

Pirarucu Fishing Community Management Activities in Protected Areas in Amazonas: Current State and Opportunities for Strengthening Production and Sales.

Pirarucu: the giant of the Amazon

Pirarucu (*Arapaima gigas*) is the largest freshwater scaled fish in the world, growing to more than two meters long and weighing up to two hundred kilos. This giant inhabits the Amazonian floodplains and has unquestionable cultural, social and economic importance for indigenous peoples and traditional communities



Photo: Adriano Gambarini

What is pirarucu fisheries community management?

Community management is the practice of participatory and sustainable use of the fishery resource, which guarantees species survival, food sovereignty and, in the long term, income for the people involved. The first initiative for this type of management for pirarucu was implemented in 1999 in the Mamirauá Sustainable Development Reserve.

Promoting numerous environmental, social and economic benefits

Pirarucu community management is an extraordinary case of biodiversity conservation, with numerous benefits. Thanks to this activity, pirarucu stock has recovered in most of the Amazonian floodplains and it is no longer a threatened species! Other species and animal stocks have increased as well, such as the *tambaqui*, *jacaré-açu*, *tracajá*, turtle, manatee, etc., and the protection of ecosystem services has also increased.

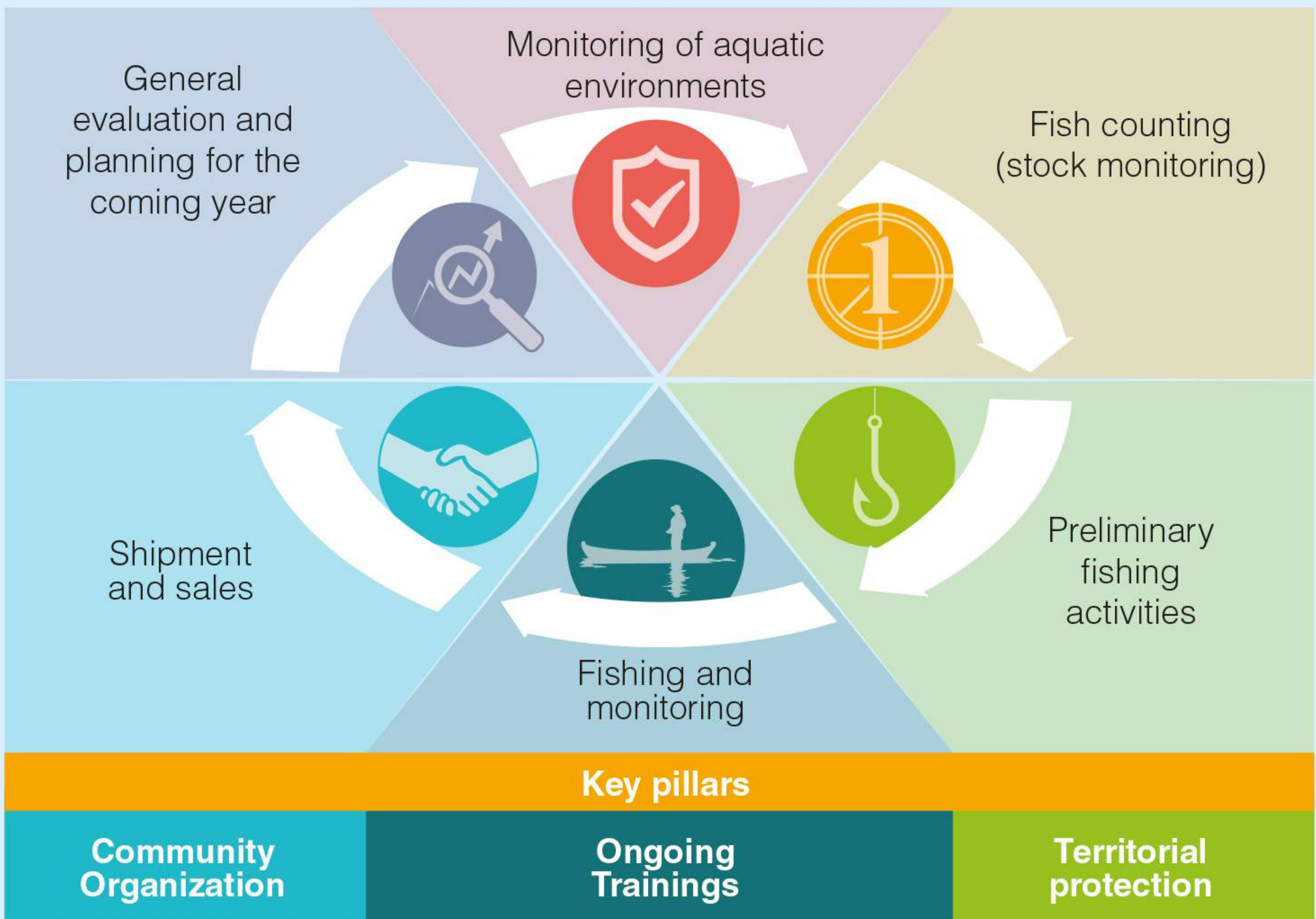
Pirarucu management also promotes **community organization**, while maintaining a **culture** of artisanal fishing and local livelihoods, and increasing indigenous and riverine fishermen's **self-esteem**.

In addition, it generates **income** for communities, helping meet families' needs and allowing them to make improvements where they live. The protected lakes are essentially "savings banks", that can be accessed every year. All this without mentioning the innumerable benefits promoted for the various other actors along the value chain.

How does community management of pirarucu fisheries work?

The participatory planning and implementation phase ideally includes:
1 - Social mobilization; **2** - Community organization; **3** - Zoning and territorial planning; **4** - Training of fishermen on pirarucu counting and fish stock management methodology; **5** - Management and business plan development; **6** - Analysis and approval of the management plan by the Brazilian Institute of Environment and Natural Resources (IBAMA); **7** - Infrastructure investments (in docks, vessels, fishing gear, etc.).

After this phase, community management initiates the cycle of annual operations, supported by three key pillars:



Analysis of pirarucu's stock management and sales

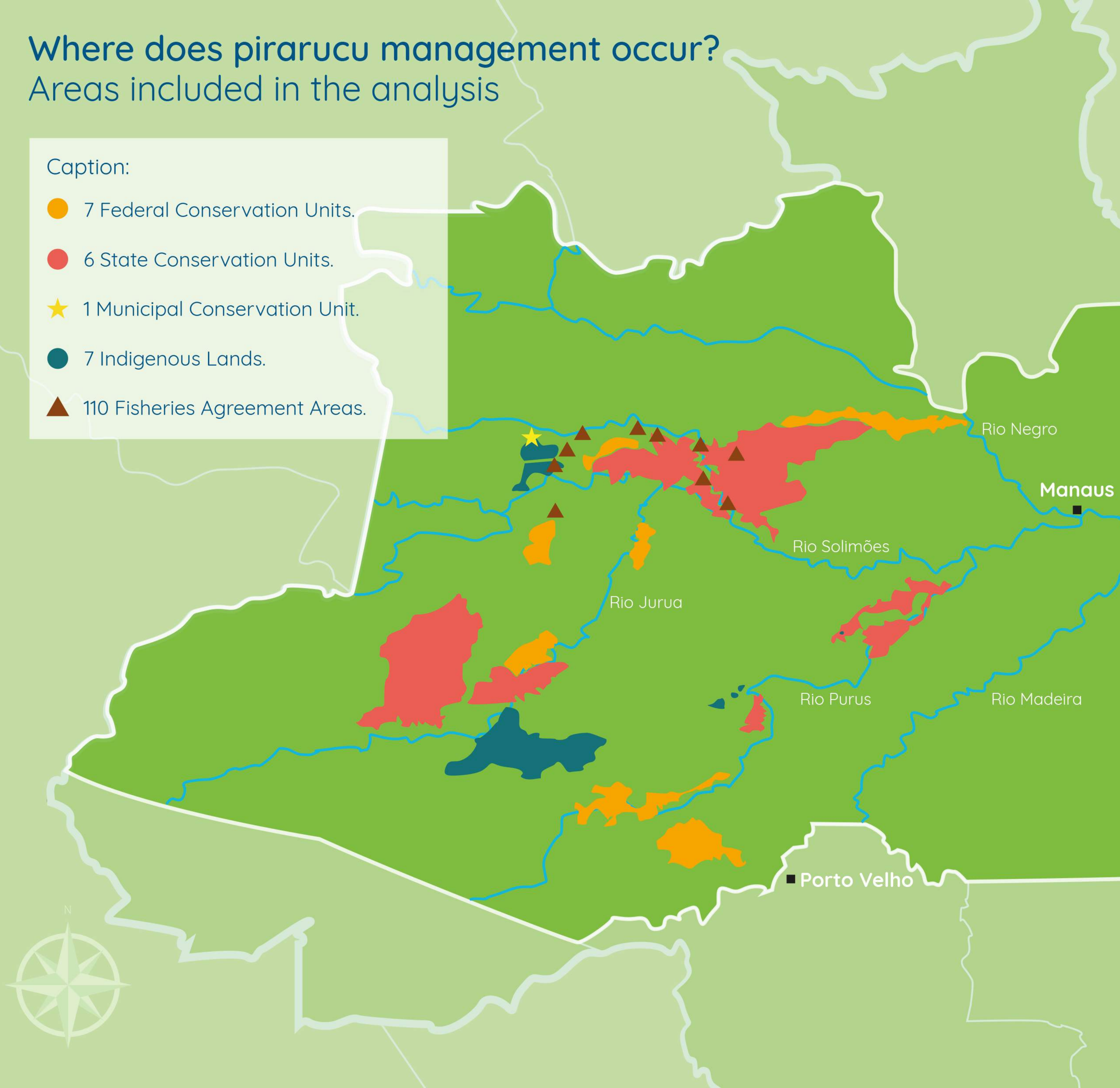
To strengthen pirarucu community management and understand the current situation of protected areas and fishery agreements in Amazonas, an analysis was conducted to support development strategies. The main results of this analysis, conducted between August 2017 and May 2018, are as follows.

Where does pirarucu management occur?

Areas included in the analysis

Caption:

- 7 Federal Conservation Units.
- 6 State Conservation Units.
- ★ 1 Municipal Conservation Unit.
- 7 Indigenous Lands.
- ▲ 110 Fisheries Agreement Areas.



Collected data

31

protected and fisheries
agreement areas surveyed.

78%

of the fishing quota authorized
in 2017 in Amazonas state.

+ de 1.200

aquatic environments
managed.

417.982

adult and juvenile pirarucus
counted in 2016.

99%

stock's cumulative growth
between 2012 and 2016.

19%

average annual stock's growth
between 2012 and 2016.

33.204

fish captured in 2016 (20% of
the adult stock).

4.044

direct beneficiaries in 2016.

69%

growth in the number of
people between 2012 and 2016.

The value chain of the managed pirarucu: from river to table

1. Fisheries production

This is the first step or link of the managed pirarucu's value chain. It is carried out by traditional peoples and communities with the support of community, nongovernmental and public organizations. Fishermen sell their catch to intermediaries, refrigeration companies, government institutions and end consumers at markets. Most of the gutted full fish is sold chilled or on ice, in the so-called "cigar" form.

2. Intermediation

This second link represents "cigar" purchases followed by unprocessed sales. It is usually done by tradesmen, known as *atravessadores*. These actors sell to other intermediaries, processors and end consumers. In this analysis, 50 *atravessadores* were identified between 2012 and 2016.

3. Processing

This stage of the value chain refers to the transformation of the pirarucu "cigar" into several products. Generally the first step of this process is done by market salesmen and refrigeration companies, and the second by bars and restaurants, fashion companies and artisans. The first actors sell to the second actors and they all sell to retailers (supermarkets, shops and market salesmen) and end consumers. Six buying refrigeration companies and two restaurants were identified during the analysis.

4. Consumer markets

A diversity of products arrives to markets and are purchased in small part by inland Amazonas cities and neighboring states and, in greater part, by the metropolitan region of Manaus, capital cities of Southeastern Brazil and other countries. The United States, Mexico, Italy, Chile, Germany, Spain and Japan are the primary international consumers of pirarucu meat and leather. Pirarucu products include:

- | | | |
|-----------------------|------------|-----------------------------|
| ◆ Fresh meat. | ◆ Scales. | ◆ Clothing and accessories. |
| ◆ Dry and salty meat. | ◆ Tongue. | ◆ Accessories. |
| ◆ Skin and leather. | ◆ Carcass. | ◆ Traditional dishes. |



R\$ 7 million
(USD 1.8 million**)
of **gross revenue** generated
for communities.*

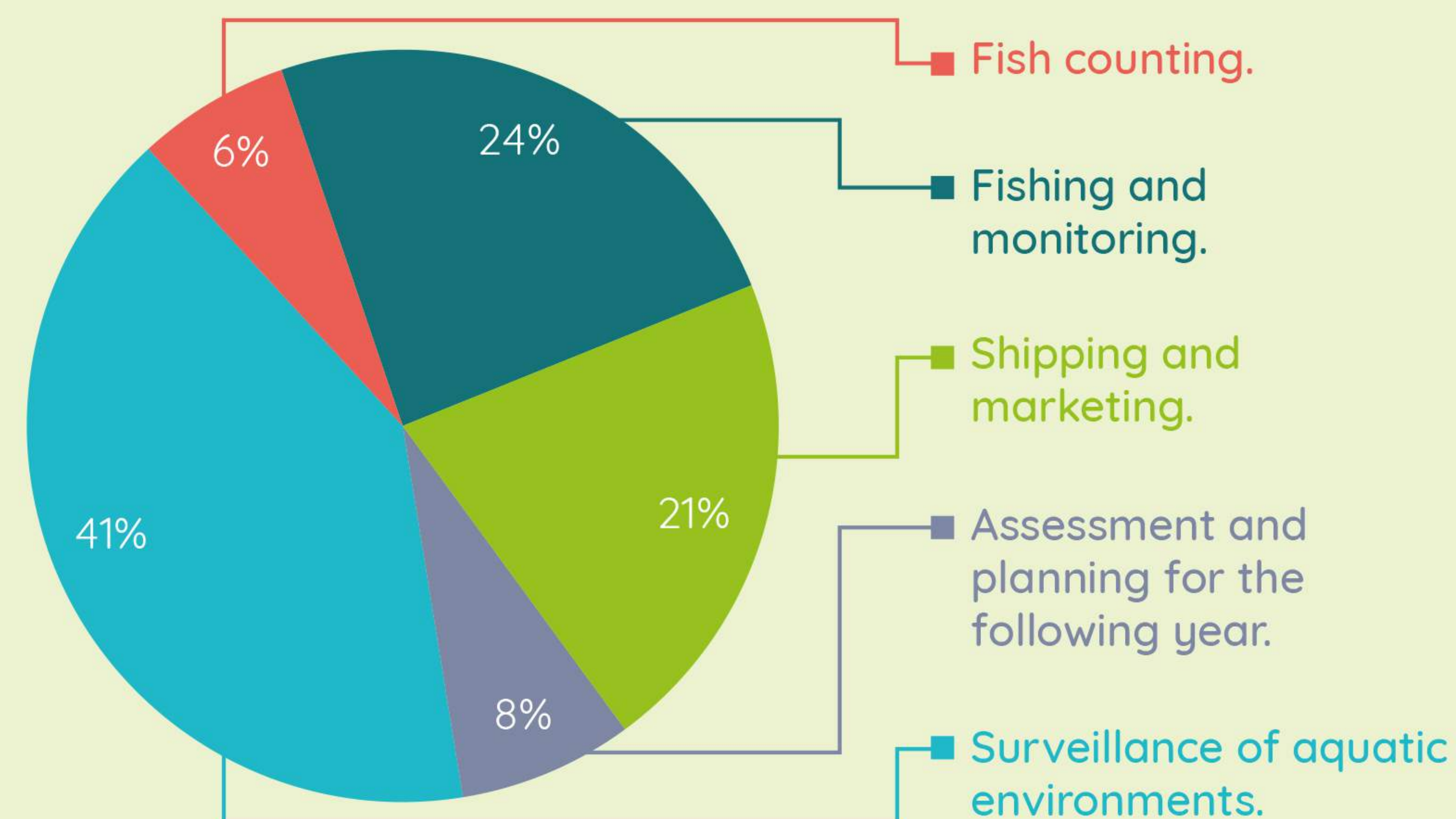
R\$ 1,765
(USD 458***)
average **gross**
revenue per person.*

Proportion of the cost of inputs and third-party services in
the operational stages, for seven management units in 2017:

37%
of **gross revenue's**
accumulated growth.**

8%
foi o crescimento médio
anual da **renda bruta**.**

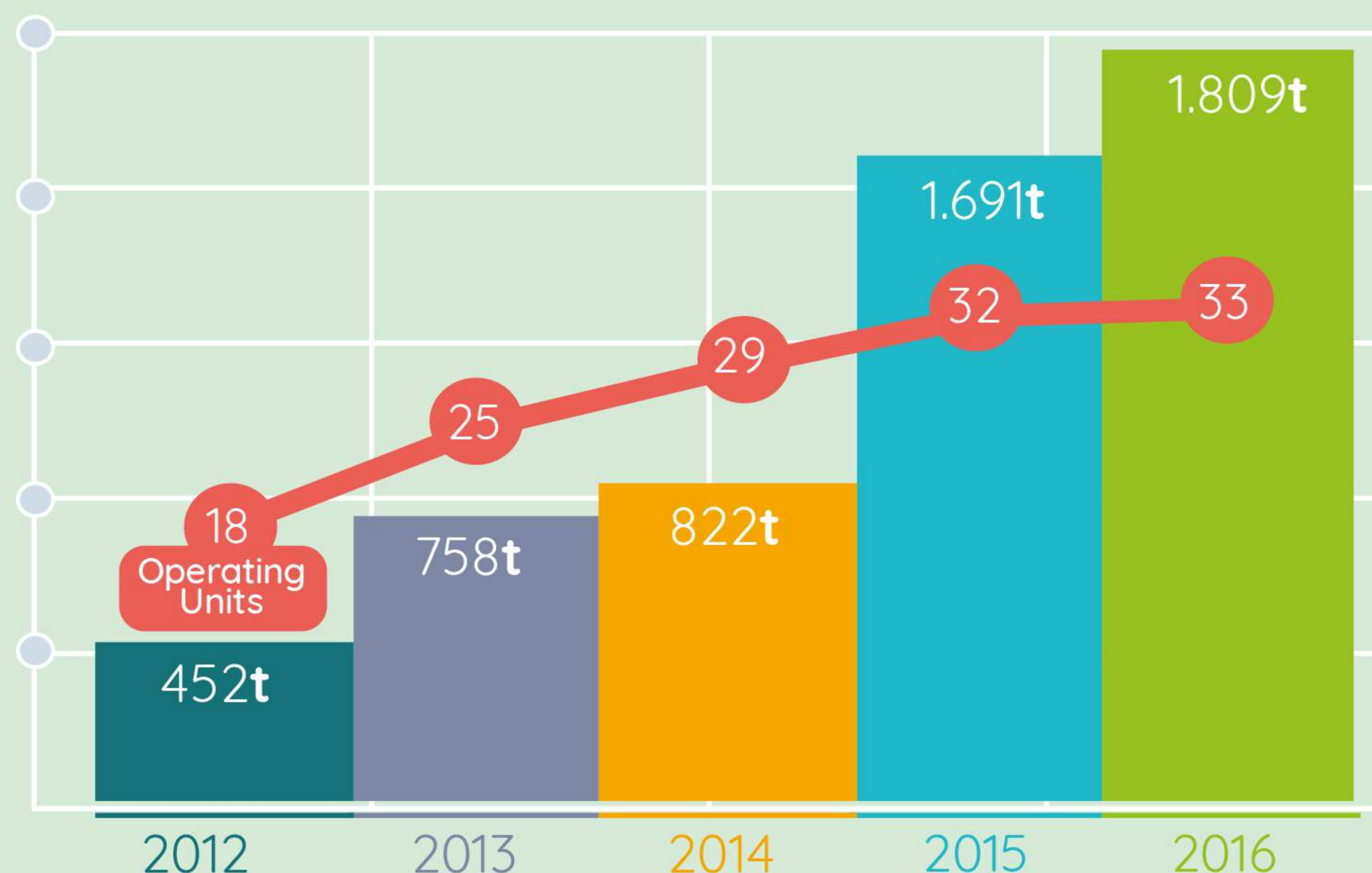
R\$ 24 million
(USD 6.2 million***)
of **gross revenue** if
value were added to fish
(i.e. sales of processed
meat and skin). *



* For 2016. ** From 2012 to 2016.

*** Exchange rate in July 2018, R\$ 1 = US\$ 0.26. Source: www.xe.com.

Fisheries production and management units in the market:



Note: There was no data available from the Fonte Boa region from 2012 to 2014 and from Tonantins from 2012 to 2015

1.725
communities directly
involved in territorial
protection.

There is community surveillance in
100%
of the protected and
fisheries agreements areas.

There is surveillance contracted in
9%
of the protected and
fisheries agreements areas.

There is illegal
fishing pressure in

100%
of the protected and
fisheries agreements
areas, **despite the
enormous community
surveillance efforts as
limited resources are
insufficient for effective
territorial protection.**

150%
of **fishery production**
growth.**

26%
of **fishery production's**
average annual growth.**

Current Challenges and Strengthening Opportunities

To maintain and increase the various benefits of pirarucu management, the following opportunities were identified to address the challenges.

CHALLENGES	IMPLICATIONS	OPPORTUNITIES
Production		
<ul style="list-style-type: none">- Lack of access to efficient and/or certified storage, transport and processing infrastructure.- Few training opportunities on managed fishing techniques and processing.	<ul style="list-style-type: none">- Low standardization of product quality.- Low aggregation of value to the products.- Low economic efficiency.- Market losses for pisciculture.	<ul style="list-style-type: none">- Development of low-cost infrastructure alternatives, with legal requirements appropriate to the local environmental and cultural reality.- Access to funding for investments and training.
Management		
<ul style="list-style-type: none">- Limited number of people trained in community businesses management.- High cost of producer groups registration and legal requirements not practical for the Amazonian context.	<ul style="list-style-type: none">- Restricted conditions for dealing with markets and administrative and financial management.- High informality that makes access to more demanding markets difficult.	<ul style="list-style-type: none">- Access to training and technical assistance, especially by incubators.- Adaptation of legislation to the Amazonian context to formalize groups of producers.
Financial and Market-Based		
<ul style="list-style-type: none">- Small number of buyers.- Absence of minimum prices for fish purchases from local producers.- Low or nonexistent working capital.- Lack of resources for investments.- High logistics costs.	<ul style="list-style-type: none">- Low competition for the purchase of fish.- Low bargaining power by communities for sales.- Stagnation of community businesses.	<ul style="list-style-type: none">- Access to low-cost financing opportunities.- Establishment of minimum prices.- Development of new entrepreneurs in other links of the value chain.
Monitoring and Enforcement		
<ul style="list-style-type: none">- High incidence of illegal fishing	<ul style="list-style-type: none">- Unfair competition	<ul style="list-style-type: none">- Increased enforcement in refrigeration companies and fish markets

Partnership for the Amazonian Biodiversity Conservation Project



Implementation



Support



Joint Advocates

Managers, grassroots organizations and supporting institutions from the following Protected Areas:

- | | | |
|---|---|--|
| - Canutama State Forest | - Auati-Paraná Extractive Reserve (RESEX) | - Acapuri de Cima Indigenous Land (IL) |
| - Amanã Sustainable Development Reserve (SDR) | - Baixo Juruá RESEX | - Deni IL |
| - Cujubim SDR | - Médio Juruá RESEX | - Espírito Santo IL |
| - Mamirauá SDR | - Médio Purus RESEX | - Macarrão IL |
| - Piagaçu-Purus SDR | - Rio Ituxi RESEX | - Paumari IL of the Tapauá river |
| - Uacari SDR | - Rio Jutai RESEX | |
| - Peixe Boi Mamirauá Sustainable Development Reserve (MSDR) | - Rio Unini RESEX | |