage. Likewise, 48.5% of the households surveyed depend mainly on sources such as rainwater, wells, rivers, and springs, which represent unimproved water sources and are highly sensitive to climate variations. In addition, during the last months of 2023, 46% of the households identified that the quality of water for consumption has worsened *(Figure 6)*.

Figure6. Sources of access to water - Departments.
Elaborated by: Action Against Hunger - Colombia, 2024



Regarding access to energy, although 82.2% of households generally indicate public energy service as their primary source, in departments such as Putumayo or La Guajira, this coverage reaches only 50.9% and 64.3%, respectively. In contrast, for the remaining departments (Bogota D.C., Norte de Santander, and Nariño), the percentage of households with public energy as their source exceeds 90%.

In the case of Bogota, which registers less impact in the dimensions at a general level, its actual effects on account of the ENP will be via food security, mainly because of the availability and frequency of food and the increase in food prices. In the households consulted the perception of price increases in the last quarter of 2023 is 47.6%. In addition, regarding the current use of coping strategies in livelihoods for access to food, 70% of the households surveyed in Bogota have used these actions (use of savings, loans for food, and sale of household goods, among others).

Finally, when identifying the sources of income at the departmental level, there is a notable variation in the main economic activities in each region. In the case of Bogota, D.C., commerce represents the primary source of income for 43% of households. In Putumayo, agriculture occupies a prominent place, being the main economic activity for 44.8% of households. In La Guajira, handicrafts stand out, representing the main economic activity for 38.7% of households. These data highlight the economic diversity and the different predominant occupations in each region.

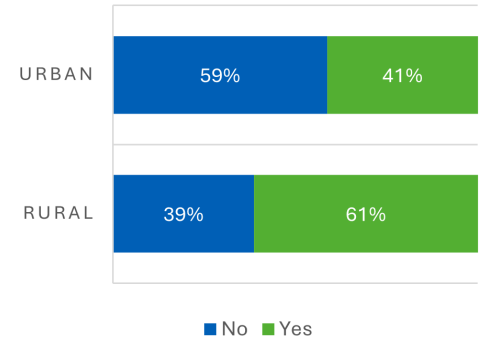
Within each territorial context and in the development of economic activities central to the population, the ENP directly impacts the production of inputs, transportation, marketing, and income. Likewise, the unpredictability of climatic changes means that, to a certain extent, the specific territorial knowledge that traditionally guided what to do in the different annual climatic transitions and on which vital activities such as sowing or harvesting depended is questioned.

3. IMPACTS ON TERRITORIAL ACCESS

Access is central to the analysis of the impact of the ENP. Obstacles to mobility are an element that affects not only the cost of goods (inputs, food, among others) but also the population's access to services such as health and education. These problems are also related to structural factors, such as the increase in fuel prices since the beginning of 2023.

In addition, in many contexts, some of these populations already suffer from mobility restrictions due to the dynamics of the armed conflict[10]. The humanitarian sector is already beginning to identify problems in accessing certain territories, especially river areas, due to the advance of the ENP, which adds to the limitations in access registered by these organizations during 2023.

Figure7. Perception of cost increases in transportation last quarter 2023 - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024



[10] Action Against Hunger (2023). Restrictions to mobility in the framework of the Colombian armed conflict and its impact on food security. Hunger and Conflict Series. Number 2. Bogota. 2023.
[11] In 2023, 128 events of restrictions on humanitarian access were recorded, limiting the delivery of aid for 16,500 people in emergency contexts. See: OCHA (2023). Report Trends and Humanitarian Impact in Colombia 2023. Report. November 2023.

In terms of land and river transport, 47.9% of the households surveyed reported increased transport prices due to climate factors in the last quarter of 2023. Households reporting greater affectation or impact due to increases in transportation costs are rural areas (61.3%) compared to urban households (41.2%) *(Figure 7)*.

Within the framework of the ENP, many populations that rely primarily on river transport may see their limited access capacity, which may generate all kinds of impacts on food security, water, health, and energy, among others. Variations in river flows and other water sources increase costs and travel times and reduce the carrying capacity of boats, which generates a general limitation in the availability of transportation for the population. In other cases, the reduction in water flow causes the complete closure of access for specific populations, as has already been identified in areas of the Amazon.

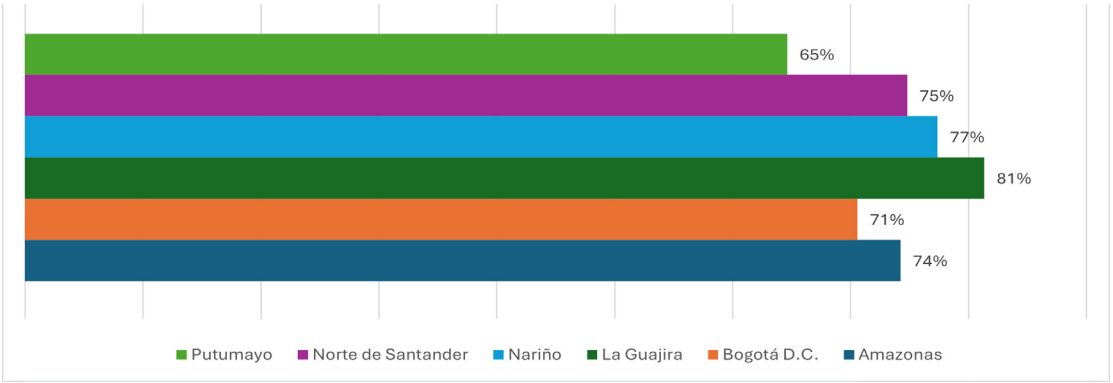
4. COPING STRATEGIES AND CAPACITIES IN COMMUNITIES

The multiple coping strategies communities use to cope with the ENP go beyond prioritizing food consumption and involve factors such as energy, water quality and quantity, and food prioritization, among others.

Identifying this type of action is central to a deeper understanding of communitie's capacities to face the crisis. It is essential to point out that not all coping strategies can be considered harmful since some involve resilience actions that strengthen the adaptive capacity in the face of the crisis.

At a general level, as part of these coping strategies, during the last quarter of 2023, 60% of the surveyed households reduced their water consumption, 59.2% reduced their energy consumption, and 72.4% implemented some coping strategy for access to food[12].

Figure8. Use of coping strategies in livelihoods by household - Departmental.
Elaborated by: Action Against Hunger - Colombia, 2024



[12] In the face of specific strategies see impacts and coping strategies on water.
[13] Action Against Hunger (2023). Humanitarian crisis derived from illicit crops. Hunger and Conflict Series. Number 3. Bogota. 2023

In other cases, as could be identified in the fieldwork conducted, **the recurrence of crises in specific communities has reduced the margin of maneuver to face a new event.** This is mainly in the context of communities affected by displacement or confinement events as part of the armed conflict or somewhere economic shocks, as in the case of the financial crisis of illicit crops, which have affected the livelihoods of communities in different rural production areas nationwide .

LA MOJANA CASE: FLOODING CRISIS PARALLEL TO THE ENP

Photo: Action Against Hunger / La Mojana

La Mojana is situated in northern Colombia, spanning the departments of Sucre and Bolívar, and stretches along the Cauca River basin and its network of rivers. Characterized by vast alluvial plains and the resulting infrastructure challenges, it features a mix of savannas, streams, swamps, and wetlands, making it prone to seasonal flooding

The arrival of the ENP in the region that makes up the municipalities of La Mojana (Sucre) is a highly complex factor. In the first place, according to local stakeholders, La Mojana is currently experiencing what is the worst crisis in its history due to the rupture of the Cara de Gato dam, which controlled water access from the Cauca River to this territory. This dam breach, which occurred in August 2021 and triggered a general flooding of the region's productive lands, still needs to be repaired, and as of January 2024, reconstruction work continues .

> **"There are no trees, so the temperature is going to make everything unlivable now with the El Niño phenomenon."**
>
> *Community - La Mojana*

The humanitarian impact of this crisis has been

[14] El Tiempo (2023). "The drama of the floods will come to an end in La Mojana with the closing of Cara de Gato". 23.11.2023
[15] OCHA (2023) COLOMBIA: Large scale flooding in La Mojana. Situation report SITREP No. 01. 25.09.2023

significant, with nearly 250,000 people and around 300,000 hectares affected. Six of the 11 municipalities in the La Mojana subregion had more than 50% of their population affected, including municipalities with between 97% and 100% affected 15. In addition to the human impact, the environmental impact has been considerable, generating losses in the region's fauna and flora due to flooding.

The ENP is an opportunity in the context of the dam closure since the decrease in flow could facilitate the project's development. However, although there is consensus on the need to close Care de Gato as an integral part of the solution to the crisis and the reactivation of the area, there are different positions around the problems that may arise, both with the presence of the ENP in the context of the solution to the floods, and with the eventual closure of the dam and the presence of the ENP in the context of recovery.

On the one hand, some stakeholders see flooding as a mitigating factor against the risk of drought associated with the ENP and consider this an opportunity to dry land after the dam closure. However, this vision contrasts with the concern of other stakeholders who point out that, even during the flooding, the ENP has been affecting the areas that are still available for agricultural activities and where the lack of rainfall and high temperatures harm rice and livestock crops, the main sectors of the affected economy in the area.
The scenarios after the closure of the dam, which coincide with the manifestation of the ENP, are also perceived as problematic, mainly due to the loss of vegetation and trees during the flood, which are central temperature regulators, much more necessary in the context of ENP.

In addition, the reactivation of production will take time and require not only the recovery of the infrastructure but also the recovery of the infrastructure. The project is not only about the loss due to flooding but also about recovering the soils, which are experiencing compaction after more than two years underwater.

The rapid transition from flooding to intense drought represents a high risk, especially when fisheries and rice crops are central to local livelihoods. The absence of these may intensify a humanitarian crisis already present in the region.

5. IMPACTS AND COPING STRATEGIES ON WATER

At the impact level, regarding access to water in the last quarter of 2023, 54.2% of households identified some change (38.9% identified reduced and 15.3% identified intermittency in access). Between urban and rural areas, differences in recent frequency of access to water were identified, with rural areas showing greater perceptions of reduced access (47.8% in rural areas vs. 34.1% in urban areas) and the urban regions identifying more significant intermittency (16.3% in urban areas vs. 13.5% in rural areas). This impact on access to water can be seen in the face of the concern already expressed in the first survey conducted in September 2023, where 84% of the households surveyed expressed concern that the arrival of an extreme weather phenomenon, such as the ENP, would reduce their access to water.

It is worth highlighting the different water access sources from which the communities derive their access, making them significantly sensitive to the ENP, especially in rural contexts. Of the rural households surveyed, 62.5% indicated that their primary access to water comes from wells or wellheads (21.0%), rivers, streams or springs (15.5%), rainwater (7.8%) and other sources (18.2%) *(Figure 9)*. However, the urban population, whose primary access is through aqueducts (76.4%), is not exempt from risk due to the fragility of the system and the lack of maintenance in specific contexts due to the increase in demand that may generate problems in the service *(Figure 9)*.

The impacts are not only on water quantity but also on water quality. In the last quarter of 2023, 43% of the households surveyed indicated that water quality had deteriorated. This deterioration in water quality is more marked in rural areas (46.6%) than in urban areas (38.9%). This deterioration is significant in the context of the ENP since the reduction in the volume of water in the sources causes the concentration of

Figure9. Sources of acces to drink water - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024

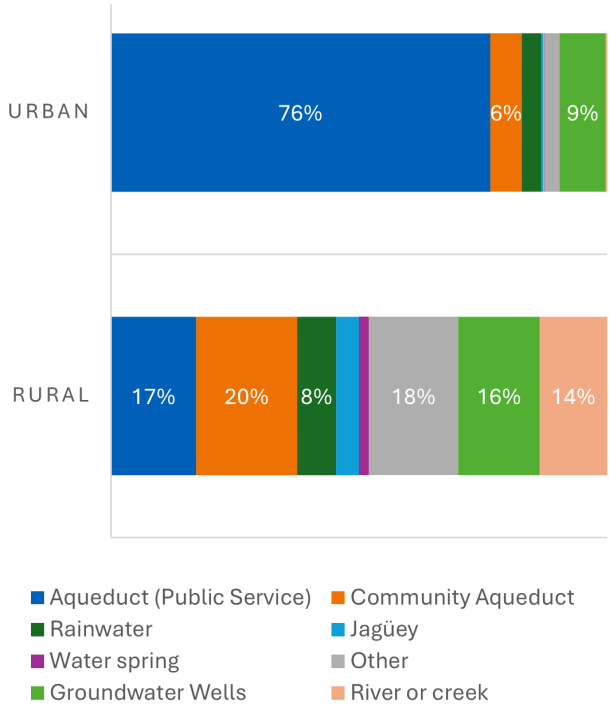
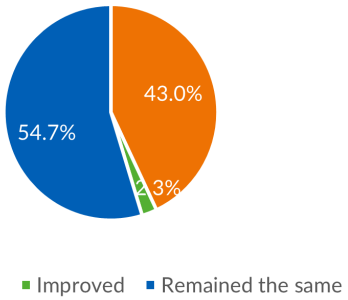


Figure10. Perception of water quality in the last quarter of 2023 - General.
Elaborated by: Action Against Hunger - Colombia, 2024



[16] Action Against Hunger (2023). El Niño Phenomenon: community perception surveys on vulnerabilities and possible effects. Report. Bogota. September 2023.

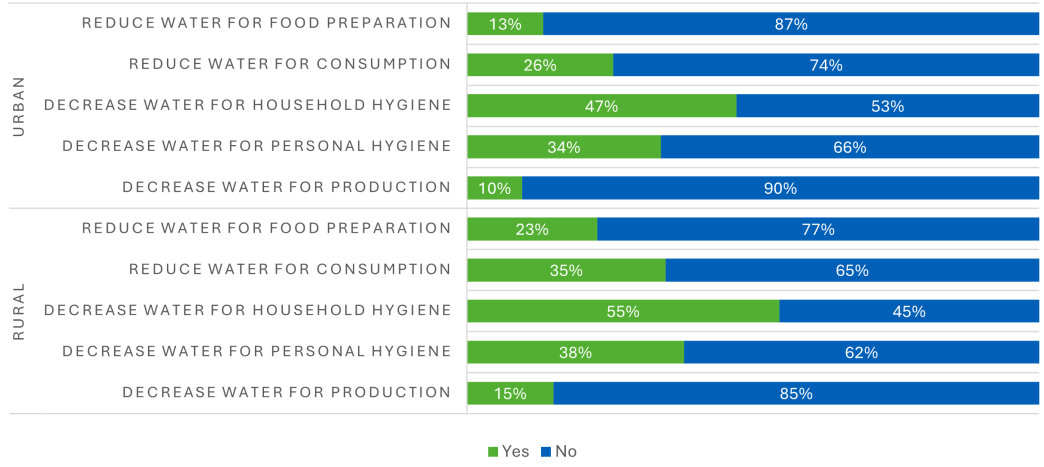
contaminants to increase, thereby increasing the risks for consumption. Contamination in water sources (heavy metals and chemicals) and the absence of access to structurally improved water is considerably high in many areas of the country, especially in rural areas, which is a cause for concern. This is more so when 58.7% of the households surveyed indicated that they do not treat their water before consumption.

Communities are already implementing diversified and coping strategies for water, prioritizing costs, quality, quantity, use, and water sources regarding access. Sixty percent of the households surveyed reduced their water consumption, and 59.9% identified an increase in the cost of water in the last quarter of 2023. Likewise, 36.4% of the surveyed households indicated the need to find a new primary source of water access in the previous quarter of 2023.

The most significant decrease in water use was in household cleaning activities, where 47.2% indicated a reduction in consumption, followed by personal hygiene (31.9%) and direct consumption (27.5%). Although saving water for household hygiene is a common component in urban (47.1%) and rural (54.6%) contexts, reducing water use in food preparation (22.8%) and food consumption (34.7%) is higher in rural areas. These processes of diversification in access to water sources and coping strategies in the face of crises are strongly linked to the contexts and interact with food and energy security in a prioritization made by each household *(Figure 11)*.

Some communities express deep concern about the recent absence of rainwater since, due to the very limitations of the contexts, rainwater is a free source prioritized for general human consumption and, on many occasions, for population groups such as children, pregnant women, and the elderly. The absence of rainfall forces households to resort to other sources of water of lower quality and, on many occasions, without treatment processes.

Figure11. Coping strategies in water use - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024



LA GUAJIRA CASE: DIVERSIFICATION AND COPING STRATEGIES TO ACCESS AND USE WATER DURING DROUGHTS

Foto: Action Against Hunger/ La Guajira

The department of La Guajira is one of the most vulnerable territories in Colombia in terms of access to water. According to official figures, aqueduct coverage is 47%, with a gap of 40 percentage points compared to the national average (88%). This disparity is replicated in access to sewerage services, which is 42%, 34% lower than the national average (76%). All this is related to factors such as the dispersion of the population in rural areas, high levels of poverty, institutional absence, and physical conditions that make La Guajira a territory sensitive to phenomena such as climate change.

When analysing the current impacts of the ENP in three (3) urban and rural communities located in the department of La Guajira, specifically in the municipalities of Riohacha and Maicao, the loss of rainwater storage due to the decrease in the rainy season is evident. The availability of a system of different water sources in the communities is essential to understanding the magnitude of their sensitivity and response capacity within the framework of the ENP. The interruption of any element in the water access chain, such as the absence of rainfall, affects the entire system that guarantees access to the resource for all households.

> **"Water is getting more expensive. Since this morning I have been waiting for water and neither the water truck nor the donkey has passed. I have not been able to wash, and the water carrier is starting to charge more (...) First the water carrier raises the price and then the truck".**
>
> *Community - La Guajira*

An example of the functioning of this system around water is how the absence of rainfall generates a greater demand for the water distributed by donkeys and water trucks, which causes an increase in prices and the loss of the quality of the available water, resorting to lower quality sources to meet the demand, sometimes with salty or poorly treated water.

Communities with access to multiple water sources have a greater capacity to respond to the ENP through diversification strategies subject to water purchase. On the other hand, dispersed rancherías are more vulnerable because they only have sources highly dependent on rainfall, making them more sensitive to precipitation shortages.

The particularities of each ranchería or settlement, such as its infrastructure, water storage capacity, presence of commerce, road accessibility, and water management practices, determine its capacity to adapt to climate variability. In this scenario, we find three (3) types of territories that establish differentiated responses:

- **Dispersed Rancherías: In the most dispersed areas, previous experien**ces of extreme droughts have led to the adoption of community strategies that rely on family ties between clans to respond to limitations in access to water in crisis contexts. An example of this is the practice of resorting to nearby ranches for the use of relative's jagüeyes (jagüeyes are small artificial ponds or lagoons used to store water, especially in rural areas, for various uses such as human, animal, and agricultural consumption). The exclusive dependence on the jagüeyes for human consumption, animal, and domestic uses increases the risk not only for human consumption but also the pressure on them that can lead to water shortages since it is a source fed only by the annual bimodal period of precipitation

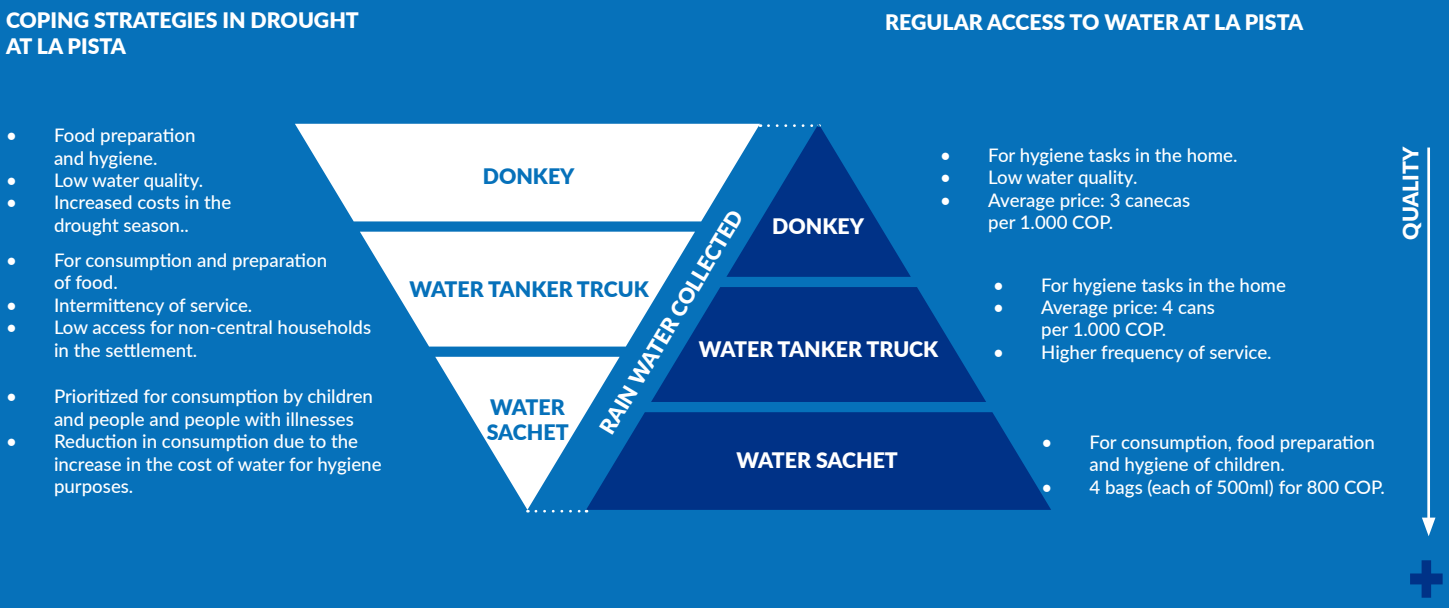
- **More densely populated rancherías:** In more densely populated rancherías, due to the rapid depletion of rainwater stored by households in less than a week, strategies for the care of community sources are prioritized. The jagüeyes are differentiated according to their use: one for human and animal consumption (water considered safe even though it is not treated) and the other for hygiene and domestic use. However, the ENP reduced water collection in community tanks (on average 15,000 Lt). In both cases, wells are a source that is present but unavailable, either because they are located in other communities, which makes access difficult, or because they are fragile infrastructures that depend on energy and third parties for maintenance and repair.

  In this scenario of the advance of the ENP, one of its greatest fears is the depletion of the jagüey for human consumption. Other sources, such as water tankers and water in bags and wells, can help mitigate water shortages. Still, they entail additional unavailable costs or deterioration in water quality.

- **Urban settlements:** The neighborhood of La Pista (municipality of Maicao) is inhabited by approximately Ten thousand people, primarily migrants of Venezuelan or binational origin. The drought in this area is dealt with through an intricate network or water market configuring a system involving various actors. In consensus among the inhabitants consulted, water is the central basis for them to remain in this area. Among the multiple sources of access to the resource is bottled water or water sachets purchased in stores; water from tanker trucks, which is sporadic depending on the possibility of supplying wells and access conditions; and the use of donkeys to carry and distribute water tanks among the alleys of the settlement.

The ENP accelerated the adoption of strategies to address water stress and the water access crisis in these urban settlements. Under normal conditions, a family of 4 people can use an average of Eight tanks of water per day from a water tank for household cleaning and the bags of water needed for consumption. However, due to the drought and the recent increase in the price of water, households have opted to reduce their water purchases by half (four tanks), increasing consumption from unsafe sources and prioritizing bottled water for children and sick people inside the home.

Water coping strategy - Urban settlements.
Elaboration: Action Against Hunger, 2024



6. IMPACTS AND COPING STRATEGIES ON ENERGY

Among the households surveyed, public utilities continue to be the primary source of energy available to them (82.2% of the total), and to a lesser extent, solar panels (3.8%) and electric plants or other (2.1%). Of the households consulted, 11.9% indicated no energy sources. However, **there are significant differences between urban and rural areas regarding energy access. Among households in rural areas, access to public energy only represents 65.0%, with 23.0% having no energy source.** On the other hand, in urban areas, 93.2% of the households surveyed have access to public energy, and only 4.9% have no source (*Figure 12*).

The ENP generates more significant pressure on an energy system with limited availability and access for vulnerable populations. The increase in temperatures creates pressure on the different energy sources, as it implies higher consumption, for example, for ventilation or refrigeration of food at home. Service availability is often intermittent, and the ENP may even increase power outages or rationing events.

Likewise, the analysis of energy access must also incorporate aspects such as the availability and access to fuels (gasoline and diesel), which, in specific rural contexts, are the backbone of the energy supply and a central input for transportation. The increase in fuel costs due to river travel reduces the availability of fuels to meet other local needs related to energy generation. It should be noted that, in rural contexts, access to public energy only represents 67.6%, while 19% indicated that they had no energy sources.

Figure12. Main source of energy access - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024

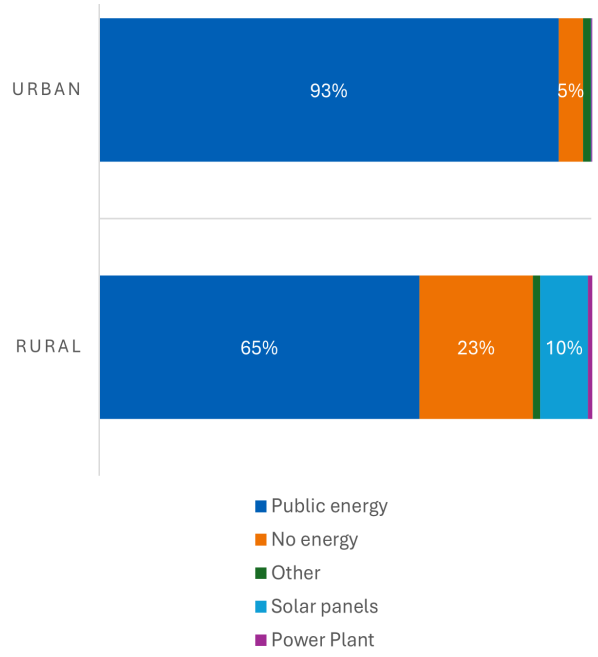


Figure13. Perception of increases in energy prices - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024

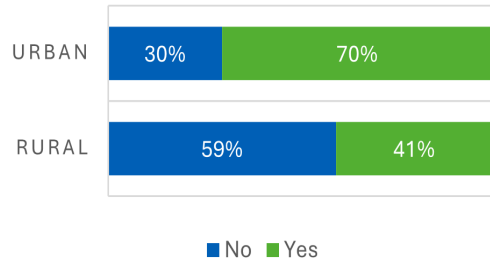
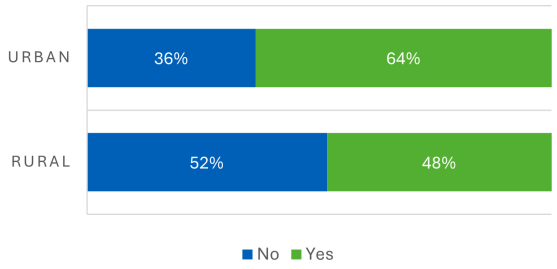


Figure14. Reduction in the use of lighting and household appliances in the las quarter of 2023.
Elaborated by: Action Against Hunger - Colombia, 2024



Within the framework of the ENP, any impact on energy supply will directly impact the different sectors, whether it is an increase in fuels, gas, or electricity. Concerning water, energy plays a central role in access and distribution; any change in energy prices or availability will compromise communitie's access to water.

Regarding **food security**, energy intervenes in food transportation, storage, and transformation, as it is a fundamental part of food commercialization, preparation, and use. In terms of health, energy provides decent conditions for living in specific spaces in the home; essential elements such as ventilation and refrigeration are necessary to guarantee people's well-being and create a healthy environment.
It also allows the development of health services within the framework of the operation of medical spaces under the conditions required for the care and treatment of patients.

An essential part of implementing these coping strategies stems from recent increases in energy prices. 58.9% of the households surveyed indicated a rise in energy prices in the last quarter of 2023. This perception of rising costs is more intense in urban areas (73.5%) than in rural areas (26.9%) *(Figure 13)*.

Communities are already implementing coping strategies to access energy. 59.2% of the respondents indicated that they have implemented a coping strategy during the last few months, such as reducing the use of household appliances or light at home due to the cost of energy. This situation is more recurrent in urban areas, where 63.3% reported having used it recently, as opposed to 50.2% of respondents in rural areas. This strategy can impact factors such as the health and well-being of households, primarily by limiting ventilation or food refrigeration *(Figure 14)*.

PUTUMAYO CASE: FLUVIAL TRANSPORT, FLOW REDUCTION AND ENERGY

Foto: Action Against Hunger/ Putumayo

River transportation is a central factor for the communities located downstream of the Putumayo and Caquetá Rivers, belonging to municipalities in Putumayo, Caquetá, and Amazonas. Given the almost total absence of land roads in this area, river transport conditioned access to goods and services, on which nearly 450,000 people in the Amazon region depend . It should be noted that vulnerability conditions increase considerably in dispersed rural populations with river access, where aggravating factors such as multidimensional poverty, absence of the state, and presence of armed conflict, among others, are concentrated.

This type of river transport has multiple problems associated with the costs involved (much higher than land transport) and the climate-related obstacles, such as droughts or floods. It also must face the barriers arising from territorial security situations due to the armed conflict, such as restrictions on mobility caused by Non-State Armed Groups (NSAGs) in these river corridors .

As previously mentioned, the intensification of drought seasons and the increase in temperature are part of the effects of the ENP in Colombia, which considerably reduces the flow of rivers, which are vital

[17] INVIAS (2021). Colombia Fluvial Program. Presentation. Bogota.
[18] Action Against Hunger (2023). Restrictions to mobility in the framework of the Colombian armed conflict and its impact on food security. Hunger and Conflict Series. Number 2. Bogota. 2023.

for river transport. In addition, once the ENP is present in these Amazonian areas, it generates an imbalance in the seasonal calendars, which implies the reduction or delay of a series of floods in river flow, known as *"Conejeras"* which usually occur in June and July. All these factors result in a prolonged and more intense dry season than in previous years.

In the case of river transportation within the framework of the ENP, the river's flow decreases due to the prolonged and extreme dry season, which makes it difficult to travel since a lower river level increases the chances that vessels of different types will collide with debris on the bottom (mainly logs). For this reason, river travelers must take a much longer route, as they need to avoid areas with lower river levels and minimize the risk of an accident or running aground. Longer travel time due to low flow rate increases gasoline consumption in the boats. Likewise, it is necessary to reduce the weight being transported, reducing the number of passengers and cargo the vessels may carry.

High transportation costs and stranding risks cause delays in the supply of inputs to communities. This can result in losses for traders and contribute to price increases or shortages of products transported by river. These products include basic foodstuffs, hygiene items, agricultural inputs, and the fuel (gasoline, ACPM) used for various productive and welfare activities. The ACPM is a central fuel used in power plants and motor pumps for extracting and mobilizing water from aqueducts, wells, and water sources.

"The El Niño Phenomenon is the trigger for everything, for passenger transportation... for everything. If the river were navigable it would be excellent, but if the river dries up it takes time for fuel and cargo to arrive. Accidents can occur, engines are damaged, everything happens".

Transport driver- Putumayo

The drought associated with the ENP has reduced the flow of the Putumayo River, which is observed in the appearance of "beaches" on the banks or points of lesser depth, directly affecting the navigability of boats.

In the upper image the flow of the river in December 2022 at the beginning of the seasonal drought, in the lower image the river in 2023 at the same time in purple the loss of flow and increase of meanders along the route.

DICIEMBRE 2022-LANDSAT 9
Image courtesy of the U.S. Geological survey

DICIEMBRE 2023-LANDSAT 9
Image courtesy of the U.S. Geological survey

7. IMPACTS AND COPING STRATEGIES ON FOOD SECURITY

Within the framework of the current development of the ENP, factors such as the increase in temperatures, delays or loss of weeks or months of rain and variations in winds have had an impact on planting possibilities, crop productivity and access to certain foodstuffs.

It is essential to mention how these crops fulfill, in many cases, a dual purpose such as self-consumption and commercialization. Among these critical factors at the productive level is the absence of precipitation for crops and animals, where 48.2% of those surveyed, linked to agricultural activities, indicate a decrease during the last quarter of 2023 *(Figure 15)*. From the communities' perception, drought generates an environment conducive to the appearance of certain pests and diseases that affect crops and animals, with rainfall being the controlling/regulating entity that favors the reduction of these affectations and optimizes practices such as fertilization and phytosanitary controls.

Regarding the impact that the ENP has had on the income of communities, 63.9% of the households surveyed stated that their income was affected in the last quarter of 2023 due to changes in the weather. It is important to highlight that this problem is even more accentuated in rural areas, where 75.8% of households state that their income has been affected in the last 3 months, due to their involvement in the agricultural sector, compared to urban areas, where 56.2% of households confirm that they have been affected during the same period *(Figure 16)*. This perception of the impact on income is close to the first measurement in September, where 68% of the population group consulted mentioned that a weather event such as the ENP could generate a reduction in their income.

Figure15. Water availability for agricultural productive activities in the last quarter of 2023.
Elaborated by: Action Against Hunger - Colombia, 2024

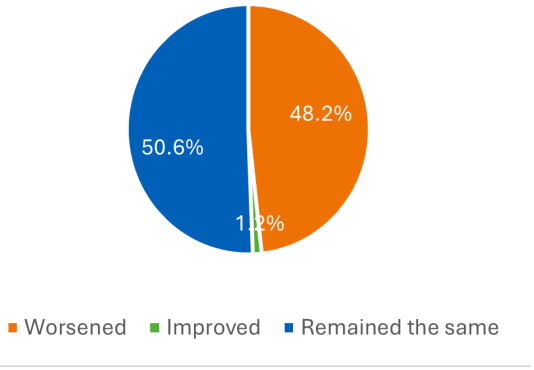


Figure16. Perception of revenue decline in the last quarter of 2023.
Elaborated by: Action Against Hunger - Colombia, 2024

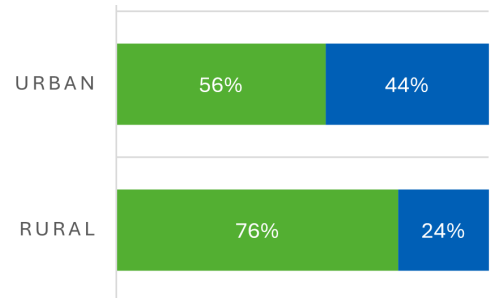
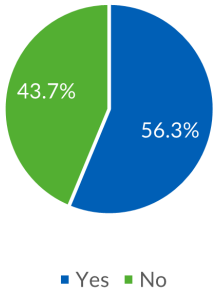


Figure17. Perception of food shortages in the last quarter of 2023 - General.
Elaborated by: Action Against Hunger - Colombia, 2024



This situation has led to a **reduction in the variety of foods available, especially those not produced locally in the surveyed areas, such as rice, sugar, salt and oils, which depend on intermunicipal and departmental transportation to reach the markets.** In the last quarter of 2023, 56.3% of those surveyed indicated that they identified shortages in some type of food, with the main ones that have decreased in availability being animal protein (62.2%), vegetables (51.6%), fruits (40.0%) and dairy products (36.4%) (*Table 1).*

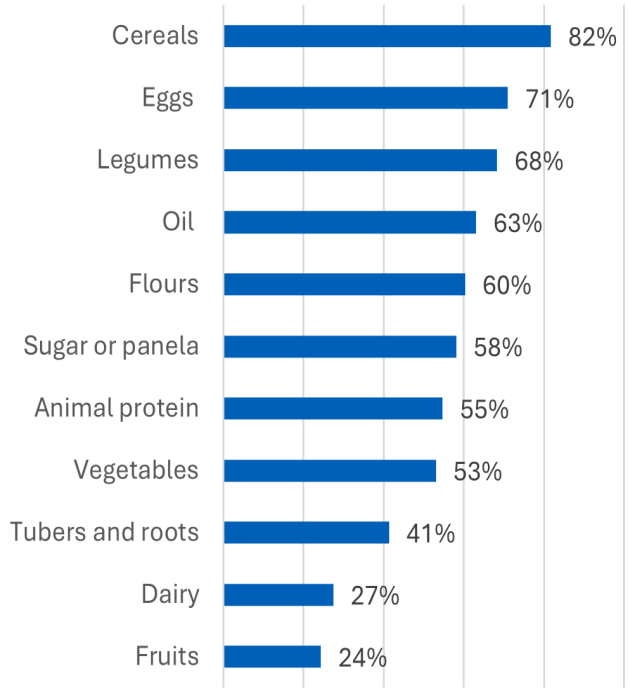
On the other hand, the foods that have experienced the least shortages, according to the perception of the communities, are oil (16.7%), panela or sugar (15.8%) and flour (14.5%). A significant percentage of households recognize the existence of shortages of certain foods, this situation is more pronounced in rural areas (63.5%) than in urban areas (49.3%).

Table 1. Percentage of households identifying shortages in each food group - Departments
Prepared by: Action Against Hunger Colombia, 2024.

Food Groups	Departamento						Total
	Amazonas	Bogota D.C.	La Guajira	Nariño	Norte de Santander	Putumayo	
Proteína animal	76.3%	58.9%	68.1%	55.6%	61.8%	58.3%	62.2%
Vegetables	81.6%	28.6%	64.9%	33.8%	63.4%	53.8%	51.6%
Fruits	21.1%	31.%	57.2%	17.8%	61.8%	42.3%	40%
Dairy and dairy products	31.6%	20.8%	55.8%	16.%	44.7%	42.9%	36.4%
Eggs	57.9%	10.7%	42.8%	35.6%	30.1%	12.2%	31%
Legumes	25%	5.4%	34.%	31.6%	35.8%	26.3%	27.2%
Cereals	46.1%	8.3%	33.%	18.2%	34.1%	31.4%	26.6%
Tubers and roots	26.3%	3%	21.8%	28%	29.3%	19.9%	21%
Olis	21.1%	4.2%	26%	12.4%	24.4%	10.9%	16.7%
Sugar or Panela	27.6%	3.6%	20%	5.8%	24.4%	23.1%	15.8%
Flours	17.1%	7.1%	26.3%	4.9%	26%	4.5%	14.5%

These findings are in line with those found in the first ENP survey in September, where, among the population consulted, the community's perception of the foods most likely to become scarce were vegetables (24%), animal protein (15%) and fruit (15%)19. The analysis that can be made of the increase in the price of foods such as animal protein may be related to factors such as the reduction of pastures and basic feedstuffs such as corn, sorghum and rice, which are sensitive to the decrease in water, especially during the rainy season. Likewise, in the case of vegetables and fruits, the reduction of water causes problems in flowering and fruit set and leaf generation, affecting quality and price.

Figure18. Food consumption by household - General.
Elaborated by: Action Against Hunger - Colombia, 2024



With regard to the population's diet and the possible scenario of shortages under the ENP, it should be noted that, structurally, there is already a considerable limitation in the dietary diversity of the communities. Sixty-four percent of the households surveyed are at low (36.2%) and medium (27.8%) levels in terms of the dietary diversity they consume. This population is already in a risk scenario, especially with regard to the advance of ENP, where availability and access factors may limit the diet in households even more.

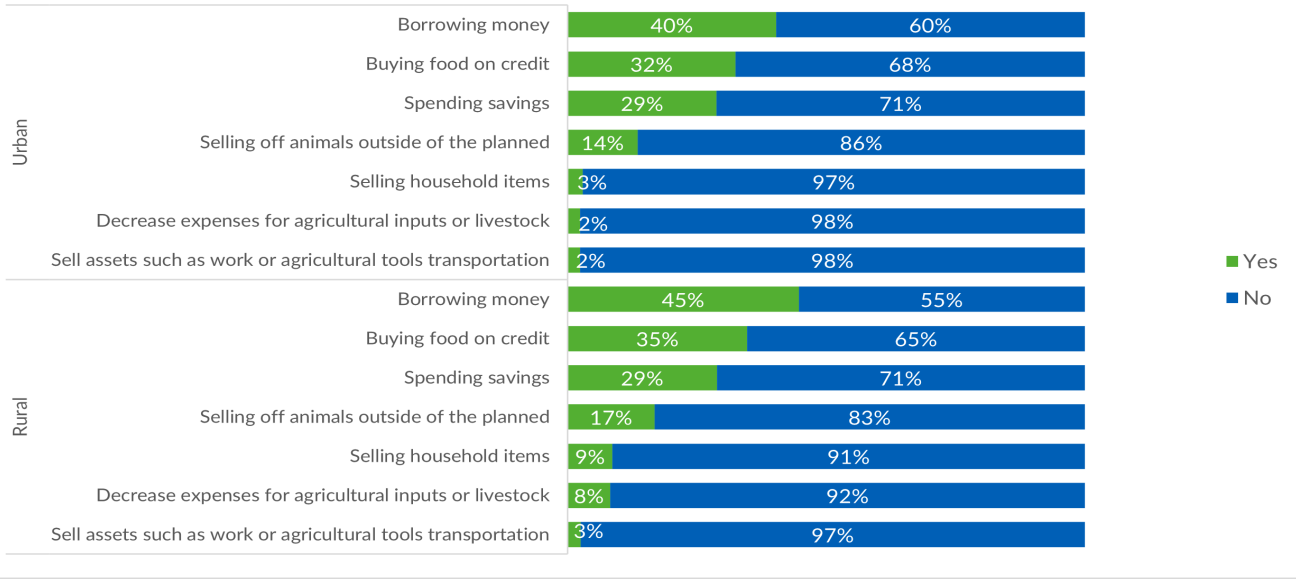
In addition, cereals were identified as the foods most consumed daily by most households (81.7%), followed by eggs (71.0%), legumes (68.3%), oil (63.1%) and sugar or panela (59.0%). Among the cereal food group, the consumption of rice and maize stands out, both crops that are highly sensitive to drought, and which may limit their availability for consumption in view of the conditions that will arise in the coming months due to the intensification of the effects of the ENP (*Figure 18*).

Although the perception of recent food shortages is significant, the group of foods such as cereals, eggs and legumes do not appear among the top positions of recent shortages on behalf of the ENP. However, among the foods that have reduced their availability are important nutritional sources such as animal protein (60%), vegetables (49.5%), fruits (37.7%) and dairy products (34.1%).

In the case of fishing, the main source of protein for a significant number of communities, it has been identified that the reduction of water sources and low water circulation, which affects oxygenation, can lead to fish mortality. From the communities' perception, this situation has also implied the reduction of fish growth times, which means that they do not reach their average size for sale or consumption within the stipulated time, as observed in some types of fish such as cachama, tilapia or catfish. In addition, there is a reduction in the amount of concentrated feed available on the market for the different growth stages of fish.

[19] Action Against Hunger (2023). El Niño Phenomenon: community perception surveys on vulnerabilities and possible effects. Report. Bogota. September 2023.

Figure19. Livelihood coping strategies - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024



Currently, the most common strategy employed by households is to turn to the possible deterioration of their livelihoods that could guarantee them daily access to food, such as borrowing (38%), followed by the use of savings (34.0%), acquiring food on credit or credit (28.2%) and selling household items (10.5%).

In contrast, less frequent coping strategies included selling animals outside of what was planned or usual (9.8%), reducing expenditures on agricultural inputs or livestock (4.5%), and selling assets such as agricultural work tools or means of transportation (1.8%). Among the coping strategies being resorted to by communities, it is relevant to highlight that 75.2% of households implemented at least one of these strategies in response to economic challenges derived from food costs or shortages. Compared to urban and rural contexts, rural contexts have implemented this type of strategy with greater intensity (81%) compared to urban contexts (19%) (*Figure 19*).

Of particular importance within these coping strategies is the relationship between prioritizing not only food, but also the for direct access to water or energy. The increase in energy costs makes them prioritize foods that do not require a long cooking time, as well as those that do not require refrigeration. These factors significantly reduce the dietary diversity of the communities, beyond the food prices themselves, starting from the investment involved in their maintenance and transformation.

Similarly, the increase in water consumption requirements due to high temperatures means that in many cases families prioritize the purchase of water, especially for people such as children and the elderly, to the detriment of other types of food for specific members of the family (adults, women).

AMAZONAS CASE: FOOD SECURITY IN INDIGENOUS COMMUNITIES THROUGHOUT THE ENP


Foto: Action Against Hunger/ Amazonas

In the case of the indigenous communities of the Kokama, Boras, Tikunas, and Muinanes peoples in Tarapacá (Amazon), the ENP, together with the effects of environmental degradation activities in the Amazon, have led to an imbalance in the usual ecological periodicities that the communities have been documenting in recent years in local calendars and Life Plans.

From the perception of the communities, it is difficult to differentiate the effects of the ENP from the general environmental crisis that the region is experiencing. However, the general perception is that the drought phenomenon experienced since 2023 has been particularly atypical. Thus, throughout the recent months, bioindicators similar to those of the summer have been maintained, such as water stagnation, which does not correspond to the beginning of some rains that were expected for November.

Changes in rainfall put at risk places that are sacred to indigenous cosmogony and wellbeing. An example of this is the drought of the so-called salados, which are clayey zones where minerals are concentrated around the river basins, which are attended by mammals, are important for subsistence hunting, but also because

they are part of the indigenous cosmogony. In addition to this, the drought has worsened the quality of the main water sources such as springs and streams. As a result, there is a decrease in the size and quantity of fish, as well as their stagnation in the rivers.

In addition, the high temperatures associated with the ENP have caused losses in the production of plants and foodstuffs such as peppers, chili peppers, cilantro and grapes, which were destined for sale. The loss of this income from the exchange of surpluses from the chagras prevents access to other food groups such as sugar, panela, flour, or Grains purchased in urban areas. In addition, there is a shortage of processed foods in the municipalities due to changes in the levels of the Putumayo River and difficulties in river transportation.

From the communities' perception, it is expected that the greatest impacts will occur in the first months of 2024, during the rotation of chagras for crops that require higher yields. The families make a minga in December and collect the chagra baja (on the banks of the river). Added to this is the uncertainty of the traditional knowledge holders in the face of the disruption of the cycles to adopt mitigation measures, together with vulnerabilities associated with the factors associated with the increase of the armed conflict in the area, which implies a higher level of sensitivity and risk in the face of the advance of the ENP in this territory of the Amazon.

> **"We have never experienced a drought like this before. It is normal that there are times when the big boats do not pass the river, but now there is a shortage of products in the urban area. It should have rained in December, but it didn't".**
>
> *Indigenous community - Amazonas*

8. IMPACTS AND COPING STRATEGIES ON HEALTH

Recent climate changes are already having an impact on household health. 66.4% of those surveyed stated that climate changes, access to water and food have affected household health, in contrast to 33.6% who consider that they do not notice an effect. This perception of health impacts is higher in rural areas (79.1%) than in urban areas (60.9%).

From the perception of the communities, the main disease associated with these climate changes refers to respiratory diseases (61.1%), followed by gastrointestinal diseases (40.2%). In rural areas, the perception of the effects of these climate changes is higher in respiratory diseases (65.7% compared to 58.2% in urban areas), gastrointestinal diseases (50.7% compared to 33.5% in urban areas), and arterial hypertension (13.4% compared to 16.1% in urban areas). In addition, the communities also identified skin conditions, such as dermatitis and rashes, which are intensified by the high temperatures.

Historically in the development of ENP in Colombia, the increase in dengue cases is significant. By the end of 2023, 228 municipalities in Colombia were on red alert for dengue, registering an increase of 96.4% of cases, from 67,116 cases in 2022 to 131,874 cases in 2023. Among the households consulted, 69% experienced an increase in the presence of mosquitoes in their environment. This perception is higher in rural areas (80.8%) than in urban areas (61.3%). In addition, 38.9% of households have identified or suspected cases of Zika, chikungunya, dengue, or malaria in the last 3 months. In urban settings, this percentage is 33.6%, while in rural areas it increases to 41.8% *(Figure 21)*.

Figure20. Perception of health impacts due to recent climate variations - General.
Elaborated by: Action Against Hunger - Colombia, 2024

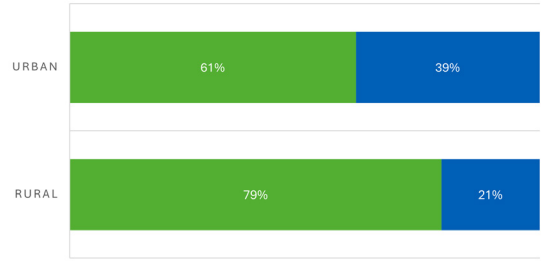


Figure21. Perception of suspected cases of dengue or Zika in the community - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024

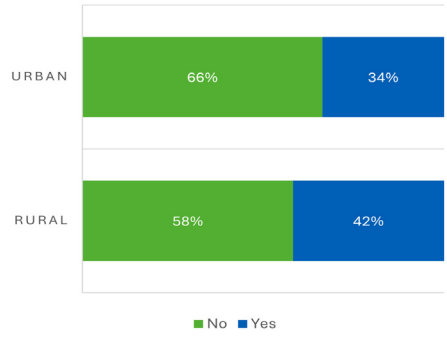
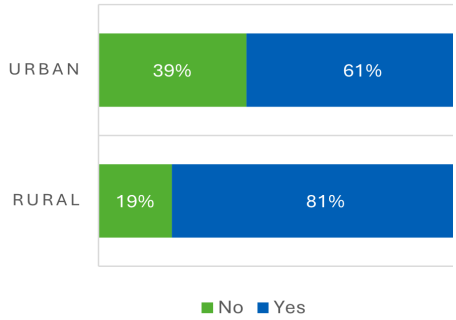
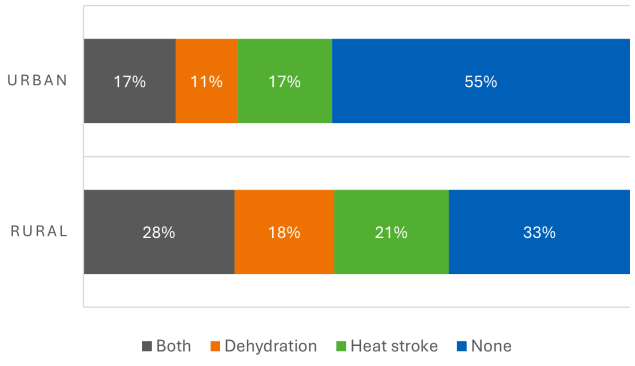


Figure22. Perception of the increase of mosquitoes in the last quarter of 2023 - Urban/Rural.
Elaborated by: Action Against Hunger - Colombia, 2024



[20] Health Cluster Colombia (2023). Overview of the 2023 El Niño climate pattern and its main effects on health. Methodological note. Report. Bogota. 2023

Figure23. Health impacts related to the ENP - General.
Elaborated by: Action Against Hunger - Colombia, 2024



The need for water storage, due to a general context of water shortage that, without proper care, can become a source of vectors that increase not only diseases such as dengue fever but also Zika, chikungunya, or malaria, is a risk factor to be addressed, considering education and awareness campaigns.

High temperatures have a direct impact on the health of communities. Prolonged exposure to high temperatures in the context of displacement or physical labor are factors that in many cases are unavoidable for the population, both for their livelihoods (agriculture or informal trade), as well as for access to resources (crops or water collection). To this must be added the considerable limitations in access to quantity and quality of water for consumption faced by communities due to factors such as availability of sources or costs.

Thus, 51.9% of the surveyed households indicated that some member of their household presented some type of dehydration or heat stroke event in the last quarter of 2023. The presence of this type of event is much more pronounced in rural contexts (66.8% of households have experienced these events) compared to urban contexts (48.5% of households) *(Figure 23)*.

The impact of the ENP on mental health is another of the impacts to be made visible. In many contexts, the housing conditions of many families do not have conditions that allow ventilation, or due to increases in energy prices, they must avoid using it. In addition, the use of materials that increase the heat inside the houses, such as plastics, cans or tiles, as well as the access and availability of water, deteriorate living conditions in general. All these heat factors make housing and living conditions more complex, generating stress, permanent exhaustion and inability to have a restful rest, and are the basis of family and community conflicts.

In this context, of particular concern is the crossover between the current and future impacts on health in the context of the ENP and access to critical areas, due to factors such as the decrease in water flow in river access areas. The reduction in access affects the emergency health care provided by the ENP, but also the possibility of attending to emergencies in the communities themselves, such as care for children, pregnant women and the elderly.

CATATUMBO CASE: HEALTH PROBLEMS ASSOCIATED WITH ENP

Foto: Action Against Hunger/ Catatumbo

The Catatumbo zone is located in the department of Norte de Santander between the Eastern Cordillera of Colombia and Maracaibo in Venezuela, making it a transborder region. It comprises 11 municipalities, including Tibú and is home to indigenous communities, as well as migrant communities.

The informal settlements in the urban area of Tibú experience multiple structural vulnerabilities in health that, in the context of the ENP, increase significantly. In these sectors, which are inhabited by about 12 thousand families, mainly migrants, there are different problems related to the absence of aqueduct, public transportation, energy, sewage and decent housing: in addition to major limitations in obtaining income for a large number of the population.

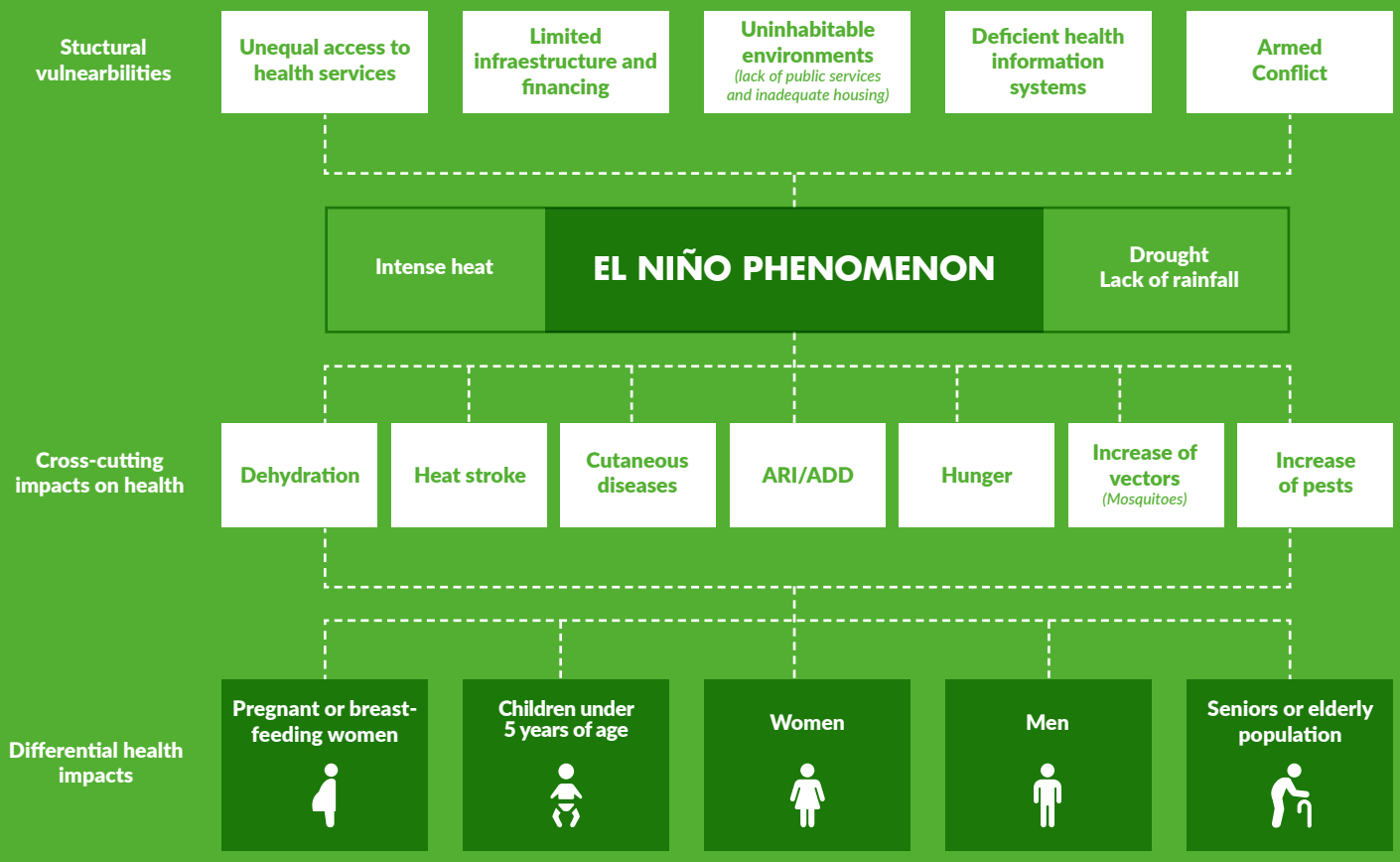
The municipality of Tibú historically has high temperatures, averaging 35 degrees Celsius during the year. However, from the perception of the communities, since the second semester of 2023, these temperatures have risen considerably, accompanied by an absence of rainfall, in periods in which they were commonly present in the region. All these vulnerabilities are increased in the context of homes built with plastic and metal roof tiles, where temperatures rise inside the homes.

This combination of structural factors, increased by the arrival of the ENP, generates a significant impact on the cross-cutting and specific health of the different populations in the community. Among the central factors we can identify the decrease in the quantity and quality of water to which they can have access, as well as exposure to high temperatures.

First, the lack of rainfall and high temperatures have triggered an increase in the water crisis in these informal settlement communities in Tibú. The absence of water sources generates different situations at the health level for families in these informal neighborhoods, all in direct relation to the quantity and quality of water they can access.

On the one hand, the need for water is prioritized by families over the purchase of food, which generates a risk of malnutrition in the context of a diet that already presents strong limitations in quantity and food diversity of the population. The absence of sources such as rainwater or nearby wells imposes a significant financial burden, leading households to sacrifice the purchase of fresh and nutritious food by prioritizing the purchase of water.

Regarding the deterioration of water quality, recent factors such as the ENP, the difficulties in accessing water sources, and the increase in prices increase the risks. The impossibility of spending on water treatment means that families drink raw water of deteriorated quality directly.



The presence of mosquito larvae, turbidity, and chloroforms in the water represent direct threats to health, causing stomach pain, diarrhea, gastrointestinal infections, and risk of malnutrition. All of these elements increase the risks for especially sensitive populations such as children and the elderly.
In the face of these factors, related to water quality, an additional risk arises for women who are especially affected by vaginal infections due to the use of poor-quality water. Likewise, pregnant and lactating women are particularly affected, actively seeking water sources to meet their basic hygiene and nutritional needs.

Rising temperatures are another factor affecting communities with ENP in Tibú's informal neighborhoods. Houses built with precarious materials such as plastic and polyshade contribute to the unbearable heat inside the houses, making them uninhabitable. This leads to significant risks, such as heat stroke, dehydration, and respiratory problems due to lack of ventilation, mainly affecting people who stay at home during the day, such as women, children, the elderly, and people with pre-existing health conditions.

Likewise, high temperatures accelerate the mosquito breeding cycle, increasing their activity and the frequency of bites. Irregular rainfall and the accumulation of stagnant water in improvised containers, common in these environments where precarious materials are used in housing construction, provide breeding grounds for mosquitoes that transmit dengue, Zika, and chikungunya. The need to take constant preventive measures, such as the use of repellents or the installation of mosquito nets, may require additional economic resources for the population, which are not available.

In addition, the intense drought intensifies the generation of dust and airborne particles, contributing to respiratory problems, colds, and rashes, especially among children. Constant exposure to dust, in addition to the lack of vegetation cover and road paving, aggravates pre-existing respiratory diseases and causes skin ailments that affect the daily life and rest of children.

CONCLUSIONS

- **The ENP already has impacts on populations and territories in Colombia:** From the perception of the communities, in the last quarter of 2023, the ENP already has impacts related to dimensions such as access to water, energy, health, and food security. 88.3% of respondents observed unusual changes in the climate such as high temperatures and lack of rainfall; 41.6% stated that the climate had worsened their access to water; and 66.4% stated that changes in the climate, problems of access to water and lack of food are affecting the health of their household. Although these changes vary in intensity according to zones, regions, and populations, they show a generalized tendency to be affected by the advance of the ENP at the national level.

- **There are populations and territories with higher levels of sensitivity to the advance of the ENP:** Although vulnerability to a disruptive climate phenomenon at the national level, such as the ENP is transversal, the sensitivity, i.e. the impact it may have, is differentiated depending on territorial and population factors. An example of these is the population in rural areas where the impacts are much more marked in relation to the advance of the ENP, either by factors related to their livelihoods (mainly agriculture) or by much more marked obstacles in access to goods and services. Likewise, populations such as children, the elderly, or pregnant women may be much more vulnerable to temperature increases, but also to variations in access to food or water, compared to other types of populations.

- **Understanding coping strategies is key to identifying impacts:** It is important to highlight that coping strategies are not only established within traditional livelihoods or reduced consumption but include strategies that integrate decisions around water and/or energy starting from needs such as managing extreme temperatures or decreasing water sources. It is central to highlight the relationships they have with other types of sectors in order to understand the need for a broader framework of analysis and thus improve the design of the intervention. It is also essential to bear in mind that this type of strategy are built in highly vulnerable contexts where there are asset limitations to face shocks such as those derived from the advance of the ENP.

- **The ENP increases an already existing problem related to access to certain territories, especially river areas:** The advance of the ENP, with a scenario of a greater decrease in water flow, could significantly increase food security in areas with river access, definitively closing access and thus the arrival of foodstuffs that are fundamental for the diet of communities, but also access to energy (fuel) that is vital for a large number of productive activities, as well as water and electricity supply. This scenario becomes more complex in the context of areas that already have limited humanitarian access and mobility restrictions due to factors related to the armed conflict.

- **Community perception is a key tool in the follow-up and intervention of the ENP:** It is necessary to establish permanent monitoring at the community level to strengthen the analysis and intervention in the context of a crisis such as the ENP. The complexity and dynamism of vulnerabilities and responses to the ENP by communities is a central source of information for evidence-based decision-making for key actors in the response to this crisis.

RECOMMENDATIONS

- **It is necessary to deepen knowledge and information channels on the ENP:** The information gaps on ENP, in which only 54.4% of the surveyed population claims to be aware of it, added to the difficulties in differentiating this event in the general framework of climate change and other crises of general impact, require information and preventive strategies that include the segmentation of urban and rural audiences, as well as key channels such as social networks and different media (radio, press, community spaces and television) according to the contexts.

- **It is necessary to strengthen ENP follow-up and monitoring systems:** Community perception is a key tool for understanding vulnerability and sensitivity levels, as well as the complexity of community responses to ENP. Having information that complements climate variability data by integrating aspects of daily life and impacts at the household level can be useful for evidence-based decision-making and contextually appropriate responses to the crisis.

- **The impacts of the ENP should be analyzed from a gender perspective:** Possible contingency measures in the face of climate variability should be based on the identification of the division of labor by sex, experiences, and capacities of women in the communities in order to minimize the health and protection risks that may occur in the development of tasks such as water collection and transportation, firewood collection, access to markets and maximize access to resources for crisis management. It is also recommended that the differential needs of the pregnant, nursing, and neonatal population be evaluated.

- **It is recommended to strengthen access to water in rural communities that depend on water sources that are highly sensitive to the ENP:** In rural contexts, 65.7% of respondents depend on wells or wells, rivers, streams, springs, or rainwater, which are the most sensitive sources to climate variations and about half of them had already experienced water shortages by 2023. It is necessary to strengthen the monitoring of water sufficiency and quality in highly sensitive areas in order to have efficient alerts and responses.

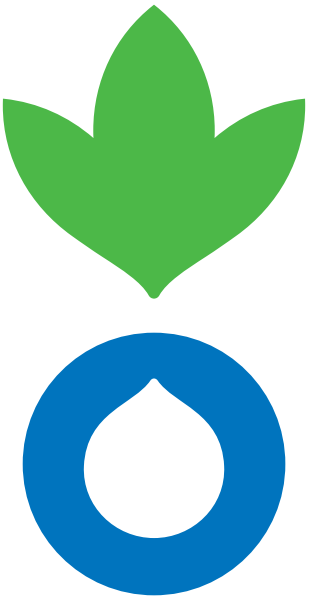
- **It is necessary to include energy availability in the analysis and measures to address ENP:** The pressure on the different energy sources, changes in prices or availability of fuel, and inconsistency in the energy service, highlight the need to monitor energy prices or outages that condition access in the areas most sensitive to rising temperatures. At the same time, it is essential to guarantee the operation and maintenance of supply systems and infrastructure such as windmills, panels, and power plants already in place in the territories.

- **It is essential to jointly address the impacts on food production, access, and consumption on account of the ENP:** the various exercises with the communities showed that climate variability in 2023 affected both planting activities, supply capacity, and the population's diet. Income recovery measures are required and livelihoods, market dynamization, and access to essential food groups such as animal protein, vegetables, fruits, and dairy products for which shortages and strategies to mitigate the effects on food security were reported for the year 2024.

- **It is recommended that response plans be established based on the characteristics of the regions:** The vulnerabilities and impacts of the ENP vary significantly between regions and departments. It is especially important to emphasize river communities, which face their own challenges in accessing food, markets, and services that require differential measures due to variations in river flows, increased fuel prices, and mobility restrictions.
- **The overlapping effects of the ENP require multisectoral actions that address the different dimensions of the communities' well-being:** The convergence of household strategies in which access to water, energy, and food consumption are negotiated accounts for a high level of stress and deterioration in households vis-à-vis their notion of subsistence and deterioration of their well-being. Response actions should be based on an analysis that strengthens community capacities and household resilience in the face of climate variability.

For more information about El Niño monitoring, please visit our data dashboard at the following link: or scan the QR code

El Niño Phenomenon Monitoring Survey Data Dashboard (Only available in Spanish)



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