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Dialogues to make a pact for the restoration of the Pantanal

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Abstract - This study resulted from the dialogue between collective social actors on the need to make a Pact for the Restoration of the Pantanal biome. The Gaia Institute convened local, state, national and international partners to socialize the concern about the violent and accelerated degradation that the Pantanal biome had been suffering. That was a conjuncture of drought, fires, port projects, waterway, small hydroelectric power plants, and the advances in agribusiness in the surroundings and in the basins of the rivers that form the largest wetland in the world. Twenty years earlier, the Pantanal had been declared a biosphere reserve, a natural heritage of humanity in the care of Brazilian, Bolivian and Paraguayan societies, in addition to having 4 Ramsar sites. The idea for this pact was inspired by other successful experiences in restoring biomes, such as the Atlantic Forest, and local initiatives in Brazil. The experiences provided concepts, knowledge, methods, techniques, and practices as inspiring references for this new pact under construction. As a source of interpretation, we used the participants' reports, which were transcribed and analyzed in the SWOT matrix. The result was a tacit agreement among the participants to commit to the restoration of the Pantanal biome.

Keywords: Alliance. SWOT. Wetlands. Plata Basin.

Diálogos para a construção de um pacto pela restauração do Pantanal

Resumo - Este texto resultou do diálogo entre atores sociais coletivos sobre a necessidade de selar um Pacto pela restauração do bioma Pantanal. O Instituto Gaia chamou parceiros locais, estaduais, nacionais e internacionais para socializar a preocupação com a degradação violenta e acelerada que o bioma pantanal vinha sofrendo. Aquela era uma conjuntura de seca, queimadas, projetos de portos, da hidrovia, Pequenas Centrais Hidroelétricas e os avanços do agronegócio no entorno e nas bacias dos rios formadores da maior área úmida do mundo. 20 anos antes o Pantanal fora declarado reserva da biosfera, patrimônio natural da humanidade aos cuidados das sociedades brasileira, boliviana e paraguaia, além de possuir 4 sítios Ramsar. A ideia do Pacto inspirou-se em outras experiências exitosas de restauração de biomas como a Mata Atlântica e em iniciativas locais no Brasil. As experiências aportaram conceitos, conhecimentos, metodologias, técnicas e práticas como referências inspiradoras para este novo Pacto em construção. Utilizamos como fonte da interpretação os relatos dos participantes, transcritos e analisados no quadro SWOT. O resultado foi um acordo tácito entre os participantes de se comprometerem a restauração do bioma Pantanal.

Palavras-chave: Aliança. SWOT. Áreas úmidas. Bacia do Prata.

Diálogos para la construcción de un pacto para la restauración del Pantanal

Resumen - Este texto resultó del diálogo entre actores sociales colectivos sobre la necesidad de sellar un Pacto para la restauración del bioma Pantanal. El Instituto Gaia hizo un llamado a los socios locales, estatales, nacionales e internacionales para socializar la preocupación por la degradación violenta y acelerada que venía sufriendo el bioma. Esa fue una coyuntura de sequía, incendios, proyectos portuarios, hidrovía, Pequeñas Centrales Hidroeléctricas y los avances del agronegocio en los alrededores y en las cuencas de los ríos que forman el área de humedad más grande del mundo. Veinte años antes, el Pantanal había sido declarado reserva de la biosfera, patrimonio natural de la humanidad a cargo de sociedades brasileñas, bolivianas y paraguayas, además de contar con 4 sitios Ramsar. La idea del Pacto se inspiró en otras experiencias exitosas en la restauración de biomas como el Bosque Atlántico e iniciativas locales en Brasil. Las experiencias brindaron conceptos, conocimientos, metodologías, técnicas y prácticas como referentes inspiradores para este nuevo Pacto en construcción. Utilizamos como fuente de interpretación los relatos de los participantes, transcritos y analizados en la tabla SWOT. El resultado fue un acuerdo tácito entre los participantes para comprometerse con la restauración del bioma Pantanal.

Palabras Clave: Alianza. SWOT. Humedales. Cuenca del Plata.

Introduction

The form of land occupation and use by human society and the development model over the centuries have impacted the environment, causing consequences such as deforestation, reduced

biodiversity, soil erosion, and water scarcity, in addition to environmental disasters that mainly affect the most vulnerable populations (Barros and Amin 2008; Pedde et al. 2013; Guerra 2021) and wetlands.

Wetlands, essential for the landscape (Theriot et al. 2013), have specific characteristics and are periodically inundated by their flood pulse (Junk and Da Silva 1999; Junk et al. 2011), which occurs in several areas in Brazil, such as dales, plains, swamps, *lameiros*, lagoons, lakes, *igapós* and *aningais* (Diegues 2002).

The Pantanal is a wetland that, over the last decades of the 20th century, has been used and occupying in a way that has been causing enormous negative socio-environmental impacts (Da Silva et al. 2015; Da Cunha et al. 2020; De Mello et al. 2020). This has occurred throughout the Pantanal area and its surroundings, further aggravating the situation, as the biome is connected with the Plateau region until its formation in the Plain (Ikeda-Castrillon et al. 2022).

The MapBiomas data (2020) show that the Pantanal degraded area had an increase of 261% between 1985 and 2020. Thus, the impacted area increased by 1.8 million hectares in this period and tends to grow rapidly with the replacement of traditional management and the implementation of monoculture agriculture with intensive use of external inputs and mechanization (Abdon et al. 2002; Harris et al. 2006; Da Cunha et al. 2020), compromising the conservation of wetlands and their biodiversity (Mamede and Alho 2006; Cardoso et al. 2020).

Despite the monitoring of devastation over the last five decades, there is a lack of sufficient and effective measures to control the impacts, which have become severe. Consequently, the largest wetland in the world (Wantzen et al. 2005) is drier (Junk et al. 2006; Lázaro et al. 2020). In the last flood, in 2018, the Pantanal flooded area reached only 4.1 million hectares. In 2020, it was1.5 million hectares, the lowest in the last 36 years (MapBiomas 2020).

It is estimated that the impacts should become even more catastrophic with global warming, according to studies by the Intergovernmental Panel on Climate Change (IPCC 2007, 2021). In 2020, the Pantanal had the biggest fire ever, reaching an area larger than 40 thousand km^2, which represented an increase of 376%, in comparison with the annual average of fires in the last two decades (Ramirez et al. 2018; Garcia et al. 2021).

The severity of fires, prolonged drought, and activities that impacted the Pantanal biome led to the urgent need to establish joint agendas and actions to stop the devastation and mobilize environmental recovery (Tomas et al. 2019). Many researchers claim that the world needs a social and ecological transition (Papin Leal et al. 2020). We consider this context of constant threats to the Pantanal as sufficient justification to bet on the need to make a Pact for the Restoration of the Pantanal.

Seeking Sustainable Development Goals (SDGs), the UN consolidated the 2030 Agenda (United Nations 2015), also known as the restoration decade. The restoration decade seeks to leverage global efforts for the recovery of nature in degraded areas (Young and Schwartz 2019).

There are still few restoration studies in Brazil, which are an important tool for the recovery of ecosystems (Oliveira and Engel 2011). The main concepts used for recovery and restoration in the country are those of the National System of Nature Conservation Units (Brasil 2000), which defines *recovery* as the "restitution of an ecosystem or a degraded wild population to a non-degraded condition that can be different from its original condition" and *restoration* as the "restitution of an ecosystem or a degraded wild population as close as possible to its original condition".

The International Society for Ecological Restoration (SER) defines ecological restoration as "an intentional activity that initiates or accelerates the recovery of an ecosystem regarding its health, integrity, and sustainability" (SER 2004).

Restoration studies are also related to rehabilitation, emphasized in studies on ecosystem recovery and functions, increasing the flow of services and benefits to people with no explicit intention to re-establish the original composition and structure of the ecosystem (SER 2004; Clewell 2009; Lima et al. 2015).

Based on the few studies on the Pantanal, there is a socio-environmental movement initiated by people from different institutions involved in the biome restoration. This study aimed to show how the Pact for the Restoration of the Pantanal began, describing the process of socio-environmental mobilization and the socio-environmental impacts, as well as the institutions involved and the experience of the Pact for the Restoration of the Atlantic Forest.

Material and methods

This study began in 2020, from an alliance between institutions interested in making a pact for the restoration of the Pantanal. The alliance brought together 42 institutions, on December 17 and 18, 2020. On the first day, the participants met in a live broadcast on YouTube (virtual), and on the following day they met again remotely for a workshop, in which the topic was discussed in more detail. These meetings were organized by the Gaia Institute team and the Mato Grosso State University. There was the participation of representatives of interested groups or stakeholders (Tristão and Tristão 2016), from the territory or linked to causes related to the Pantanal.

Initially, before these two meetings, many actions were taken to mobilize the participating groups. The Gaia Institute contacted the entities by phone, WhatsApp, and e-mail, and held meetings with several partner institutions, in addition to jointly performing socio-environmental activities. After establishing the contacts, the partners remotely participated in the meeting.

During the research, the speeches were transcribed and the data were analyzed and coded. The data were transcribed into a Microsoft Excel spreadsheet; then, the SWOT (Strengths, Weaknesses, Opportunities, Threats) matrix was constructed.

The SWOT matrix was applied to assess the strengths, opportunities, weaknesses, and threats to the Pantanal, aiming at strategically planning the proper functioning of this reality (Leigh 2010; Façanha and Da Silva 2017). By listing the strengths and weaknesses of actions in the four quadrants in a grid form, people better understand how strengths can be used and enhanced to perceive new opportunities and understand how weaknesses can slow progress or increase threats (Helms and Nixon 2010).

After identifying the social actors, they were listed in a table and grouped into local, regional, national, and international spheres according to their institutional interests in Market, Government, and Society.

The social actors' names were coded and identified with numbers to maintain anonymity when citing their speeches.

The research was conducted following the Consubstantiated Opinion No. 5,271,201 of 03/03/2022, approved by the Research Ethics Committee of the State University of Mato Grosso, Cáceres, Mato Grosso, Brazil.

Results and discussion

Making a pact for the restoration of the Pantanal

The call for a meeting to make a pact (agreement or alliance) arose from the need to build networks between different social groups, civil organizations, and public bodies to restore the Pantanal.

This was not the first time that civil society entities met to dialogue, exchange experiences, and join forces against the destruction that the unsustainable model of development has caused in wetlands (WWF-Brasil 2013; Santos 2013; Ikeda-Castrillon 2017). One of the participants defined this dialogue for a pact in the following terms:

> "This Pact for the Restoration of the Pantanal is a call for everyone here; many are coming from different movements. We are already performing this restoration, so we are calling it a pact for a whole restoration, considering that the Pantanal is one of the largest wetlands in the world that is connected to other wetlands. We are part of this immense connection between the wetlands of South America and the Plata Basin." (Social Actor 5).

The call, therefore, was for organizations and people who are already working on environmental restoration within the Pantanal to dialogue about their experiences and practices and join efforts in a process that covers the entire biome threatened with destruction by unsustainable human activities. The awareness of the connectivity of the ecosystem on the agenda appears. Each action, no matter how local, has repercussions on the whole through its connections.

Anthropogenic activities upstream of the Paraguay River have been causing several negative impacts for decades. Therefore, conservation initiatives needed to be implemented over time. Among them, the recovery of degraded areas stands out, especially in the headwaters of the Upper Paraguay Basin (UPB) (Santos 2013).

Assuming that this process of environmental aggression continues, Da Cunha et al. (2020) model a scenario of reduced wetlands. The current extension policy makes a warning that demands immediate action, because there was an increase of 125.23% in agricultural areas in the biome, between 2007 and 2016.

From 2013, the Pact in Defense of the Headwaters of the Pantanal was made, involving the WWF-Brasil, Pantanal Springs Complex Consortium, Pantanal Amazon Conservation Institute (IPAC), State Department of Environment of Mato Grosso, State University of Mato Grosso, and other governmental and non-governmental organizations.

The organizations involved in this Pact developed actions for the recovery of riparian forests and springs with the planting of native species in the UPB. However, Macedo et al. (2017) explain that the recovery initiatives in the region have not yet been finished and there is a need to implement indicators to improve monitoring and evaluate the results of the actions taken.

Another relevant point is the scarcity and fragility of studies to plan and execute restoration actions in the region and thus obtain appropriate parameters and/or indicators for the Pantanal region. The situation was aggravated by the sudden decrease in research funding in Brazil, as a result of changes in priorities and the policy of cutting expenses (Fernandes et al. 2017).

Santos (2013) recorded the history of degradation ofoverears in the UPB region, where silted streams, with ravines, gullies, and headwaters that supply the affluents of the Paraguay River were degraded in the

main former of the Pantanal (Silva et al. 2007). This also causes a decrease in the quantity and quality of water (De Mello et al. 2020). This perception of the situation, years ago, motivated local residents to initiate an action called "movement of waters in Cabaçal Reserve", which intensified in the region.

This experience was highlighted in the report of a participant:

> "A person or an entity or a group, which has an erosion or a gully in the chest, is unable to perform the restoration. So, I see the solution in the pact, because we had a pact here, the 'Pact of the Headwaters of the Pantanal', which did an excellent job because there were a lot of people involved, many people involved, with a lot of desire, a lot of determination to do it, and here it gave visibility to Mato Grosso." (Social Actor 16).

The importance of a pact for environmental restoration appears in the report as the overcoming of a local problem that a person or a group of people is unable to face alone and needs ideas, knowledge, experiences, commitment, and help from other groups to develop a collective project.

As observed in the Movement of Waters and the Pact for the Headwaters of the Pantanal, the Pact for the Restoration of the Pantanal brings together several entities against a series of impacts, which occur synergistically, and expand on a local, regional, continental, and possibly global scale.

Mobilization process and socio-environmental impacts

Regarding the Pantanal, there are few studies assessing the multiple environmental impacts that can be used to guide the restoration of the biome, which has suffered impacts and pressures for several years (Da Silva et al. 2015; Cai et al. 2018), such as those caused by the Paraguay-Paraná Waterway (PPW) and the Small Hydroelectric Power Plants (Calheiros et al. 2018).

The challenges that appeared during 2020, with the beginning of the Covid-19 pandemic, the political crisis in Brazil, and drought and fires in the Pantanal made it difficult to face environmental crimes, which became more frequent because of the dismantling of environmental inspection, defense and protection agencies.

As an example, we cite the reduction of budgets, the occupation of coordinating positions by people declared to be against protection, and the loss of organized civil society positions in participatory spaces such as environmental councils that were occupied by representatives of vulnerable populations and entities committed to making environmental problems in wetlands visible.

The meeting convened to discuss the pact was well accepted by most of the entities invited as they understand the need to join forces and become effective partners in joint actions. This understanding is expressed in a participant's report:

> "Tonight is a kickoff, an initiative that, if it is well received and well committed by all the participants, will be able to bear fruit from now on. It is great now, above all, the need for partnerships and partnerships that put their heart, eyes, head, hands, and feet together to transform and recover what has already been lost and improve the current conditions that we are thinking about." (Social Actor 2).

The expressions, "kickoff" in that meeting, and "partnership" as a need for a method of joint and participatory action of organizations and people well "committed" body and soul with the proposal of restoration show faith in the "fruits" that the Pact can provide.

The Gaia Institute is a non-profit civil social organization, its headquarters is located in Cáceres, on the banks of the Paraguay River in the state of Mato Grosso. Most of Gaia's actions are related to the defense of the biome and the Paraguay River, which is the main tributary of the Upper Paraguay Basin. This extensive floodable area and the affluents area form the Pantanal Mato-Grossense, one of the largest wetlands in the world (Wantzen et al. 2005).

Most of the representatives of the entities that participated in the meetings proved to have knowledge and information on the Pantanal. They exposed their actions and experiences in the territory where they work, in defense of this biome.

> "UNESCO is responsible for taking care of its seven biosphere reserves in Brazil and the Pantanal was recognized as a Biosphere Reserve as well as a World Heritage Site. The protected area complex of the Pantanal was also recognized as a World Natural Heritage Site in 2000. We are talking about 20 years of recognition." (Social Actor 17).

The international recognition of the Pantanal as a biosphere reserve and a world heritage site imposes responsibilities on the preservation and conservation of these natural assets of humanity. Ultimately, this is what the present Pact needs to address and take care of.

In the analysis of contributions and information from the participants, we used the SWOT matrix, which made possible the identification of the "strengths, weaknesses, opportunities and threats" to the restoration of the Pantanal, the object of the Pact (Figure 1).

Figure 1. SWOT Scheme.

STRENGTHS Union of different institutions; Scientific knowledge generated; Traditional knowledge and strength; Team work against fire and fire damage.	**WEAKNESSES** Lack of efficient public policies; Misinformation from the community; Lack of resources for inspection; Lack of government support.
OPPORTUNITIES Dialogue between the different sectors; Financing of restoration projects; Strengthening of actions that involve the community and its knowledge; Building support networks; Recognition of the culture.	**THREATS** Installed hydroelectric projects; Fires; Climate changes; Waterway; Agriculture; Deforestation; Environmental degradation.

Source: Transcription of the live with the groups interested in the Restoration of the Pantanal

In the exhibitions and discussions in the virtual meetings, we could identify several issues that can be classified into the category of threats. Changes in the environment such as the construction of hydroelectric plants (Owusu et al. 2019) and waterways (Calheiros et al. 2018), as well as the expansion of extensive productive actions in agriculture, such as soybeans (Da Cunha et al. 2020), were elements addressed in the speeches as a great threat.

Agribusiness mechanizes the management of crops and pastures, which drains wetlands and causes effects on the entire Plata basin, introducing chemical fertilizers, poisons, and transgenic seeds into its waters (Zeni et al. 2019), causing environmental degradation.

The waterway, agribusiness, and hydroelectric plants favor the river silting process, through deforestation and fires that reached the mark of more than 40 thousand km2, in 2020 (Garcia et al. 2021). Da Silva et al. (2015) have already identified these activities as driving forces that promote the loss of local biodiversity. These changes in land use, especially deforestation, are decisive in altering water quality (De Mello et al. 2020).

Among the negative points and weaknesses that strengthen these threats, the group pointed out the lack of efficient public policies, scarcity of resources for inspection, in addition to the lack of or little support from the government for activities such as research, which has been suffering annual budget cuts (Lima 2017; Fernandes et al. 2017), which directly impacts the quantity and quality of knowledge generation in one of the most megadiverse countries in the world (Mittermeier et al. 2017).

Another worrying point is the civil community's misunderstanding or misinformation on the environmental consequences of productive or infrastructure projects. Confusion can greatly hinder the perception of problems and the various actions necessary for environmental conservation. The economic immediacy of quick and easy profit, combined with the purposeful transgression of environmental norms and rules by public and private agents, compromises sustainable development (Câmara 2013).

These impacts are making difficult the survival of animal and plant species in the Pantanal. This impact on fauna and flora directly affects traditional local communities that depend on fish and other resources from the rivers of this biome (Da Silva et al. 2015; Façanha and Da Silva 2017) as a source of protein, food, and construction.

In contrast, the following strengths were listed: (1) union of different institutions in favor of the same cause, including local institutions and institutions with international actions; (2) accumulation of scientific knowledge, which continues to be generated, even when ignored by some government institutions; (3) strength of the knowledge and work of traditional and local communities; (4) interaction between these actors, observed in the considerable effort of teams against fires in 2020, in rescuing and supporting local fauna, and in punctual restorations (Tomas et al. 2019). Araújo and Schwamborn (2013) address that Environmental Education involves people in socio-environmental scenarios and can generate strategic action for the dissemination of knowledge in communities, which are necessary for the continuity and expansion of preservation actions.

Even in the pessimistic scenario, at the governmental level, several opportunities were listed and can be used to achieve the objective that is the development of the Pact for the Restoration of the Pantanal, a wetland where the global impacts of agriculture and monocultures implemented in the higher areas of the basin, which removed native vegetation around springs and streams that form the wetlands of the Pantanal (Ramsar 2006; Zahang and Kong 2019).

Most speeches evidenced the importance of the traditional and local voice for bringing experiential empirical knowledge, which interacting with academic knowledge can strengthen the defense, protection, and restoration actions. The interaction of local knowledge in different sectors must be considered.

Funding is another opportunity, especially at an international level, which can strengthen actions already started and initiate others. Resources together will be able to develop the pact further, protect, conserve and restore more and more the Pantanal and sustain the people who live there, improve water quality (De Mello 2020), increase local biodiversity, capture and stock carbon, and improve quality of life.

Institutions involved at the beginning of the pact

Inspired by the experiences of other actors and local collective projects, we seek alternatives by articulating partners with common interests in that biome restoration. Several institutions were convened and responded to the invitation of the Gaia Institute of Environmental Education of the Pantanal (Gaia), which contacted and established a wide network of social actors (Table 1), who adhered to the idea of making a Pact for the Restoration of the Pantanal.

Table 1. Entities that were present in the first moment of dialogues for the Pact for the Restoration of the Pantanal.

No.	Name of the entities
1	Faith and Life Institute – Cáceres Mato Grosso, Brazil.
2	Roots Group – Cáceres Mato Grosso, Brazil.
3	Popular Basin Committee – Cáceres, Mato Grosso, Brazil.
4	Institute for Research and Environmental Education – Gaia – Cáceres, Mato Grosso, Brazil.
5	Water Observatory (OGA), Brazil.
6	World Resources Institute (WRI), Brazil.
7	Survival "Amigos de la Tierra" – Paraguay.
8	SOS Atlantic Forest – Brazil.
9	Network of Traditional Peoples and Communities of the Pantanal – Brazil
10	Pantaneiro Men Institute – Mato Grosso do Sul, Brazil.
11	Network of Solidarity Economic Enterprises and Socio-biodiversity Products – RESOLBIO – Mato Grosso, Brazil.
12	Friends of the Pantanal – Mato Grosso, Brazil.
13	Ecology and Action (Ecoa) – Mato Grosso do Sul, Brazil.
14	External Commission on Fires – Mato Grosso, Brazil.
15	Cabaçal River Basin Committee – Mato Grosso, Brazil.

No.	Name of the entities
16	Natural Sciences of the United Nations Educational, Scientific and Cultural Organization (UNESCO) – Brazil.
17	UCDB – Dom Bosco Catholic University
18	GRETAP - Animal Cerrado Pantanal Technical Rescue Group
19	Pantanal Biosphere Reserve – Mato Grosso/Mato Grosso do Sul, Brazil.
20	Long Term Ecological Research Program (PELD)/Brazil.
21	The Nature Conservancy (TNC) – Brazil.
22	Water Observatory
23	Pantanal Springs Complex Consortium – Mato Grosso, Brazil.
24	Federation of Organizations for Social and Educational Assistance (FASE) – Mato Grosso, Brazil.
25	Social Service of Commerce (SESC) Pantanal – Mato Grosso, Brazil.
26	World Wildlife Fund (WWF) – Brazil.
27	Cáceres City Council, Mato Grosso, Brazil.
28	Mato Grosso State University (UNEMAT), Cáceres, Mato Grosso, Brazil.
29	International Rivers – Paraguay.
30	Socio-environmental House Fund – South America.
31	Forum on Environment and Development of Mato Grosso (FORMAD) – Mato Grosso, Brazil.
32	"Bichos do Pantanal" Environmental Project (UNEMAT), Cáceres, Mato Grosso, Brazil.
33	Environmental Education Group (UNEMAT), Cáceres, Mato Grosso, Brazil.
34	UNEMAT / Environment Education Group
35	Cerrado and Pantanal Women's Network (CerraPan) – Mato Grosso do Sul, Brazil.
36	Eco Pantanal – Mato Grosso, Brazil.
37	Postgraduate Program in Environmental Sciences (UNEMAT), Cáceres, Mato Grosso, Brazil.
38	Productividad Biosfera Médio Ambiente (PROBIOMA) – Santa Cruz, Bolívia.
39	National Institute of Colonization and Agrarian Reform (INCRA) – Brazil.
40	Atlantic Forest Pact, Brazil.
41	NEDET - Extension Center in Development, Mato Grosso, Brazil.
42	Legislative Assembly of Mato Grosso, Brazil.

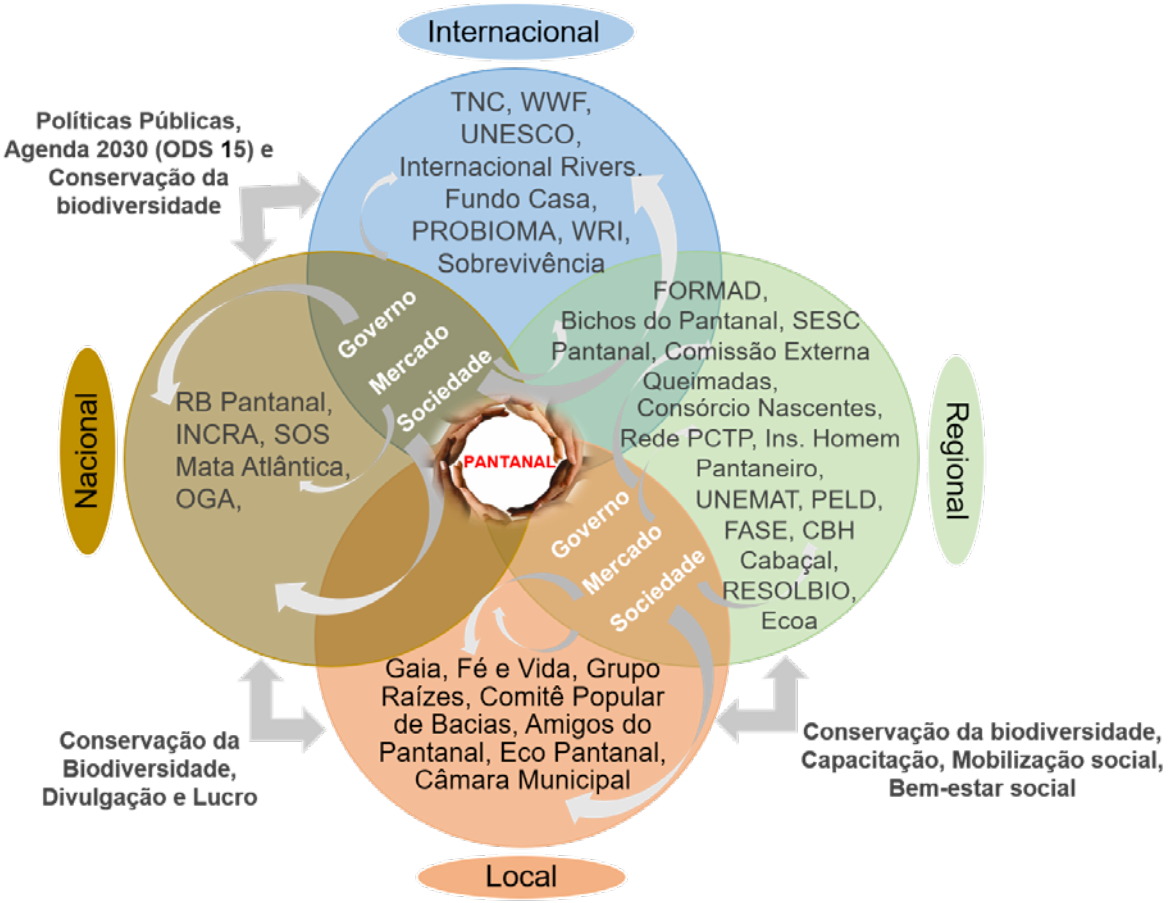
Source: Groups that participated in the dialogues (live and meeting) for the Restoration of the Pantanal

Forty-two social groups participated in the meeting to dialogue and think about restoration actions for the Pantanal.

"The representations intervene in the action on the social world, as this action is based on the social actors' knowledge of this world and of their position" (Jodelet 2018, p. 428).

These actors represent institutions from different spheres of society, local, regional, national and international (Figure 2).

Figure 2. Social actors grouped into local, regional, national, and international spheres.



The needs for biodiversity conservation were discussed and training was performed through activities, mobilizing people who were grouped at the local and regional levels.

The groups in the national and global spheres addressed the commitments assumed by several countries, through the 2030 Agenda, to achieve the Millennium Development Goals, mainly for biodiversity conservation.

These groups have different interests (political, economic, social, environmental, and governmental) in the Pantanal; however, they met in a collective interest for finding solutions to the problems that are affecting everyone involved. These people are residents of communities in the Pantanal, women, youth, adults, elderly, students, teachers/professors, and researchers from urban and rural areas, from Mato Grosso, Mato Grosso do Sul, and other Brazilian states and biomes, as well as form other countries, demonstrating that the Pantanal is not only a local concern but also a global one.

Finding the answers to the questions discussed (Table 2) is another challenge to be overcome.

Table 2. Questions asked by the social actors during the dialogues.

Questions raised in the dialogues
1. What is a pact? Is it an agreement "locked", ensured, or established?
2. What indicators are we going to determine in a restoration at the level of structure, diversity, function, and restoration of biodiversity, regarding ecological processes, water restoration, social, economic, and cultural function, and this relationship with human communities?
3. How are we going to restore it?
4. How do we restore understanding that sustainable management is necessary for the restoration of fields?
5. How do you prevent undesirable species from proliferating?
6. How do we restore the flood pulse level?
7. At this level of destruction, will we be able to restore?
8. Can we build a Pact for the Restoration of the Pantanal, and discuss the importance of the Restoration and the construction of a wide restoration program?
9. How exchange the knowledge needed by this dialogue proposal? Hold meetings with more dialogues? How can we build this pact based on experiences, such as those obtained in the Atlantic Forest, and expand our dialogue?
10. The Cabaçal River is important for forming the waters of the Pantanal, so is it because of this you have to know who to do it for? where to do? And with whom?
11. In the experience of the Atlantic Forest Pact:
- What was important in this process?
- Was it important to bring a little bit of the experience of how the movement was based on a reference and concepts, and what was restoration about?
- What was the aim of the restoration?
- What technique was available?
- How to monitor this area?
12. How do we say that in addition to being together, we can do something together?
13. The invitation is open to people who want to join this cause. Let's build a Pact for the Restoration of the Pantanal?

Source: Synthesis of the questions formulated by the participants in the dialogues

The effort to answer these questions will be reflections on the process of establishment and execution of the pact. They will appear in the development of plans, presentation of proposals, the establishment of agreements, formulation of projects, and practical actions in the field that involve the local populations of the Pantanal.

The Atlantic Forest Pact experience challenges the restoration of the Pantanal

We consider that the construction of the Pact for the Restoration of the Pantanal does not start from ground zero, but is inspired by practices and information from other pact experiences, even in other biomes. For example, it is interesting to know how occurred the process of making the pact for the restoration of the Atlantic Forest (Lima et al. 2015; Rodrigues et al. 2009). Despite the differences, the form, methodology, and governance developed by the Atlantic Forest pact can serve as a reference for making the Pact for the Restoration of the Pantanal.

To make the Pact for the Restoration of the Atlantic Forest, it was necessary to articulate partners to discuss and define the methodology, governance, and sustainability of the pact, including its continuity. Conservation and restoration studies, planning activities, and goals began to be established from 2009 (Rodrigues et al. 2009; Crouzeilles et al. 2020).

The reference of concepts and actions for Atlantic Forest restoration was one of the important issues in the process of making the Atlantic Forest Pact (Lima et al. 2015; Rodrigues et al. 2009), a survey that addresses the historical aspect of the occupation of the Atlantic Forest, restoration models, ecosystemic view of restoration, the importance of environmental diagnosis of the areas to be restored, monitoring, restoration methods for economic purposes and description of restoration actions.

Governance is an important element, which is related to articulating the political-administrative system that governs the decision-making process in the public sphere, with the different social actors of the territories (Oliveira et al. 2021), municipal, state, or federal. In this sense, governance comprises how the territory is politically organized and the participation of civil society.

Restoration projects generally quantify only biological diversity as a measure of success (Siqueira et al. 2021), but it is necessary to include human diversity.

The socio-environmental problems that affect the communities of the Pantanal did not start in 2020. In studies on the recovery of springs in the region of the Pantanal in Cáceres (Ikeda-Castrillon 2017), the community of the "Laranjeira I" settlement asked partner institutions for help, as they were suffering from the drought and many people were abandoning their properties because it was impossible to produce food and ensure the family's livelihood with no water available for the people and the activities in the rural area.

"Since 2012, communities have drawn attention to the need for Restoration of Springs. Two thousand-twelve, for example, was a very dry year both in the flood and in the drought, and the communities were the first to suffer" (Social Actor 5)

Unfortunately, the situation of communities located in the Pantanal has become worse in recent years.

> "How can some people enter someone else's house without asking permission and still want to dictate the house's orders? So, we have this feeling regarding what has been happening in the Pantanal, and we are talking about challenges that are not new, we are talking about challenges from enterprises, agribusiness advancement in this territory called Pantanal, but together with it there is also this whole process of exclusion, all this process puts the communities in a situation of vulnerability." (Social Actor 10).

The Gaia Institute and some partner institutions (ICMBIO, STTR of Cáceres, EcoPantanal, Z2 Fishermen's Colony of Cáceres / Traditional Communities Network of the Pantanal, Pantanal Biosphere

Reserve, PELD, UNEMAT, and IFMT) had a project with approved funding in 2021 to continue the proposal of the pact: BIODIVERSITY RESTORATION, WATER CONSERVATION, AND PANTANAL WETLANDS FIRE PREVENTION PROJECT – TAIAMÃ ECOLOGICAL STATION.

One of the objectives of this project is to strengthen the sustainability and continuity of projects for the recovery of degraded areas by making a Pact for the Restoration of the Pantanal. The development of actions such as this pact can contribute to understanding the historical processes and local activities (Zhang and Kong 2019) necessary for the transformation of socio-environmental relationships (Toas et al. 2019; Oliveira 2021) and the different interests of society and natural ecological needs (Grenfell et al. 2007; Cohen-Shacham et al. 2015).

After the first dialogues for a pact, the above-mentioned project is the first proposal that arises to give continuity to social mobilization and participation works aimed at the Restoration of the Pantanal.

Conclusions

Considering that making the Pact for the Restoration of the Pantanal will be a great challenge, except for the differences, many lessons can be learned from the analysis of the experience of the process of making the Pact for the Restoration of the Atlantic Forest.

The main challenge will be to find a form of construction that defines the characteristics and objectives of the process, elaborates the methodology, and decides on the governance structure for making and executing the agreement. A restoration is desired with the participation of the populations that live in the Pantanal such as fishermen, riparian populations, and traditional communities.

The choice of engaging techniques that bring all institutions to a sense of collective and unity belonging in the construction and execution of activities of the pact will be essential. This process should be characterized by principles and guidelines that truly meet the needs of the Pantanal.

The construction of a public document with references, concepts, protocols, and restoration models for the Pantanal will be fundamental. This topic needs to be debated and deepened because, without it, there will be many difficulties to expand the scale of the Pantanal restoration. This pact should not only be a purely technical-scientific agreement but easily accessible to the populations involved in the base.

The SWOT analysis contributed to identifying priorities in facing and overcoming weaknesses (misgovernment) and threats (enterprises) and especially in taking advantage of strengths (partner institutions and experiences) and opportunities (dialogue, network, and knowledge), which will contribute to the development of a restoration agenda.

In conclusion, we can say that concepts such as partnership, governance, restoration, sustainability, and monitoring are the central elements for the successful development and implementation of the Pact for the Restoration of the Pantanal.

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