RIVER DOLPHIN CONSERVATION POLICIES AND ACTIONS IN SOUTH AMERICA

Progress and challenges in the implementation of national and cross-border actions
AUTHORS

Angélica Lúcia Figueiredo Rodrigues (Biomap - Brazil)
Brenda Toledo (WWF-Peru)
Cedric Gilleman (Solinia - Peru)
Daphne Willems (WWF International)
Fabiola La Rosa (WWF-Peru)
Federico Mosquera - Guerra (Omacha Foundation - Colombia)
Fernando Trujillo (Omacha Foundation - Colombia)
Gabriel Melo-Santos (Bioma - Brazil)
Jéssica Pacheco (WWF-Ecuador)
Lila Sainz (WWF-Bolivia)
Marcelo Oliveira (WWF-Brazil)
Mariana Paschoalini (Aqualie Institute - Brazil)
Miriam Marmontel (Mamirauá Institute - Brazil)
Ronaldo Barthem (Museu Paraense Emilio Goeldi - Brazil)
José Saulo Usma (WWF-Colombia)
Paul Van Damme (Faunagua - Bolivia)
Veronica Denisse Zambrana Rojas (Faunagua - Bolivia)
Victor Utreras (Associate Researcher at the Instituto Nacional de Biodiversidad (National Institute of Biodiversity) INABIO - Ecuador)
Waleska Gravena (UFAM - Brazil)
Yurasi Alejandra Briceño (Instituto Venezolano de Investigaciones Científicas (Venezuelan Institute of Scientific Research)

Technical Review:
Analiz Vergara, Bernardo Gachet, Valeria Tamayo-Cañadas, Aimée Leslie, María Inés Rivadeneira (WWF).

Suggested Citation:
South American River Dolphin Initiative (SARDI), 2022. Policies and actions for river dolphin conservation in South America.

Available online at https://wwf.panda.org/es/?5274866

Front cover photo: © naturepl.com / Franco Banfi / WWF
Back cover photo: © Esteban Barrera
INTRODUCTION

This document represents a regional effort between specialists and government representatives from six South American countries: Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela, which allowed to summarize the current state of threats to river dolphins, and to evaluate the progress and opportunities in the implementation of conservation actions intended to maintain the largest population of river dolphins in the world and protect their habitats.

The WWF has coordinated this study in alliance with institutions located in the six countries, and with the financial support of the World Bank as part of the global diagnostic project of good practices for river dolphin conservation. The study is aimed at supporting the review of strategies, actions and policies for the conservation of the species in their large area of distribution in South America.

Of the approximately ninety known species of dolphins and whales, only a small group of six genera inhabit freshwater environments, and they are known as river dolphins. River dolphins are among the most endangered aquatic animals on the planet. In South America, according to taxonomic criteria, only two species are currently accepted by the international scientific community: *Inia geoffrensis* (pink dolphin) and *Sotalia fluviatilis* (tucuxi). Two other species (*Inia araguaiaensis* and *Inia boliviensis*) still lack additional studies to be officially recognized as such; however, they are presented here as distinct species, given the advance in genetic and taxonomic studies coordinated by South American researchers.
Unlike ocean-dwelling dolphin species, river dolphins largely share their habitats with human communities. Rivers occupied by dolphins are increasingly important to ensure food security for riverine populations and water security for millions of people. These rivers are also a significant component of the national matrixes of production and energy; they serve to transport consumer goods through waterways; they irrigate agricultural plantations; and they are a source for the exploitation of various minerals and provide touristic places. The ways in which humans use the rivers, within our economic and social development models, affect the required conditions to maintain the health of river ecosystems and, therefore, that of river dolphins.

In the last two decades, threats to river dolphins have grown in scale and severity. This has required increased attention from governments, society, and the private sector. As an example of the dramatic population decline and threats to river dolphin in the Asian continent, the Baiji (Lipotes vexillifer) was declared extinct in 2007. The degree of threat to the South America species follows a similar pattern, with the two recognized species (Inia geoffrensis and Sotalia fluviatilis)
in the Endangered (EN) category according to the International Union for Conservation of Nature (IUCN). At the regional level, however, countries have their own assessment criteria (red lists of threatened species and National Action Plans - NAPs) and the Endangered category may differ according to local threats and endemic species (Table 1).

Table 1. Conservation status of river dolphins in South America according to the Red List of Threatened Species and National Action Plans (NAPs).

<table>
<thead>
<tr>
<th>SPECIES/COUNTRY</th>
<th>BOLIVIA</th>
<th>BRAZIL</th>
<th>COLOMBIA</th>
<th>ECUADOR</th>
<th>PERU</th>
<th>VENEZUELA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pink dolphin <em>Inia geoffrensis</em></td>
<td></td>
<td>Endangered</td>
<td>Vulnerable</td>
<td>Critically Endangered</td>
<td>Insufficient data</td>
<td>Vulnerable</td>
</tr>
<tr>
<td>Bolivian river dolphin <em>Inia boliviensis</em></td>
<td>Vulnerable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Araguaian River Dolphin <em>Inia araguaiaensis</em></td>
<td></td>
<td>Vulnerable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tucuxi <em>Sotalia fluviatilis</em></td>
<td></td>
<td>Near Threatened</td>
<td>Vulnerable</td>
<td>Critically Endangered</td>
<td>Insufficient data</td>
<td></td>
</tr>
</tbody>
</table>
River dolphins are essential to the integrity and health of the ecosystems, where they live as top predators in the food chain. Considered cultural symbols in the Amazon, these charismatic species have an enormous influence on the culture of riverine populations and indigenous peoples.

This document provides the results of a participatory regional information survey, the main challenges to be addressed for the maintenance of the largest river dolphin populations in the world, as well as identified opportunities to advance public policies, government actions and cooperation among the countries that make up the distribution range of these marine mammals, in order to reduce threats and ensure their long-term conservation.
METHODOLOGY

The study considered the period between 2006 and 2020 and aimed to identify progress and challenges in the implementation of national and cross-border actions for the conservation of river dolphins in the region. River dolphin management and conservation specialists from six countries were involved in the study.

An extensive literature, including scientific articles, conference abstracts, theses, monographs, reports, action plans, legislations, governmental and news sites were reviewed. In addition, the effectiveness of national policies and action plans relevant to the conservation of river dolphin species and their habitats was analyzed through structured interviews with government officials, NGOs, businesses, researchers, and community leaders. The national action plans for the conservation of the species were examined, and their level of progress in each country and the most urgent actions to be implemented in the coming years were established.

The information was organized into the following topics: population monitoring; interactions with fishing activities; community awareness and engagement; pollution; infrastructure and transport; and national and regional action plans. Based on the results of these analyses, the following recommendations are given.
RESULTS

Monitoring

Among the main challenges for the survey of natural populations of river dolphins in South America is their wide geographic distribution, often in remote and difficult to access regions. In addition, the scarcity of public resources to support further research has limited the scope of action to monitor dolphin populations in many countries. Despite this, researchers in the region have developed standardized methodological tools for data collection, statistical analysis, and the use of innovative technologies. Thanks to such an effort, appropriate monitoring results have been obtained in South America.

Forty-two scientific expeditions, coordinated by different institutions in the six countries, assessed dolphin species populations in approximately 47 thousand kilometers of rivers in the main river basins of the region, such as the Amazon, Tocantins-Araguaia, and the Orinoco, thus being the largest river dolphin research initiative globally. This made possible a better understanding of the abundance and population density of these species in areas of high environmental relevance. By comparing these data, it is possible to monitor the status and fluctuation of dolphin populations in rivers, lakes, and other wetlands, thus becoming an essential indicator for the evaluation of the effectiveness of management and conservation policies and actions implemented in the countries. The results indicated trends of population reduction in several of the sampled regions, thus demonstrating the need to implement conservation actions and continuous long-term monitoring programs, especially in key locations where threats are increasing.
The use of new technologies for conducting ecological assessments and research has contributed to a better understanding of the species. Drones, hydrophones, satellite trackers, and genetic analysis, including environmental DNA, have catalyzed and expanded knowledge about river dolphin behavior, natural history, habitat use, and home range. Information about the high diversity of sounds that these animals emit to communicate; the preferred areas of use for the species (e.g., confluences, islands, riverbanks, bays, etc.); their trophic and reproductive ecology, and the genetic structure of the populations are among the most recent discoveries.

This information, issued in a number of scientific articles over the last few years, is crucial for the design of more adequate strategies for the management and conservation of species and the protection of aquatic environments. For example, it is possible to use river dolphin-related indicators to develop stronger ecological zoning proposals, design protected area systems that prioritize the protection of wetlands, or even as input for planning infrastructure work with less impact.

Interactions with fishing activities

Negative interactions between fishermen and river dolphins pose one of the most urgent threats to the conservation of these cetaceans in some regions. Risks include incidental entanglement of dolphins in fishing nets (sometimes resulting in mortality), as well as blows with oars, gunshots, injuries with harpoons, etc., inflicted in response to the damage the animals cause when catching fish that are already caught in the nets. Thus, dolphins are seen as fish competitors, negatively influencing the fishermen's perception and resulting in a conflictive relationship. In addition, by-products of dolphins accidentally caught in fishing nets, such as their teeth or blubber, are traded as magical-religious amulets in several regions of the Amazon.

Between 1990 and 2000, the use of river dolphin and caiman meat as bait for fishing piracatinga, mota, or blanquillo, common names of the species Calophysus macropterus, a necrophagous catfish (which feeds on dead species) commercially appreciated in some regions, was recorded for the first time. More recently, the use of dolphins as bait has been seen in Bolivia, Peru, and Venezuela. Although this use as bait is opportunistic, it nevertheless represents a threat to river dolphins.

The progress made in incidental bycatch reduction includes diagnoses of the fishing activities and practices that severely impact river dolphins (such as fishing gear or specific types of fishing), and the quantification of the occurrence of these events, as well as the analysis of the context in which dolphins and fishermen collide. Based on these data, it is possible to map conflict zones and develop fishery management strategies that lead to reduced conflicts. Successful measures such as the creation of no-fishing zones and/or temporary restriction of fishing; training of local communities in sustainable fishing methods; engagement and training of women from fishing communities for the production of hamburgers with fish
“damaged” by dolphins or less valued in Colombia; the training of fishermen’s children to produce nuggets and fish hamburgers in Brazil; and the training of protected areas’ officials to promote fishing agreements with local communities in Ecuador should be supported and made visible to replicate and scale up these practices in other countries.

Other measures that contributed to the decrease of cetacean mortality are the national moratoriums and bans that respectively prohibited the fishing and commercialization of piracatinga in Brazil and Colombia. However, their effectiveness lacks precise indicators, as well as enforcement efforts for control, and information at the regional level on the routes, and the dimension of the piracatinga trade in South American countries.
Awareness and community engagement

The perceptions of local populations about river dolphins range from awe to fear. Shrouded in legends and mysticism, river dolphins are cultural icons of the Amazon, and the importance of these animals in daily life and in the imagination of riverine communities can contribute to the conservation of the biodiversity of the aquatic ecosystems they inhabit.

A number of tools and methodologies for raising awareness and generating commitments from the community have been implemented in the countries, including educational primers, multimedia games, smartphone applications, video documentaries, social media outreach, television and radio programs, the inclusion of dolphins in school subjects, and environmental education programs. For example, the Bolivian government adopted the term bufeo boliviano to refer to the Bolivian dolphin (Inia boliviensis), generating empathy and broadcasting the image of the species as a national treasure and Natural Heritage of Bolivia. A similar strategy was adopted in Colombia (by WWF-Colombia and Omacha Foundation), with the dissemination of the image of dolphins on television and radio, making these species become national references for the health of their watersheds. On Brazilian television, a prime-time soap opera shows a dolphin helping the protagonist. When such strategies are scaled, they have the potential to bring river dolphins to natural heritage status, especially in the Amazon region.

The promotion of ecotourism, or sustainable nature-based tourism, is another excellent tool for generating...
social engagement when conducted in a responsible and orderly manner. In Colombia, a partnership between the Omacha Foundation and the Ministry of Environment and Sustainable Development led to the creation of an ecotourism program for responsible river dolphin watching with the effective participation of local communities. Community guides were trained and received financial resources to assist tourists. River dolphin watching was identified by many tourists as one of the main reasons for visiting the Colombian Amazon, and is a tourist activity that already generates more than US$8 million per year. The activity was affected by the COVID-19 pandemic, but it is still a source of revenue for local communities while raising public awareness of the importance of dolphins and aquatic ecosystems. A similar model to the Colombian one is being applied in Ecuador. In Venezuela, sustainable tourist guides are also being trained. In Brazil, a wildlife-watching tourism program in the Mamirauá Sustainable Development Reserve benefits guides from local communities and contributes to improving the perception of river dolphins by the community. In Bolivia, the river dolphin image has been adopted as a flagship species not only at the community level but also in the private tourism entrepreneurship sphere, private companies of all types, and civil society organizations in general. Finally, the processes of generating commitment to dolphins and the development of sustainable natural resource management actions in communities exploiting sustainable use reserves and Ramsar sites combine successful participatory methodologies that should be replicated in river dolphin distribution areas.

Pollution

The sources of river pollution in South America are many: mercury and other heavy metals, hydrocarbons, urban waste, agro-toxins such as PCBs (polychlorinated biphenyls), fungicides, pesticides, and fertilizers, and are widely distributed in the Amazon, Orinoco and Tocantins-Araguaia basins. Several studies conducted in the region indicate very high concentrations of pollutants such as lead, cadmium, chloride, copper, and mercury in the waters of the Amazon basin from small-scale gold mining, oil spills, urban pollution, and fish farming. The disposal of pollutants occurs near large urban centers such as Manaus and Belém, as well as in industrial districts and oil pipelines in the region of Lake Maracaibo and Lower Orinoco.

High levels of mercury were found in pink dolphins (*Inia geoffrensis*) in the Amazon, Arauca, Iténez, Tapajós, and Madeira rivers. In humans, the effects of mercury poisoning are highly harmful to health, as they are for river dolphins. Although the effects of this contamination on dolphin health are still not exactly known, it is known that mercury, as well as other heavy metals, can affect the liver, kidneys, brain, and reproductive system of cetaceans.

In Ecuador, the Napo River basin is one of those with high levels of contamination due to oil spills from the
industry in this area and the Aguarico River. A similar situation occurred in the Arauca River on the border between Colombia and Venezuela after the Caño Limón-Coveñas oil pipeline in Colombia was attacked with explosives.

The Brazilian water management model expects the National Basic Water and Sanitation Agency (ANA) to monitor the quality of water resources. This Agency is responsible for managing the Watershed Committees, regulating irrigation and industrial activities, and promoting democratic management of national waters, with the participation of different sectors of the civil society. The other Amazonian countries have similar water management models in place. In this sense, water resource management in border areas would benefit from transboundary coordination, integrating efforts of agencies and governments in the protection of freshwater, one of the most valuable assets available in the South American river dolphin range.

Infrastructure and Transportation

The current development model of aquatic infrastructure works in the Amazon mainly focuses on hydroelectric dams, waterways, and irrigation. The need for energy must be imperatively addressed, but alternative sources such as solar, wind, or geothermal energy must be considered, and care must be taken to ensure that the design of the infrastructure considers the ecological processes of the site. In the current model, these projects have permanent and often severe impacts on the regions where they are developed. Changes to aquatic environments range from the modification of the natural water structure of river channels, their natural flow, limnology, and biogeochemical cycles, to the interruption of river connectivity. A striking example of this is the interruption of the long-distance migration of the gilded catfish (dorado) (*Brachyplatystoma rousseauxii*) in the Madeira River due to the construction of the Jirau and Santo Antonio dams,
which is leading to a critical decline in the populations of the species at regional scale in Bolivia.

The legal framework across all the evaluated countries foresees environmental licensing processes that include public hearings and prior consultation with the populations affected by the projects and/or benefited by environmental compensation programs. However, these processes often fail in their implementation. Sometimes, public hearings do not have great social participation due to logistical and scheduling hurdles; in other cases, negotiations between representatives of local communities and companies interested in developing infrastructure do not consider the long-term negative socio-environmental effects. The environmental impact assessments, mandatory in the licensing process, do not incorporate various effects and impacts on aquatic environments, including the maintenance of fishing resources and water security for local populations. A recent example was the construction of the Belo Monte hydroelectric dam in Brazil, which impacted dozens of indigenous communities in the project’s influence area.

After the start of operations, the companies responsible for the works must adopt impact monitoring and mitigation programs. However, there are many cases where the conditions are modified and the programs are impoverished over time, preventing a thorough analysis of the mitigation of impacts on aquatic environments. River dolphins are affected by these operations, due to the alteration of the availability and variety of prey; the modification of the dry (low water) and full (high water) cycles in the rivers; the loss of habitats that are modified and become unsuitable for the species; and the isolation of populations, as in the case of the Santo Antonio and Jirau plants, on the Madeira River, which since 2012 have kept a dolphin population isolated over an area of 100 km between the two dams.

All South American countries where river dolphins thrive are undergoing hydroelectric plant construction projects. Due to its size, Brazil is the country with the largest infrastructure projects, especially in the Amazon. In addition to the 15 large-scale plants already operating in the Brazilian Amazon, the National Energy Plan - 2050 (PNE 2050) foresees the construction of at least 90 new plants. In Bolivia, new plants are planned for the Madeira River complex and the Madeira-Madre de Dios-Beni Corridor. In Colombia, smaller plants are planned to meet local energy demands. In Venezuela, five large plants overlap the distribution of dolphins or were built on major tributaries of the Orinoco River. However, cumulative impact assessments are scarce or non-existent. Dams built and under construction in the Andean region, especially in Peru – although located in areas not inhabited by dolphins – will have a huge impact on sediment and nutrient transport, and will alter limnological conditions of the Amazon River tributaries and other large rivers in the basin, i.e. river dolphins’ home.
National Action Plans for the Conservation of river dolphins

National Action Plans (NAPs) for the Conservation of species are documents that establish courses of action to mitigate threats to target species, coordinating and directing conservation efforts in the country. These plans point out the most urgent conservation issues, identify those that require more resources, and have the potential to direct the formulation of laws and public policies, for example, the moratorium on piracatinga or mota fishing. River dolphins’ issues are addressed by the NAPs in all South American countries where they occur; however, there is little or no financial support from national governments for the implementation of the actions developed in these documents, thus hampering the success of this tool. Another limiting factor identified is the very low participation of the private sector in the drafting of these plans, such as energy and river transport companies, which should be partners and co-responsible for the implementation of these actions since they directly depend on the health of the ecosystems for their success.

In addition to national conservation plans, transnational collaborative efforts are in place as well. The 2010-2020 Action Plan for the Conservation of South American River Dolphins introduced an assessment of threats, abundance, research needs, and conservation actions for all Amazonian countries. Its validity was planned until 2020, and regional planning efforts for South America are now expected to continue with the development of the South American River Dolphin Conservation and Management Plan (CMP), under the aegis of the International Whaling Commission (IWC). This initiative stands out as the first regional effort of South American governments to agree on joint strategies for the conservation of river dolphins in the Amazon, Orinoco, and Tocantins-Araguaia basins. Endorsed by the IWC in 2020, the CMP integrates actions in Brazil, Colombia, Ecuador, and Peru, with the following objectives: i) reduce conflicts between river dolphins and fishing activities; ii) mitigate the effects of illegal fishing, retaliation, and bycatch of river dolphins; iii) improve connectivity and habitat conservation; iv) expand knowledge on river dolphin taxonomy, genetics, population trends, ecology, and health; v) engage governments, the private sector and civil society with river dolphin conservation issues in South America.

Finally, the care of Ramsar sites is also a strategy for the conservation and sustainable use of key aquatic ecosystems for dolphins and other threatened aquatic vertebrate species (manatees, otters, black caiman, pirarucu, large migratory catfish). In Colombia, research and financial and human resources focused on river dolphins were used to consolidate the designation and formulation of environmental management plans for three Ramsar sites totaling more than 1.1 million hectares (Bita River, Estrella Fluvial Inírida, and Tarapoto Lakes). Similarly, in Bolivia, the designation of the Llanos de Moxos wetland, which covers 6.9 million hectares, is of utmost importance to promote the protection of key fluvial ecological corridors for the species in the country.
RECOMMENDATIONS

A partir de los resultados obtenidos, varias recomendaciones fueron hechas por los especialistas involucrados para motivar a los gobiernos, la sociedad civil y el sector privado a la adopción de acciones concretas para mejorar el estado de conservación de los delfines de río y sus hábitats.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONITORING</td>
<td>Update the distribution limits of river dolphin species in South America, as well as coordinate efforts to monitor population trends in key areas for the maintenance of species diversity and habitat quality.</td>
</tr>
<tr>
<td>MONITORING</td>
<td>Map critical and highly relevant areas for the maintenance of river dolphin populations, prioritizing models and studies that support the definition of infrastructure-free zones, with the free and dynamic flow of rivers, and the quality of environments essential for the maintenance of fish populations and aquatic biodiversity.</td>
</tr>
<tr>
<td>MONITORING</td>
<td>Encourage and finance long-term research programs aimed at monitoring fishing resources, biological diversity, and conservation status of river dolphins, with participatory research approaches that integrate key local people in the processes of information gathering and knowledge sharing.</td>
</tr>
<tr>
<td>MONITORING</td>
<td>Support the development and maintenance of open data integration platforms that support the monitoring of the effectiveness of conservation actions (NAP, CMP, CBD), threats, and transformations in the species’ range of distribution.</td>
</tr>
<tr>
<td>INTERACTION WITH FISHING ACTIVITIES</td>
<td>Map and characterize fishing areas where conflicts between fishermen and river dolphins occur, including maintaining the integration system and making data available to support decision making and development of conflict reduction strategies.</td>
</tr>
<tr>
<td>INTERACTION WITH FISHING ACTIVITIES</td>
<td>Train fishermen and key local populations about the value of river dolphins and biodiversity in general. Develop national cooperative efforts to fund the implementation of sustainable livelihood development projects with fishing communities in vulnerable, isolated, or underserved areas.</td>
</tr>
<tr>
<td>INTERACTION WITH FISHING ACTIVITIES</td>
<td>Increase income-generating programs targeted at riverside communities, including ongoing training and assistance to develop tourism-related activities, handicraft production, sustainable dolphin-friendly fishing practices, such as the use of bycatch reduction devices and dolphin alternative baits, and adding value to fish, among others.</td>
</tr>
<tr>
<td>INTERACTION WITH FISHING ACTIVITIES</td>
<td>Promote the monitoring of fisheries inventories as a basis for the development of supplementary income programs for fishing communities; and for the adaptation of zoning, including the implementation of exclusive zones for artisanal fishing and the creation or readjustment of protected areas.</td>
</tr>
<tr>
<td>Interaction with Fishing Activities</td>
<td></td>
</tr>
<tr>
<td>------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Develop plans to monitor the effectiveness of public policies in response to threats to river dolphins, as well as to integrate a regional citizen observatory and enforcement efforts for compliance with measures, with a special focus on the trade piracatinga/mota/blanquillo in South American countries.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community, Private, and Citizen Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adopt an inclusive conservation approach that encourages the participation of key stakeholders in decision-making and benefits related to river dolphin conservation.</td>
</tr>
<tr>
<td>Expand and replicate positive experiences of commitment on the part of the society that are efficient for the conservation of aquatic resources and river dolphins. These experiences may include activities such as fishing, environmental education, and interpretation, or responsible tourism observation, among others.</td>
</tr>
<tr>
<td>Develop mechanisms for directing economic resources from environmental fines and environmental compensation from infrastructure works, for the expansion of community training programs in education, strengthening local leadership, promoting sustainable local development, and promoting sustainable livelihoods consistent with the life processes of the environment.</td>
</tr>
<tr>
<td>Encourage the inclusion and/or promote the upgrading of educational content in the public education network in a way that aquatic resources and the social co-responsibility of all in the conservation of water and its associated biodiversity are valued.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pollution and Mining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement public-private partnership models for monitoring water resources in critical areas, including urban centers, agricultural regions, and degraded areas.</td>
</tr>
<tr>
<td>Advance public debates and dissemination of knowledge on human and environmental rights, to foster equitable participation and responsible decision making about reducing the impacts of gold mining in the Amazon and Orinoquia and the effective implementation of the Minamata Convention, especially in signatory countries.</td>
</tr>
<tr>
<td>Promote and support transboundary water governance mechanisms, integrating efforts of agencies and governments in the protection of shared watersheds.</td>
</tr>
</tbody>
</table>
### Infrastructure and Navigation

Promote assessments of cumulative environmental impact social impacts, and execute consultation processes, if applicable, for infrastructure works at the regional or basin level, prioritizing the analysis of connectivity and alteration of water flows, as well as adding modeling results of the potential impacts of the climate crisis on water resources and river dolphin habitats.

Guarantee the inclusion of river dolphins in Environmental Impact Assessment and monitoring programs in infrastructure works in the Amazon and Orinoco river basins, as well as ensure the proper execution of these programs, following quality standards and with recognized socio-environmental safeguards.

Allocate a part of the environmental compensation resources and/or conversions of environmental penalties (above-mentioned) for the implementation of conservation actions while improving the quality of life of riverside populations.

### Action Plans

Integrate local communities in the different phases of the drafting, implementation, and evaluation of action plans.

Promote policies and financial support mechanisms for the implementation of the actions listed in the national action plans for river dolphin conservation, which often lack a budget for implementation.

Promote private sector participation in the drawing and implementation of dolphin conservation action plans as water resource protection initiatives.
CONCLUSIONS

Promoting the conservation of river dolphin species is a catalytic strategy for other national policy instruments, and the implementation of legal instruments for the conservation of the species and their habitats should be a long-term political priority, integrated into the regional economic and social development plans of river dolphin distribution areas.

The fact that river dolphin species are protected by law in all the countries where they live in South America provides unique political opportunities for the fulfillment of the goals established in international agreements. For example, the Convention on the Conservation of Migratory Species of Wild Animals has already identified the agreed measures for river dolphin conservation in Asia. The Minamata Convention, which aims to eradicate the use of mercury in the signatory countries, strengthens the relevance of actions to control the use and contamination by mercury in gold mining activities, especially in the Amazon. The Convention on Biological Diversity and Aichi Target 11, which supports the creation of protected areas, benefit directly from the creation and maintenance of areas for the protection of aquatic species. The Ramsar Convention creates opportunities for actions to manage and protect the wetlands essential for river dolphins and for the thousands of people who live along riverbanks. To a large extent, the achievement of the Sustainable Development Goals benefits from the protection of aquatic habitats, through the reduction of environmental degradation, water scarcity, and the loss of biodiversity.

It is worth highlighting the progress made in the generation of knowledge and management of river dolphins in South America, with the emergence of new research groups, regional collaborative efforts, the development of new fields of research, the use of innovative tools and technologies, and technical and political collaboration among countries. These coordinated actions should be maintained and strengthened, overcoming the setbacks brought about by the economic and social crisis aggravated in recent years by the Covid 19 pandemic.

Greater integration between specialists and government representatives would enable the exchange of evidence and strategic information for more effective planning and monitoring of mega-infrastructure works. Actions to promote scientific research and the creation of credit lines for the implementation of national plans can generate progress that reconciles the protection of aquatic environments, water resources, and species, while promoting respectful infrastructure, management plans, and even the production of cutting-edge knowledge, the strengthening of community leaders, the training of young people from local populations, social participation and empowerment in decision-making processes and the monitoring of potential impacts and threats.
REFERENCES


