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GOVERNANCE FOR MEGADIVERSITY

Brazil | Australia

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INTRODUCTION

In 2017, 15 members from the Researches Groups in Environmental Law and Sustainable Development from Brasília University Centre – UniCEUB and Mackenzie Presbiterian University attended a workshop with researchers from different Australian universities that took place in 3 different Australian towns: Sydney, Coffs Harbour and Armidale. The workshop named Governance for Megadiversity was organized by Professor Paul Martin, Director of the Australian Centre for Agriculture and Law in the School of Law at the University of New England and the main objective was to discuss biodiversity governance issues in both countries.

To participate in the event, researchers had to submit a summary of approximately 5 pages, containing a summary of their research that would be presented in one of the sessions of the workshop and then discussed by the group.

Thus, this book presents these summaries, already reviewed by the authors, which make a contribution in terms of the beginning of the debate on biodiversity governance in both countries, Australia and Brazil. After the Congress, the authors started doing joint research, forming groups containing Brazilian and Australian researchers, that are now developing scientific papers about common issues in Biodiversity governance that will be published in another book.

The idea of this publication is not, therefore, the deepening of the issues raised in the congress, but only its presentation to the public, with the news that several of these themes will be, in more depth and following the scientific method, addressed in its own publication.

There are two parts in this book, one with the Australian and other with Brazilian researchers. The ideas in the drafts can be used for future papers or master or PhD researches.

The authors and themes in part I are:

1. Amanda Kennedy - Effective agri-environmental governance in Australia – the case of extractive resource development;

2. Amy Cosby - The Dairy industry and the Global Sustainable Development Goals;

3. Carina Costa de Oliveira and Nengye Liu - Due diligence obligations for the sustainable management of marine resources in deep seabed mining: comparing Brazilian and Australian experiences;

4. Donna Craig – Indigenous Governance of protected áreas in Australia: Uluru-Kata-Tjuta Case Study;

5. Evan Hamman and Saiful Karim - The Effective Governance of Marine Biodiversity in Australia's Great Barrier Reef;

6. Andrew Lawson - Co-governance for connectivity conservation across public and private rural landholdings in Australia;

7. Kip Werren - Utilising Taxation Incentives to Promote Private Sector Funded Conservation;

8. Natalie Taylor - Landholder duties of care, Biosecurity and Biodiversity;

9. Paul Martin - Meta-governance of biodiversity protection in Australia;

10. Sharllene Marimuthu - Food security and biodiversity; and

11. Vivek V. Nemane - The implementation of shared responsibility (adopted in biosecurity law and policy) for the control and management of invasive animal species in peri-urban Australia

The authors and themes in part II are:

1. André Ricardo Rosa Leão – The mining in Federal Conservation units of integral protection of Brazil;

2. Carolina Flávia Freitas de Alvarenga Nogueira - Unsound disposal of waste as a cause of biodiversity loss to be considered;

3. Celia Maria Machado Ambrozio - Legal and Environmental Management Instruments concerning the area of Environmental Protection of the Descoberto River Basin;

4. Flávio Aurélio Nogueira Júnior – Natures's rights: A Non Anthropocentric Interpretation of the Brazilian Constitution;

5. Jacqueline Maria Cavalcante da Silva - Paradigm of the society of risk and the challenges for prevention of environmental damages: the disaster in Mariana/MG in 2015;

6. Larissa Suassuna Carvalho Barros - Management plans in Brazil: panorama, challenges and perspectives;

7. Lígia de Souza Cerqueira - Laws and draft laws on lands of traditional communities
An analysis after the 5th CDB report (2015);

8. Lorene Raquel de Souza - Brief Portrait of the Management of the Conservation Units of the Federal District;

9. Márcia Dieguez Leuzinger and Gabriel Leuzinger Coutinho - Deforestation in the Amazon and Atlantic forest x The creation of conservation units;

10. Paulo Campanha Santana - Environmental Control and Licensing in the Brazilian cooperative federalism;

11. Romana Coelho Aráujo and Jorge Madeira Nogueira – Environmental Disaster in a Mineral Area: Legal and Economic Interfaces in na Ecological Restoration Program. Lessons from the Vale-BHP Billiton Case in Mariana, Brazil; and

12. Solange Teles da Silva and Nathalia Lima – The Legal Protection of Natural and Cultural Heritage.

SUMMARY

PART I – AUSTRALIAN DRAFTS

PARTE II – BRAZILIAN DRAFTS

PART I

AUSTRALIAN DRAFTS

EFFECTIVE AGRI-ENVIRONMENTAL GOVERNANCE IN AUSTRALIA
THE CASE OF EXTRACTIVE RESOURCE DEVELOPMENT

Amanda Kennedy

1 SUMMARY OF THE CASE STUDY, INCLUDING KEY FACTS AND ISSUES

Protection of biodiversity in Australia is primarily concerned with the governance of rural lands and surface waters. This is because intact biodiversity is most likely to be found in rural areas that have not been converted to industrial or urban uses. Of particular concern is farmland biodiversity; agricultural holdings presently operate across almost fifty per cent of Australia's total land area,[1] including large areas of ecological significance. There is a significant overlap between land managed for agriculture (particularly grazing), and biodiversity hotspots,[2] suggesting the need for conservation activities on rural agricultural land.

However, Australia's biodiversity performance is not encouraging, despite the existence of many legal and other instruments and programs designed to stem the trajectory of biodiversity loss. The most recent findings from October 2017 note that Australia is one of seven countries responsible for more than half of global biodiversity loss, with land clearing (including for agricultural purposes, especially in NSW and Queensland) a key causal factor. The loss of rural biodiversity is a

[1] Australian Bureau of Statistics, *4627.0 - Land Management and Farming in Australia, 2015-16* (23 August 2016) ABS <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4627.0>

[2] Paul Martin, Jacqueline Williams and Amanda Kennedy, 'Creating next generation rural landscape governance: the challenge for environmental law scholarship' in Paul Martin, Li Zhiping, Qin Tianbao, Anel Du Plessis and Yves Le Bouthillier (eds), *Environmental Governance and Sustainability*, (Edward Elgar Publishing, 2013) 46-80.

significant environmental threat, compounded by other risks and hazards such as climate change, declining soil and water quality, increased salinity, and the ability to control invasive species.

The rapid expansion of extractive developments in recent years has further compounded the threat to rural land biodiversity. This includes the expansion of existing fossil fuel operations (for example, coal mining), and the development of newer industries (for example, coal and shale bed methane gas) upon land already used for agricultural purposes. A significant portion of both current and planned fossil fuel development in Australia takes place upon or within close proximity to agricultural land. While only 2 percent of Australian land is currently under mining lease (and only 0.2 percent is being actively mined), 57 percent of Australian land is subject to coal and gas exploration applications. In the agriculturally productive North West region of New South Wales alone, 640,000 ha of land are subject to exploration licenses for coal, and 6 million ha for CSG. Between 2001 and 2009, 47 million ha of agricultural land was lost to other purposes, including mining. The immediate impact of expanding extractive developments is further loss of biodiversity, as well as the loss of arable, food producing land.

As one of only 17 'mega-diverse' countries in the world, Australia's rural agricultural lands are a significant source of ecosystem goods and services.[3] In light of the Convention on Biological Diversity, and the Sustainable Development Goals, it is clear that there are opportunities to improve the governance of rural land in Australia to increase biodiversity protection. The assessment and approval processes for rural land use are an appropriate starting point for considering how this might be achieved.

Current approaches to agricultural land use assessment and approval have been the subject of intense debate in Australia in recent years. Particularly in the context of approving extractive development on agricultural land, the relevant regulatory frameworks for environmental assessment have prompted unprecedented social conflict in several jurisdictions. It has been argued that these regimes have

[3] ABS, *1301.0 Year Book of Australia 2012 Land and Biodiversity* (24 May 2012) <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1301.0~2012~Main%20Features~Land%20and%20biodiversity~278>.

tended to prioritise development above environmental and social concerns, as well as limit opportunities for public participation in decision making. Courts have played a significant role in 'filling out' the concepts of sustainable development in order to sustain biodiversity (see, for example, the recent decision in *New Acland Coal Pty Ltd v Ashman & Ors and Chief Executive, Department of Environment and Heritage Protection (No. 4)* [2017] QLC 24 – which saw a coal mine expansion on prime agricultural land rejected, *inter alia*, because it would significantly impede intergenerational equity).

This case study will explore the nature of rural land use governance in one Australian jurisdiction – New South Wales – against the backdrop of international instruments concerned with maintaining biological diversity.

2 SUMMARY OF THE MOST RELEVANT PRINCIPLES OF THE BIODIVERSITY CONVENTION (OR OTHER APPLICABLE CONVENTION) PRINCIPLES THAT SHOULD APPLY TO THE CASE STUDY PROBLEM

The *Convention on Biological Diversity* is concerned with the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of its benefits. It also recognises sustainable use, and offers guidance to decision makers based on the precautionary principle. This is relevant in terms of recognising that natural resources are not finite, and that extractive development must be done according to principles of sustainable use.

Also relevant to the case study are the *Sustainable Development Goals*, arising from the June 2012 Rio+20 United Nations (UN) Conference on Sustainable Development. Unlike the *Convention on Biological Diversity* these are non-binding, but governments are expected to take ownership and establish national frameworks for the achievement of the 17 Goals. Particularly relevant to the assessment of extractive development on agricultural land is SDG2 – Zero Hunger, SDG7 – Affordable and Clean Energy, SDG 12 – Responsible Consumption and Production, SDG13 – Climate Action and SDG 15 – Life on Land.

Other potentially relevant instruments include the Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention) and the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol; however, for the purposes of narrowing the focus of this paper to biodiversity under the land use planning regime the implications of these agreements are not considered here.

3 A SUMMARY OF THE RELEVANT LOCAL LAWS, AND HOW THEY SHOULD/DO APPLY TO THE PROBLEM

At the Federal level, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Australian Government Minister for the Environment. Matters relevant to the assessment of extractive developments include world heritage and national heritage properties, threatened species and ecological communities, and water resources in relation to coal and coal seam gas developments. These 'triggers' provide an additional national layer of assessment.

At the state level, rural land use is governed under a number of instruments. Most relevant to the discussion here are large-scale developments that require planning consent under the *Environmental Planning and Assessment Act 1979* (NSW); and the land clearing provisions under the recently implemented *Biodiversity Conservation Act 2016* (NSW).

The *Environmental Planning and Assessment Act 1979* (NSW) sets out the processes by which development applications are assessed – this is relevant for large-scale activities such as coal mining and coal seam gas developments. These applications are usually considered by the Planning Assessment Commission (PAC), an independent planning body who has authority to review development applications, as well as act as decision maker under delegation from the Minister for Planning.[4] The PAC considers the likely impacts of the development (including environmental, social and economic impacts), the requirements of any

[4] Environmental Planning and Assessment Act 1979 (NSW) s 23D.

environmental planning instruments (such as State Environmental Planning Policies, Biodiversity Offset Policies), and any public submissions.[5] The most relevant State Environmental Planning Policy is the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (the 'Mining SEPP'). This policy provides specific criteria for decision makers to consider, including compatibility with nearby land uses, the impact of transport, the efficiency of resource recovery, and post-development land rehabilitation.

Also relevant to agricultural land are regulations to decrease broad-scale land clearing using permits and criminal penalties – notably, the new *Biodiversity Conservation Act 2016* (NSW). This act replaces the previous *Native Vegetation Act 2003*, which banned broadscale clearing unless it maintains or improves environmental outcomes. The new legislation expands the range of allowable clearing activities, and introduces new self-assessable codes for land clearing which assume that landholders have the ecological expertise to determine clearing. The new Act also expands allowable offsetting activities.

These instruments variously incorporate Australia's international obligations with respect to biodiversity conservation and sustainable development; for example, s.391(2) of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) outlines the precautionary principle: "The precautionary principle is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage".

4 DISCUSSION OF HOW WELL, OR HOW BADLY, THE LAW AND OTHER GOVERNANCE ARRANGEMENTS ARE WORKING

When it comes to the assessment and approval of large scale extractive developments on rural lands in NSW (particularly under the *Environmental Planning and Assessment Act 1979* (NSW)), adherence to the principles of sustainable development has been problematic (for detailed case studies see Amanda Kennedy, *Environmental Justice and Land Use Conflict: The Governance of*

[5] Environmental Planning and Assessment Act 1979 (NSW) s 79C.

Mineral and Gas Resource Development, 2017 Routledge). Concerns have been expressed that, for example, the precautionary principle is being bypassed or compromised through fragmented implementation. This has been enabled through the legislation where certain large-scale extractive developments are deemed to be of state or national significance, which takes them beyond the sustainable development protections of the legislation; as well as through additional instruments (for example, the *Biodiversity Offsets Policy*, which permits offsetting beyond the obligations stipulated in the legislation). Moreover, individual projects tend to be considered in isolation rather than systemically, which obscures the cumulative impacts of development. The judiciary has been left to effectively 'fill out' the gaps in the legislation and to attempt to give effect to concepts such as ecologically sustainable development, and intergenerational equity. However, their effectiveness in doing so depends upon the nature of the cases that come before them, as well as a range of other factors pertaining to the judicial process (for more on this point, see Preston, B., Kennedy, A.L., and Martin, P., 'Bridging the gap between aspiration and outcomes: The role of the court in ensuring ecologically sustainable development' in Courts and the Environment, Voigt, C., and Makuch, Z.A. (eds.), Edward Elgar (forthcoming)).

Agricultural communities in NSW have expressed significant dissatisfaction with the ways in which the impacts of large scale extractive projects are being measured and determined, and the scale and range of biodiversity offsets permitted. There is a concern that the economic benefits of extractive interests have taken priority in PAC assessments, with the relevant legislative instruments (e.g. s 79C *EPAA*) providing no weighting for the protection of biodiversity.

An illustrative example arose in the assessment of Shenhua's proposed Watermark coal mine in north-west NSW. Among other matters, there was significant community opposition to the biodiversity impacts of the mine, including koala habitat. It was determined by the Planning Assessment Commission (PAC) that these could be managed or offset under the relevant legislation. One community group – Upper Mooki Landcare – sought judicial review of the PAC determination, commencing proceedings in the NSW Land and Environment Court to challenge the

approval of Shenhua's Watermark mine on an error of law.[6] The group argued that the PAC did not properly consider whether the mine would place the koala population in the area at risk of extinction, as required under threatened species provisions of the *EP&A Act* (s 5A(2)(a)). Koala populations in NSW are considered vulnerable under the *Threatened Species Conservation Act 1995* (NSW). Of particular concern was the plan of action for the koala habitat proposed by the proponent, which anticipated that koalas would 'naturally move away from the habitat that is being cleared' and, if they did not, then a translocation plan would be implemented. Evidence was put to the PAC that translocation programs have resulted in high mortality rates for koalas, and Upper Mooki Landcare argued that the PAC did not consider this, constituting an error of law. However, the threshold for a claimant to demonstrate an error of law in judicial review proceedings is particularly high, and Upper Mooki Landcare could not demonstrate that the PAC had failed outright to consider the impacts upon the koala population, or the principles of ESD. Accordingly, the claim was dismissed.

Other key case examples include *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited* (2013) 194 LGERA 347, [2013] NSWLEC 48. This case involved an appeal by a community group against a decision to approve the expansion of a coal mine in the Upper Hunter Valley in NSW. The Court found that the impacts of the mine expansion would have significant and unacceptable impacts upon biodiversity and social impacts, contrary to the principles of ecologically sustainable development, and allowed the appeal. Following the Court's decision, the mine proponent swiftly lodged an appeal, and lobbied the NSW State government to intervene to enable the approval of the mine. The State government subsequently introduced regulatory changes to prioritise the 'economic benefits' of resource extraction when determining development applications, enabling the proponent to submit a substantially similar application for approval. The assessment for the subsequent

[6] Upper Mooki Landcare Inc v Shenhua Watermark Coal Pty Ltd and Minister for Planning [2016] NSWLEC 6.

mine approval took place in a forum which closed off opportunities for further merits review.[7]

5 DISCUSSION – THE ISSUES THAT SHAPE THE EFFECTIVENESS, EFFICIENCY AND FAIRNESS OF THE GOVERNANCE ARRANGEMENTS AS APPLIED TO THE CASE STUDY PROBLEM

- Notwithstanding the incorporation of principles such as ecologically sustainable development, and provisions for the conservation of biodiversity, within domestic legislative instruments there is still the ability for these to be bypassed.
- For example, provisions around land clearing apply differently to extractive developers than they do to farmers, which has resulted in different standards for development and agriculture – and arguably, in the case of development, it is a standard which does not maintain or improve environmental outcomes.
- The courts have been left to play a significant role in translating and applying concepts such as sustainable development and intergenerational equity, but their capacity to do so effectively is dependent on a range of factors which has resulted in inconsistent application of the principles.

6 DISCUSSION – DIAGNOSIS OF CAUSES AND EFFECTS, AND KEY SYSTEMIC RELATIONSHIPS RELEVANT TO E ABOVE

- Translation of international obligations within domestic legislation
- Bypassing of key provisions relating to sustainable development for particular interests e.g. large-scale extractive development projects
- Political influence of certain interest groups to shape regulatory framework

[7] As noted earlier, see also New Acland Coal Pty Ltd v Ashman & Ors and Chief Executive, Department of Environment and Heritage Protection (No. 4) [2017] QLC 24.

- Capacity of judiciary to 'fill out' concepts of sustainable development – depends on cases which are brought before them, nature of advocates, etc.

7 DISCUSSION – RECOMMENDATIONS FOR MORE EFFECTIVE, EFFICIENT AND FAIR LEGAL GOVERNANCE

- Procedural reforms – e.g. more definitive obligations regarding sustainable development, and limitations on avoiding these through offsetting; criteria for refusing coal and gas development in light of international obligations e.g. exclusion zones; expanded merits appeal rights and liberal standing provisions.
- Enhance conditions for effective public participation in environmental decision making: clear and early notice of issues requiring decisions that will impact the environment; provision of relevant information; multi-directional consultation; meaningful input into decision making; and access to review functions.
- Addressing financial, technical and other structural barriers to participation by attending to the manner and methods of participation (e.g. allowing longer time for submissions, or simplifying technical data), and recognising and potentially offsetting the financial costs of participation.
- Policy and regulatory requirements to consult stakeholders or establish participatory processes; these must should detail how participation will occur, and how the inputs from participation will be used and evaluated. These should also include a requirement to assess the effectiveness of participatory processes; without monitoring and evaluation, decision makers may hear, but not listen to, public views. Also provisions for judicial review of public consultation processes as a safeguard against tokenism.
- Place-based perspectives accommodated in development assessment mechanisms; social-impact assessment as a complement to environmental and economic impact assessment – there is scope for an expanded and independent social impact assessment process for development approval,

separate from environmental and economic impact assessments and mediated by community empowerment.

- Metagovernance reform

THE DAIRY INDUSTRY AND THE GLOBAL SUSTAINABLE DEVELOPMENT GOALS

Amy Cosby

1 A SUMMARY OF THE CASE STUDY KEY FACTS AND ISSUES.

Dairy is the third largest rural industry in Australia with the farm, manufacturing and export sector valued at a total of $13.7 billion. There are approximately 6,000 dairy farms in Australia, 120 factories and 38,000 people employed directly by the dairy industry.

Australia's dairy herd of 1.66 million cows produced 9.5 million litres of milk in the 2015-16 season.[1] The Australian dairy industry consist of small to medium sized enterprises and are typically owner-operated businesses.[2]

A partnership between the International Dairy Federation (IDF) and the Food and Agriculture Organisation of the United Nations (FAO) the Dairy Declaration (Declaration) was signed at the IDF World Dairy Summit on Wednesday 19 October 2016 in Rotterdam, Netherlands.[3]

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[1] Dairy Australia. (2016). Australian Dairy Industry in Focus. Retrieved from http://www.dairyaustralia.com.au/Industry-information/About-Dairy-Australia/~/media/Documents/Stats%20and%20markets/Australian%20Dairy%20Industry%20In%20Focus/Australian%20Dairy%20Industry%20In%20Focus%202016.pdf

[2] ACCC. (2016). ACCC Inquiry into the Australian dairy industry Issues Paper. Retrieved from https://www.accc.gov.au/system/files/ACCC%2520Dairy%2520Inquiry%2520Issues%2520Paper%2520-%25208%2520November%25202016%2520%2528FINAL%2529.pdf

[3] A copy of the Dairy Declaration can be found here: http://www.dairydeclaration.org/Portals/153/Dairy%20Declaration.pdf?v=1

The Declaration, on behalf of the one billion people who make up the global dairy community, states that the dairy industry is 'committed to the sustainable development of the dairy sector to generate widespread benefits for people and the planet.'[4]

During the 12 months since the launch of the declaration, 19 countries[5] have signed the Declaration. The Australian Dairy Industry Council (ADIC) endorsed the Declaration in September 2017. Ian Halliday, Managing Director of Dairy Australia (Australia's peak dairy industry body) also endorsed ADIC and the wider dairy industry's commitment to the goals of the Declaration. Chair of the ADIC, Terry Richardson said:

> The Australian dairy industry is committed to finding innovative solutions and building capacity to develop the sustainable food systems and resilient agricultural practices envisaged by the goals.[6]

The ADIC released the 'Australian Dairy Industry Sustainability Report 2016' (Sustainability Report) with the goals for the industry to 2020 to:

- Reducing environmental impact
- Enhance economic viability and livelihoods
- Improving wellbeing of people
- Providing best care for our animals.[7]

The ADIC's 'Sustainability Report is based on the global 'Dairy Sustainability Framework' (DSF).[8] The DSF

> …has been developed to provide overarching goals and alignment of the sector's actions globally on the path to sustainability. The DSF will enable the dairy sector to take a holistic approach to sustainability through a common language, alignment of international sustainability activity and

[4] FAO and IDF. (2016). The Dairy Declaration of Rotterdam. Retrieved from http://www.dairydeclaration.org/Portals/153/Dairy%20Declaration.pdf?v=1

[5] Including Australia, New Zealand, United States of America and England.

[6] Get Farming (2017, 14 September). Australia endorses the Dairy Declaration of Rotterdam. Retrieved from http://getfarming.com.au/2017/09/14/australia-endorses-dairy-declaration-rotterdam/

[7] You can read the whole report here: Australian Dairy Industry Council. (2016). Australian Dairy Industry Sustainability Report. Retrieved from file:///Users/amycosby/Downloads/Dairy+Industry+2016+Sustainability+Report+14th+Aug+17.pdf

[8] You can read more about the Framework here: Dairy Sustainability Framework. (2017). Global Criteria. Retrieved from https://dairysustainabilityframework.org/dsf-membership/global-criteria/

> through this generate a common sustainability commitment that can be expressed at a global level, but also regional, national and organizational levels.[9]

2 A SUMMARY OF THE RELEVANT OF THE BIODIVERSITY CONVENTION (OR OTHER APPLICABLE CONVENTION) PRINCIPLES THAT SHOULD APPLY TO THE CASE STUDY PROBLEM.

The IDF is committed to the 17 global sustainable development goals (SDG) outlined by the FAO. The strategic objectives of the FAO are to make agriculture, forestry and fishery more productive and sustainable across the globe. To achieve food security one of the fundamental criteria is to ensure all people have regular access to high-quality food which in turn allows them to lead active and healthy lives.[10] In addressing the SDGs the Dairy Declaration recognises that[11]

- The global dairy industry supports, both directly and indirectly the livelihoods of 150 million farmers. Vast employment opportunities are generated along the supply chain which can employment opportunities along the value chain, which can lead to the passageway out of poverty **(SDG1 – No poverty)** but also contributes to the prospect of beneficial employment and decent work for all **(SDG 8 – Decent work and economic growth)** and makes inroads into reducing inequality **(SDG10 – Reduced inequalities).**
- The dairy industry has the ability to work towards ending hunger and achieving food security **(SDG2 – Zero Hunger)** and contribute to healthy lives **(SDG3 – Good Health and Wellbeing)**, because of the important role of milk in the provision of energy, protein and micronutrients and through investments that reduce the negative impact of the dairy industry on public health.

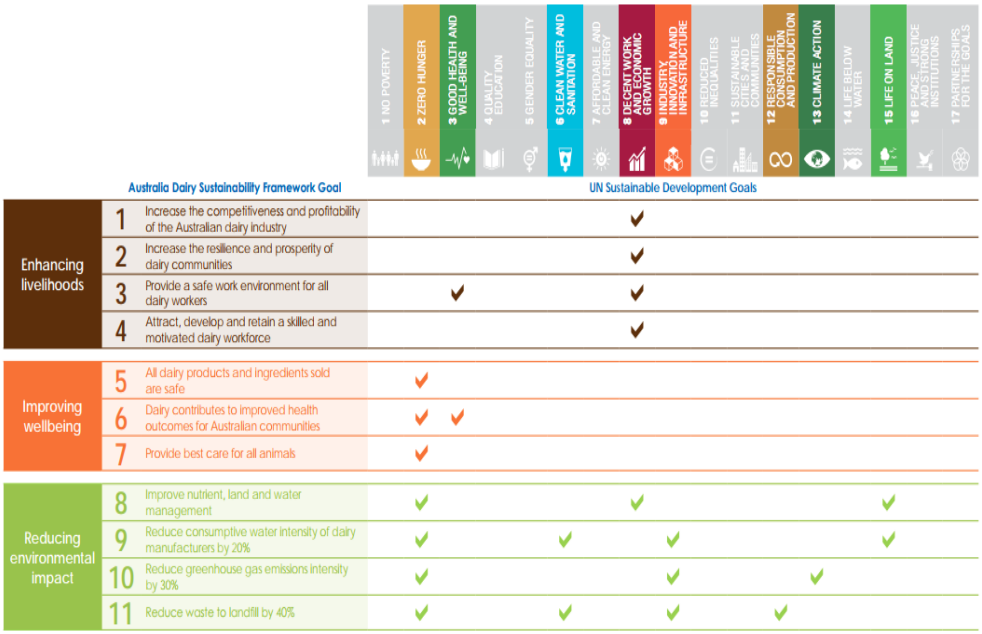
[9] Ibid.
[10] Jim Cornall. (2016, October 20). IDF and FAO sign Dairy Declaration of Rotterdam at summit. *DairyReporter.com.* Retrieved from https://www.dairyreporter.com/Article/2016/10/20/IDF-and-FAO-sign-Dairy-Declaration-of-Rotterdam-at-summit?utm_source=copyright&utm_medium=OnSite&utm_campaign=copyright
[11] Adapted from Cornall (2016) above n 10.

- Women play a key role in the dairy industry contributing to getting closer to achieving the goal of gender equality **(SDG5 – Gender equality)**.
- The dairy industry has the potential to address, through the adoption of best practice, many other SDGs including the promotion of sustainable consumption and production patterns **(SDG 12 – Responsible consumption and production)**, combatting climate change **(SDG13 – Climate action)**, protecting and restoring terrestrial ecosystems including biodiversity **(SDG 15 – Life on land)** and the sustainable management of water and sanitation **(SDG 6 – Clean water and sanitation)**.
- The relationships between the many facets of the dairy industry, its people and the globe are complex and multidimensional. There is a need for processes which foster collective and concerted action bringing together many different stakeholders to develop, integrate and implement these goals through increased investment and effective policies (**SDG 17 – Partnerships for the goals**).

3 A SUMMARY OF THE RELEVANT LOCAL LAWS OF THE JURISDICTION, AND HOW THEY SHOULD/DO APPLY TO THE CASE STUDY PROBLEM.

Through the 'Sustainability Report' the Australian dairy industry is committed to developing a more sustainable dairy industry, both at home (Fig. 1) and on a global scale.

Fig. 1 – Australian Dairy Industry Council Sustainability Frameworks goals and the global sustainable development goals they seek to address.[12]



The ADIC through its 'Sustainability Report' is committed to addressing the FAO's (and in turn the Dairy Declaration). The SDGs are not legally binding on Australia, however it is expected that each country will works towards establishing frameworks and policy which will lead to the achievement of each of the 17 goals.

4 DISCUSSION OF HOW WELL, OR HOW BADLY, THE LAW AND OTHER GOVERNANCE ARRANGEMENTS ARE WORKING.

The ADIC Sustainability Report reports on progress against the goals of the framework. Some points of interest are:

Goal 8 – Improve nutrient, land and water management[13]

- Baseline data indicated that 50% of farms recycled water on their farm with the 2020 target 100%. As of 2015, good progress has been made against

[12] Australian Dairy Industry Council (2016) above n 7.
[13] Australian Dairy Industry Council (2016) above n 7, p 31.

this target with 75% of farms now reporting they are recycling water on their farm.

- However, progress against the target of '*managing land for conservation and biodiversity*' or '*managing noxious weeds'* has not been as positive. The 2020 target is that 100% of farms will do these tasks with 2015 levels reported at 45% and 29% respectively. This indicates there is still work to be done in this area.

The Sustainability Report also highlights progress against targets under 'Enhancing Livelihoods' and 'Improving Wellbeing.'[14],

5 DISCUSSION – THE ISSUES THAT SHAPE THE EFFECTIVENESS, EFFICIENCY AND FAIRNESS OF THE GOVERNANCE ARRANGEMENTS AS APPLIED TO THE CASE STUDY PROBLEM.

Issues that have been identified that shape the effectiveness, efficiency and fairness of the arrangements include:

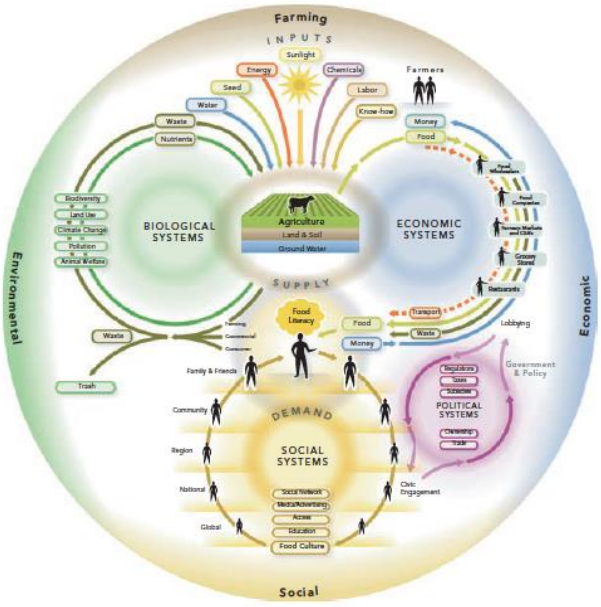
- The dairy industry has focussed historically on environmental activities and has made inroads to improving environmental outcomes, however have not been as successful in addressing the social dimension.
- Activities which have a positive influence on achieving targets are complex and may address more than one SDG, directly or indirectly. This highlights the challenge faced if there are attempts made to influence one particular target. Additionally, by reaching targets for some economic or social criteria, this may lead to a flow on effect for environmental concerns due to increased viability of the business and/or improved human capacity to address issues.
- For inroads to be made into improving environmental sustainability, investment needs increased into research and development into these areas, as does the extension and support for farmers to implement findings.[15]

[14] Ibid.

6 DISCUSSION – DIAGNOSIS OF CAUSES AND EFFECTS, AND KEY SYSTEMIC RELATIONSHIPS RELEVANT TO THE ABOVE.

Figure 2 is a good representation of the key systemic relationships relevant to the dairy (or any food system) industry. Dairy processors (especially in Australia) are an important stakeholder in the industry and have significant effects on the achieve ability of targets e.g. sustainable pricing of milk, information sharing and capacity building of farmers.

Figure 2. Food system[16]



7 DISCUSSION – RECOMMENDATIONS FOR MORE EFFECTIVE, EFFICIENT AND FAIR LEGAL GOVERNANCE, FOR

In simplistic terms, improvements could be made if:

[15] K. Bellamy & E. Bogdan. (2016). Dairy and the Sustainable Development Goals: The Dairy Sector's Contributions and Opportunities. *Rabobank*. Retrieved from http://www.dairydeclaration.org/Facts-and-Resources

[16] J. P. Hill (2017). Assessing the overall impact of the dairy sector. Retrieved from http://www.dairydeclaration.org/Portals/153/Assessing-the-overall-impact-of-the-dairy-sector(J-P-Hill)-1.pdf?utm_source=Newsletter&utm_campaign=Assessment%20file%20track&utm_term=Assessment%20file%20track&utm_content=Assessment%20file%20track

- Accurate and honest objective reporting against progress against targets (as opposed to self-reporting).
- Government/industry incentives as opposed to penalties for practice change
- Compliance required under instruments as opposed to voluntary codes.
- Increased collaboration and connection between key stakeholders in throughout the entire dairy value chain, at a regional, national and international scale, to address SDG.

8 ANY OTHER OBSERVATIONS THAT THE AUTHOR THINKS MIGHT BE RELEVANT (FOR EXAMPLE, ABOUT THE IMPLEMENTATION OF LAW MORE BROADLY, OR INTERSECTION BETWEEN LAW AND POLITICS OR ECONOMICS, OR ANY OTHER ISSUES).

There is the opportunity for other sectors of the agricultural industry (e.g. beef, sheep, vegetables) to commit to addressing the Sustainable Development Goals in a similar manner to the dairy industry. The 'Australian Beef Sustainability Network' has made a start on mapping their sustainability framework to the global SDGs.

As there is substantial overlap in the sustainability goals of Australian agricultural industries, the collective action across all industries may also advance the achievement of the global SDGs.

DUE DILIGENCE OBLIGATIONS FOR THE SUSTAINABLE MANAGEMENT OF MARINE RESOURCES IN DEEP SEABED MINING
COMPARING BRAZILIAN AND AUSTRALIAN EXPERIENCES

Carina Costa de Oliveira
Nengye Liu

The national implementation of international obligations on sustainable management of marine resources, such as due diligence, may provide some answers on how different national jurisdictions have been protecting the marine environment. The same obligation stated in treaties often has different meanings when enforced at the national level. Considering that both Australia and Brazil are offshore mining States, it is worth analyzing how they implement the due diligence obligation in their national jurisdiction. Before presenting the Brazilian and the Australian compliance with the due diligence obligation, it is relevant to define sustainable management of marine resources and due diligence obligation under international law.

Marine mineral resources are finite and are part of an environment rich in a rare and fragile biodiversity. This therefore justifies their sustainable management. The terms "sustainable development" and "sustainable management" are commonly used in literature with little differentiation but might take more precise meaning in some international documents. The UN Watercourses Convention states that "'management' refers, in particular, to: "(a) Planning the sustainable development of an international watercourse and providing for the implementation of any plans adopted…". The Watercourses Convention refers to the concept of "sustainable management" in a practical way as a process of actualizing the goal of sustainable development. This use is consistent with what will be analyzed in this paper, that is,

how States comply with their obligation to deploy their best effort[1] to guarantee the protection of the marine environment under their national jurisdiction.

As for the due diligence obligation, it has been construed under international law and, specifically, under the law of the sea. The obligation reflects the duty to adopt a standard of care where States agree "to take all practical steps" and to use "all appropriate and practical measures" to comply with their commitments.[2] It is described in the *Corfu Case* as "every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States."[3] In this sense, States must actively implement measures on their territory, people, entities or vessels under their control.

However, the due diligence implementation may take on slight variations.[4] This introduces the debate on whether due diligence should be *in concreto* or *in abstrato*, that is, on whether States have an obligation of means or of results.

The *Advisory Opinion 17* of the International Tribunal for the Law of the Sea found that Developing States should not be allowed a lower standard of care in relation to persons engaged in deep seabed exploration or exploitation or in their duty to use best environmental practices. The Chamber stressed the importance of demanding similar environmental protection measures from all States. In assessing potential liability, the crucial point is then identifying the minimum level of due

[1] Sustainable Development in International Law: Nature and Operation of an Evolutive Legal Norm, Virginie Barral, European Journal of International Law, at http://www.ejil.org/article.php?article=2292&issue=111.

[2] For example, the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, article I: Article I. "Contracting Parties shall individually and collectively promote the effective control of all sources of pollution of the marine environment, and pledge themselves especially *to take all practicable steps* to prevent the pollution of the sea by the dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea"; 1973/78 Convention for the Prevention of Pollution from Ships (MARPOL), article 6 "(1). Parties to the Convention shall co-operate in the detection of violations and the enforcement of the provisions of the present Convention, *using all appropriate and practicable measures* of detection and environmental monitoring, adequate procedures for reporting and accumulation of evidence" (emphasis added). Similar language is found in the Vienna Convention for the Protection of the Ozone Layer, article 2; Convention on the Regulation of Antarctic Mineral Resource Activities, article 7(5); Convention on Environmental Impact Assessment in a Transboundary Context, article 2(1) and 2(2); Convention on the Protection and Use of Transboundary Watercourses and International Lakes, art 2(1).

[3] Corfu Channel Case (United Kingdom of Great Britain and Northern Ireland v. Albania), [1949] ICJ Rep 4.

[4] *Responsibility and obligations of States sponsoring persons and entities in the context of activities in the Area* [2011] ITLOS Advisory Opinion n. 17 [117].

diligence that could be required from all States for the protection of marine resources. [5]

The exploitation of deep seabed resources in areas beyond national jurisdiction is yet to commence, but the International Seabed Authority (ISBA) has already granted several exploration contracts[6] , for instance, in relation to polymetallic sulfides.[7] As of now, there are many uncertainties as to the seriousness or the likelihood of any risks incurred. But State liability may be triggered by failure to comply with direct obligations created by ISBA and LOSC[8]. The *Advisory Opinion n. 17* has examined the duty of due diligence in the context of deep seabed mining and provided States with clear indication that the implementation of due diligence obligations is incumbent upon the "sponsor" State in its role as regulator and supervisor of both public and private operators exploring and exploiting seabed resources. Due diligence requires, amongst others: a) preventive measures, even in face of scientific uncertainty[9]; c) best environmental practices (in line with the Chamber's rejection of the "common but differentiated responsibility" notion in this context); and c) Environmental Impact Assessments. These three general obligations must be implemented by States for the management of minerals under and beyond their jurisdiction. It is worth analyzing how Brazil and Australia have been implementing these obligations.

[5] In order to achieve a common standard, international organizations have created initiatives such as the IMO Integrated Technical Co-operation Programme (ITCP) with the goal of achieving of uniform and effective compliance with the organization's regulatory framework by assisting developing countries in building their human and institutional capacities.

[6] For commercial research and prospecting.

[7] International Seabed Authority. *Status of contracts for exploration in the Area. Twenty-First Session Official Documents* (ISBA/21/C/8, 2 June 2015).

[8] Direct obligations of States include obligations set out in the Regulations drawn up by the Seabed Authority and obligations under UNCLOS; the 2010 Polymetallic Nodules regulation and Polymetallic Sulphide of Regulation 2010. On this, see: International Seabed Authority. *Decision of the Assembly of the International Seabed Authority relating to regulations on prospecting and exploration for polymetallic sulphides in the Area* (ISBA/16/A/12/Rev.1, Sixteenth Season Official Documents, 2010). On top of that, another frequently cited regulation is: International Seabed Authority. *Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters* (ISBA/19/C/17, Nineteenth Season Official Documents, 2013). Also see: *Responsibility and obligations of States sponsoring persons and entities in the context of activities in the Area* [2011] ITLOS Advisory Opinion n. 17 [121]-[140].

[9] The failure to comply with the precautionary principle may trigger liability if a State has not put in place the legislative and regulatory framework which would have enabled it to become aware of the risk, to measure its probability and gravity, and to take measures aimed at preventing the harm.

Brazil is an example of State that has been granted a seabed exploration contract by ISA in 2015[10], but has not yet implemented procedural and substantial measures ensuring the protection of marine resources beyond national jurisdiction. This is the first contract signed to explore an area of 3.000 km2 located in the South Atlanctic, specifically at the *Alto do Rio Grande*[11]. Given that Brazil will have not only rights but also duties concerning mineral exploration, there are many challenges that the State will have to face to implement international obligations related to this contract[12]. Some of the obligations are: elaborating norms on the exploration of minerals in areas beyond and under national jurisdiction; the implementation of the precautionary approach for the prevention of environmental damages[13]. Brazil has not yet completely complied with these obligations and the latter is still object of much scientific and legal research[14]. It is worth pointing out that within the existing national regulation and institutional framework for oil and mineral offshore activities there are some limits and gaps to protect the marine environment that can jeopardize environmental protection.

Regarding Brazilian oil exploitation under national jurisdiction, some offshore activities have already caused serious environmental damage in States such as Rio de Janeiro, São Paulo, Paraná, Espírito Santo and Bahia. Oil exploitation is a central economic activity in Brazil, which started in the 1930s and represents, along

[10] Avalilable at: <http://www.cprm.gov.br/publique/Noticias/Contrato-assinado-entre-CPRM-e-ISBA-preve-investimento-de-11-milhoes-de-dolares-na-exploracao-do-Atlantico-Sul-4113.html?from_info_index=41>. Access on the 5th of August 2017.

[11] See : OLIVEIRA, C.C. "Os direitos e os deveres decorrentes do recente contrato assinado entre o Brasil e a Autoridade Internacional dos Fundos Marinhos"**.** *Revista de Direito Internacional* , v.12, p.2 – 8 ; MORE, Rodrigo; SOUZA, Cláudia Maria Rezende. *Elevação do Rio Grande: obrigações e responsabilidades*. Novas Edições Acadêmicas, 2015.

[12] See: OLIVEIRA, C.C. "Os direitos e os deveres decorrentes do recente contrato assinado entre o Brasil e a Autoridade Internacional dos Fundos Marinhos"**.** *Revista de Direito Internacional*, v.12, p.2 – 8 ; MORE, Rodrigo; SOUZA, Cláudia Maria Rezende. *Elevação do Rio Grande: obrigações e responsabilidades*. Novas Edições Acadêmicas, 2015.

[13] See on this issue: Regulation 31(2). Regulation 2(2), 5(1) and 31 (5), 33(2) and 5.; TANAKA, Yoshifumi. *The international law of the Sea*. Cambridge, 2015 , p. 319. About the risks of the activity, see: VAN DOVER, Cindy Lee. « Mining seafloor massive sulphides and biodiversity: what is at risk? ». *ICES Journal of Marine Science* (2011), 68(2), 341–348; Polymetallic Massive Sulphides and Cobalt-Rich Ferromanganese Crusts: Status and Prospects – ISA Technical Study No. 02. Kingston, 2002; HOGLAND, Peter; BEAULIEU, Stace; TIVEY, Marice A.; EGGERT, Roderick G.; GERMAN, Christopher; GLOWKA, Lyle; LIN, Jian. "Deep-sea mining of seafloor massive sulfides". *Marine Policy*, v. 34, 2010, pp 728-732; ISBA/18/C/22, 26 July 2012, para 1.

[14] See: OLIVEIRA, C.C(Org). Meio Ambiente Marinho e Direito: exploração e investigação na Zona Costeira, na Plataforma Continental e nos Fundos Marinhos. 1. ed. Curitiba: Juruá Editora, 2015. v. 1.

with the gas sector, 13% of the Brazilian Gross Domestic Product (GDP)[15]. Actually, there are around 135 oil platforms fixed, floating and functioning in Brazilian maritime space.[16] In order to prevent environmental damage, the oil sector has to comply with Brazilian security norms.[17] Since 1960, many oil spills have been reported in Brazil.[18] The large oil spill that occurred in January 2000 in the Guanabara Bay, due to a leaking pipeline operated by the Brazilian company *Petrobras*, is a well-known example.[19] In 2004, the Chilean chemical tanker *Vicuña* explosion in the Paranaguá Port contaminated many areas of high environmental sensitivity.[20] In 2011, the *Chevron* case occurred, discharging more than 50,000 liters of crude oil into the Campos Basin situated in the state of Rio de Janeiro. In 2014, the National Agency of Petroleum, Natural Gas and Biofuels (ANP) reported a significant increase in the number of communications concerning oil spill accidents.[21] More recently, at the beginning of 2015, a major oil accident occurred on an offshore production facility called *FPSO Cidade de São Mateus* belonging to the BW Offshore group.[22] In this last case, not only was there an environmental impact, but also nine people were killed.[23]

Concerning the institutional framework, there is a lack of coordination between different institutions which are competent to authorize, for instance, mineral exploitation. There are some institutions under the national level which are responsible for this issue: the Diretor-Geral from the *Departamento Nacional de*

[15] Portal Brasil, Setor de petróleo e gás chega a 13 % do PIB brasileiro, 2014, available at: <http://www.brasil.gov.br/economia-e-emprego/2014/06/setor-de-petroleo-e-gas-chega-a-13-do-pib-brasileiro>.

[16] Available at: <http://www.petrobras.com/pt/quem-somos/>.

[17] Some examples of Brazilian security norms are Federal Law n. 6.938/1981; Resolution of CONAMA n. 237/1997; Portaria n. 423/2011; Portaria MMA & MME n. 198/2012. For more information on these specific norms see: *J. S. Carvalho Filho*, Manual de Direito Administrativo**,** 26 ed., 2013, p. 35.

[18] According to the International Tanker Owners Pollution Federation Limited (ITOPF), the first oil spill recorded on the Brazilian coast was due to the tanker *Sinclair Petrolore*. On this topic see: <http://www.itopf.com/>.

[19] *M. Taam*, The Guanabara Bay Oil Spill Incident – "The Brazilian Exxon Valdez" An Institutional Perspective, US EPA Archive Document, available at:
<https://archive.epa.gov/emergencies/content/fss/web/pdf/taampaper.pdf>.

[20] International Tanker Owners Pollution Federation (ITOPF), Oil spills in Brazil: case histories, available at: <http://www.itopf.com/knowledge-resources/countries-regions/countries/brazil/>.

[21] *ANP*, Relatório anual de segurança operacional das atividades de exploração e produção de petróleo e gás natural, 2014, p.57.

[22] For more information see: <http://www.bwoffshore.com/news1/in-memoriam/>.

[23] For more information see: <http://economia.estadao.com.br/noticias/geral,em-cinco-anos-50-acidentes-fatais-ocorreram-na-petrobras,1633061>.

Produção Mineral (DNPM)[24], the Minister of Energy and Mining (*Minas e Energia*)[25], the Maritime Authorithy (*Autoridade Marítima*)[26], the Executive Environmental Body (IBAMA)[27], the National Petroleum Agency (ANP)[28]. It would be worth organizing the institutional framework for mineral exploration and exploitation to guarantee the sustainable management of the resources. Some conflicts of competences can be pointed out[29] in the context of exploration. For instance, in the oil sector, the conflict between the ANP and the Maritime Authority and in the mining sector, the conflict of competences between the Federal State and the Federated States can be pointed out.

[24] Competent for authorizing the research activities.

[25] Art. 2º of the Brazilian Mining Code. BRASIL. *Decreto-Lei nº 227*, de 28 de fevereiro de 1967, dá nova redação ao Decreto-lei nº 1.985, de 29 de janeiro de 1940. (Código de Minas). Available at: < http://www.planalto.gov.br/ccivil_03/decreto-lei/del0227.htm>. Access in August, 2014.

[26] See: Portaria DNPM nº 441/2009. BRASIL. *Portaria DNPM nº 441*, de 11 de dezembro de 2009, *dispõe sobre os trabalhos de movimentação de terras e de desmonte de materiais in natura necessários à abertura de vias de transporte, obras gerais de terraplenagem e de edificações de que trata o § 1º do art. 3º do Decreto-Lei nº 227, de 28 de fevereiro de 1967*. Available at: < http://www.dnpm.gov.br/conteudo.asp?IDSecao=67&IDPagina=84&IDLegislacao=589>. Access on july, 2014.

[27] BRASIL. *Resolução CONAMA n.° 237*, de 19 de dezembro de 1997. Available at: < http://www.mma.gov.br/port/conama/res/res97/res23797.html>. Access on may, 2014.

[28] See: § 2º, Article 114 do Decreto nº 62.934/1968. BRASIL. *Decreto nº 62.934*, 2nd July 1968. Available at: < http://www.planalto.gov.br/ccivil_03/decreto/1950-1969/D62934.htm>. Access on June, 2014.

[29] See on this issue: ALVIM, A. *Manual de direito processual civil*. 5. ed. São Paulo: RT, 1996, v.1; CINTRA, Antonio Carlos de Araújo. DINAMARCO, Candido Rangel. GRINOVER, Ada Pellegrini. Teoria Geral de Processo. 26. Ed. São Paulo: Malheiros, 2010.

INDIGENOUS GOVERNANCE OF PROTECTED AREAS IN AUSTRALIA
ULURU KATA-TJUTA CASE STUDY

Donna Craig

1 SUMMARY OF THE CASE STUDY KEY FACTS AND ISSUES

Uluru–Kata Tjuta National Park covers about 1,325 square kilometres and is 335 south-west of Alice Springs. Each year more than 300,000 people visit the National Park (NP). Anangu is the term that Pitjantjatjara and Yankunytjatjara Aboriginal people, from the Western Desert region of Australia, use to refer to themselves. Aboriginal people and their culture have always been associated with Uluru. Anangu, believe that the landscape was created at the beginning of time by ancestral beings and they are responsible for "looking after country" using traditional ecological knowledge (TEK). The knowledge necessary to fulfil these has been passed down from generation to generation through *Tjukurpa*, the Law. Many of the traditional owners live in the Mutitjulu Aboriginal community[1]. Traditional owners for the Park also live elsewhere in the Northern Territory, Western Australia and South Australia. In 1985, title to the park was transferred to the Uluru–Kata Tjuta Aboriginal Land Trust, the first Board of Management was constituted (for Anangu to jointly manage the park with the federal agency – Parks Australia). The joint management of Australian national parks, under federal jurisdiction, provide the best known examples of Indigenous Peoples joint management of protected areas (PAs). However, the NP and high visitor numbers on Anangu land raises issues

[1] This is the only resident community in Uluru national park Parks Australia are largely responsible for services for the growing population.

associated with "sharing country" governance (principles, resources and methods), community development and livelihoods[2].

The National Reserve System was established by the states, territories, the Australian Government, non-government organisations and Indigenous landholders to achieve an Australian system of terrestrial PAs. It aims to contain samples of all regional ecosystems, their constituent biota and associated conservation values, in accordance with the Interim Biogeographic Regionalisation for Australia[3]. Uluru Kata-Tjuta NP is one of 5 PAs in the located in the Great Sandy Desert bioregion[4]. Uluru–Kata Tjuta NP is inscribed on the World Heritage List under the World Heritage Convention for its outstanding natural values (1987) and cultural values (1994). The park is representative of one of the most significant arid land ecosystems in the world and is listed as a Biosphere Reserve under the UNESCO Man and the Biosphere Programme.

2 SUMMARY OF THE MOST RELEVANT OF CONVENTIONS AND PRINCIPLES

The Convention on Biological Diversity (CBD) three main goals are the conservation of biological diversity; sustainable use of its components and fair and equitable sharing of benefits arising from genetic resources. The main objective is to develop national strategies for the conservation and sustainable use of biological diversity, including appropriate financing. Article 3 of the CBD affirms the sovereign right of states over their own biological resources[5].The *in-situ* conservation commitments in article 8 provides for the establishment of a system of PAs with appropriate legislative and regulatory frameworks for the

[2] Bauman, Toni and Dermot Smyth 2007 Indigenous Partnerships in Protected Area Management in Australia. Three case studies. Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra, Section 2.6

[3] Department of the Environment, Australian Bioregions (IBRA)

[4]Other national strategies include National Strategy for the Conservation of Australia's Biological Diversity and the National Strategy for Ecologically Sustainable Development that provides for conserving biological diversity in situ, integrating biological diversity conservation and natural resource management, managing threatening processes, improving knowledge of biological diversity and involving the community in biodiversity conservation.

[5] However, the CBD also underlines the responsibility of states to conserve and sustainably use their biological diversity and the preamble affirms that the conservation of biological diversity is a "common concern of humankind" and the principle of intergenerational equity.

sustainable management and use of biological resources and ecosystems within, or outside, PAs incorporating the respect, preservation and maintenance of traditional biodiversity-related knowledge. This is elaborated in Article 8(j)[6]. Article 10(c) further requires contracting parties to *protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation and sustainable use requirements.* TEK of indigenous and local communities are also being incorporated in all the programmes of work under the Convention. A Working Group (WG) on article 8(j) and related provisions was established in 1998 at COP4. The COP5 adopted a programme of work to implement the commitments of article 8 (j), Outcomes of the WG include the *Tkarihwaié:ri Code of Ethical Conduct to Ensure Respect for the Cultural and Intellectual Heritage of Indigenous and Local Communities Relevant to the Conservation and Sustainable Use of Biological Diversity* (2010)[7]. The WG also contributed to the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* (2010)[8]. The CBD parties are now directed by the 'Strategic Plan for Biodiversity 2011–2020' along with its 20 'Aichi targets' that should be reflect in National Biodiversity Strategies and Action Plans (NBSAP). The approach to sustainable use under the CBD has developed over time as reflected by the *Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity.*[9]

[6] Under Article 8(j), States are encouraged, 'subject to national legislation', to … respect, preserve and maintain knowledge, innovations, and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices.

[7] See also Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessments Regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities.

[8] Parties shall seek free prior informed consent in relation to traditional knowledge associated with genetic resources held by indigenous and local communities, as well as to genetic resources held by indigenous and local communities where the rights of these communities over these resources have been recognized. It also provides for the sharing of benefits, based on mutually agreed terms, arising from the use of traditional knowledge associated with genetic resources, as well as benefits arising from the use of genetic resources in accordance with domestic legislation.

[9] http://www.biodiv.org/programmes/socio-eco/use/addis-principles.asp

Many other conventions are applicable to Uluru Kata-Tjuta National Park[10], particularly *ILO169* and the *United Nations Declaration on the Rights of Indigenous* Peoples. The most important principles for the case study relate to the rights of Indigenous Peoples to self-determination (recognition of their laws, institutions and ownership and control over their lands and resources), free prior informed consent, participation and equitable sharing of benefits in the governance of their lands and resources. TEK should be accorded protection through these principles and sui generis legal protection. In relation to CBD, the principles developed for the ecosystem approach should be applied[11] as well as the as well as the Precautionary Principle and the *Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity.*

3 SUMMARY OF THE RELEVANT LOCAL LAWS

Freehold title granted to Uluru–Kata Tjuta Aboriginal Land Trust during a deeply emotional hand back ceremony in 1985. However, Aboriginal owners had to immediately lease the land back to Parks Australia as a condition for the future joint management of the PA. Joint management is the term used to describe the working partnership between Nguraritja (Traditional Owners), relevant Aboriginal People[12] and the Director of Parks Australia, as lessee of the park[13]. The park continues as a Commonwealth reserve under the EPBC Act[14]. The Governor-General can proclaim Commonwealth reserves over areas of land or sea that the Commonwealth

[10] applicable Conventions are (a) The Convention on the Elimination of all Forms of Racial Discrimination (1965); (b) The Convention No.169 on Indigenous and Tribal Peoples (ILO 1989); (c) The Convention on Biological Diversity (1992); (d) The Convention for the Safeguarding of the Intangible Cultural Heritage (UNESCO 2003); (e) The Convention on the Protection and Promotion of the Diversity of Cultural Expressions (2005); (f) The Universal Declaration on Human Rights (1948); (g) The International Covenant on Civil and Political Rights (1966); (h) The International Covenant on Economic, Social and Cultural Rights (1966); (j) The Universal Declaration on Cultural Diversity (UNESCO 2001); (k) The Universal Declaration on Bioethics and Human Rights (UNESCO 2005); (n) The United Nations Declaration on the Rights of Indigenous Peoples (2007), Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (UNCE 1998)

[11] https://www.cbd.int/ecosystem/principles.shtml

[12] Relevant Aboriginals means the traditional Aboriginal owners of the park, Aboriginal people entitled to use or occupy the park and Aboriginal people permitted by the traditional Aboriginal

[13] For a period of 99 years

[14] Pursuant to the Environmental Reform (Consequential Provisions) Act 1999.The EPBC objectives include the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and promoting the use of Indigenous people's knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

owns, or is leased, the Commonwealth or the Director.[15] There is a diversity of legal arrangements for other Australian joint managed national parks (under State and Territory legislation) including some that are Indigenous owned and do not require a leaseback[16].

The majority of the Uluru–Kata Tjuta Board of Management members must be Indigenous persons nominated by the Traditional Aboriginal owners of land in the park[17]. The functions of the Board are to make decisions relating to the management of the park that are consistent with the management plan in operation for the park and (in conjunction with the Director) to prepare and monitor management plans and advise the Minister on all aspects of the future development The MP for a Commonwealth reserve has effect for 10 years. The EPBC Act prohibits certain actions being taken in Commonwealth reserves except in accordance with the MP. These prohibitions do not prevent Aboriginal people from continuing their traditional use of Uluru–Kata Tjuta National Park for hunting or gathering (except for purposes of sale) or for ceremonial and religious purposes[18]. World Heritage, National Heritage and Commonwealth Heritage values of the park must be taken into account in the MP[19].The MP must assign an IUCN Protected Area Category[20] and apply the relevant IUCN Management Principles[21]. Access to biological resources in Commonwealth areas such as the park is regulated under the EPBC Act[22]. The Uluru–Kata Tjuta MP should include the interests of the Traditional Owners of the park, any other Indigenous persons interested in the park and the protection, conservation and management of biodiversity and heritage within

[15] EPBC Act, Section 343

[16] Craig, D.G, "Recognising Indigenous Rights through Co-Management Regimes: Canadian and Australian Experiences" *New Zealand Journal of Environmental Law* Vol 6, 2002: 199-255.

[17] EPBC Regulation 2000(Cth), Section 377(4)

[18] Traditional use of land in the park for hunting, food gathering, ceremonial and religious purposes is exempted from ss.354 and 354A of the EPBC Act by s.359A and exempted from the operation of the Regulations by r.12.06(1) (e).The EPBC Act also does not affect the operation of s.211 of the *Native Title Act 1993*, which provides that holders of native title rights covering certain activities do not need authorisation required by other laws to engage in those activities.

[19] EPBC Act, Sections 313 to 324. These values must be taken into account in the Management Plan. See also EPBC Act and Regulations *National Heritage Management Principles, Australian Biosphere Reserve Management Principles, Australian World Heritage Management Principles, National Reserve Management Principles*

[20] Uluru Kata-Tjuta National Park is designated as IUCN Protected Area Category 2.

[21] EPBC Act, Section 346

[22] EPBC Act, Sections 301and 528, EPBC Regulations, Part 8A

the park. The responsible Minister gives the final approval for a MP that becomes a legislative instrument[23]. The Director and Commonwealth Agency must perform its functions powers consistently with a MP[24]. The EPBC Act makes provision for dispute resolution when there is a dispute with a land council or Board over the implementation of the MP[25]. The responsible Minister makes the final decision in these circumstances. Except the Lease term, the provisions of the Lease may be reviewed by the Land Trust, the Central Land Council and the Director every five years, or at any agreed time. The Land Trust and the Director may agree in writing to terminate the Lease at any time. If any legislation enacted in connection with the park is inconsistent with the Lease and substantially detrimental to the Land Trust or to 'relevant Aboriginals' in terms of the park's administration, management or control, the Lease is deemed to be breached. The key rights of 'relevant Aboriginals' are contained in the Lease, subject to the directions or decisions of the Board and any such reasonable constraints within the MP. Rent is paid to Central Land Council on behalf of the Land Trust[26].

4 EVALUATION OF ULURU KATA-TJUTA INDIGENOUS GOVERNANCE AND RECOMMENDATIONS

There is research and practice that Indigenous joint governance of PAs can be effective (in terms of natural and cultural biodiversity values), efficient and fair [27] Bauman and Smyth observe that that *'joint management' (often referred to as 'co-management' in the international literature) means the establishment of a legal partnership and management structure which reflects the rights, interests and obligations of the Aboriginal owners of the park, as well as those of the government conservation agency, acting on behalf of the wider community. Joint management arrangements represent a trade-off between the rights and interests of Indigenous people and the rights and interests of government conservation agencies and the*

[23] EPBC Act, Section 371
[24] EPBC Act, Section 362(2)
[25] EPBC Act, Section 363 and 364
[26] Rent is $150,000 per year, indexed from May 1990, plus an amount equal to 25 per cent of park revenue
[27] Borrini-Feyerabend, G, Kothari, A & Oviedo, G 2004b, Indigenous and local communities and protected areas: towards equity and enhanced conservation — guidance on policy and practice for co-managed protected areas and community conserved areas, Gland, Switzerland.

wider Australian community[28]. There are some studies comparing Australian joint managed NPs and Indigenous owned lands managed for conservation values[29] (eg Indigenous Protected Areas[30]). Bauman and Smyth concluded that their case studies in protected area partnerships in Australia were shaped by different histories, environments, legal frameworks and capacities[31]. There are currently no specific criteria or indicators in place aimed at tracking the effectiveness of these partnerships. *Such procedures need to distinguish between the monitoring of the overall success of the management of protected areas and the success of the partnerships involved in jointly managing them*[32].

The institutional arrangements for Uluru Kata-Tjuta NP align closely with the current legal framework and demonstrate strong intent and practice to recognise and implement Anangu law and governance. There are some significant examples of practices such as climbing Uluru that are distressing to Anangu and remain unresolved. Progress has been made in areas such as ranger training and employment, cultural guidance and interpretation and management practices such as the use of customary fire practices. Significantly, this is based on a high level of discretionary power by the Minister and Parks Australia. This may apply an adaptive management approach based on trust, joint problem-solving and a social learning process[33]. Berkes argues that integration between biodiversity and human livelihoods and well-being requires a multi-layered approach to governance and multiple objectives[34]. However, this should not imply a weak Indigenous rights

[28] Bauman, Toni and Dermot Smyth 2007 Indigenous Partnerships in Protected Area Management in Australia. Three case studies. Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra at p.6.

[29] Ibid. See also Ross, H, Grant, C, Robinson, C, Izurieta, A, Smyth, D & Rist P 2009, 'Co-management and Indigenous protected areas in Australia: achievements and ways forward', Australian Journal of Environmental Management, vol. 16, no. 4, pp. 242–52.

[30] *An Indigenous Protected Area (IPA) is an area of Indigenous-owned land or sea where traditional Indigenous owners have entered into an agreement with the Australian Government to promote biodiversity and cultural resource conservation* (Smyth, D & Ward, G (eds) 2009, Protecting country: Indigenous governance and management of protected areas in Australia, AIATSIS, Canberra).

[31] Bauman, Toni and Dermot Smyth 2007 Indigenous Partnerships in Protected Area Management in Australia. Three case studies. Australian Institute of Aboriginal and Torres Strait Islander Studies, Canberra at xii.

[32] Ibid.

[33] Berkes, F 2009, 'Evolution of co-management: role of knowledge generation, bridging organizations and social learning', Journal of Environmental Management, no. 90, pp. 1692–1702.

[34] Ibid.

framework as *respect for rights and respect for culture go hand in hand* [35].This is central to negotiated and sometimes contested PA governance. The Uluru Kata-Tjuta case study reveals that laws, principles and institutions developed over 30 years ago need review. It is recommended that:

- The EPBC Act be amended so that Lease Back should not be required for a joint managed Commonwealth Reserve
- A new service contract with Parks Australia should be negotiated to replace the lease - similar to IPA agreements
- Review rent and benefit sharing arrangement to provide more equitable return
- Provide for explicit legal recognition of customary law and sharing of power in new Aboriginal controlled Board of Management and other customary law institutions involved in PA governance
- Board should develop, approve and monitor the implementation of the MP and develop culturally appropriate engagement, free prior informed consent processes and dispute resolution
- Board should be remunerated adequately for their time, expertise and TEK
- PA governance should apply the CBD Principles (Precautionary Principle, Principles for Ecosystem approach and *Addis Ababa Principles* on sustainable use) and Indigenous right to self-determination to the fullest extent possible including sui generis protection of TEK.
- Research and develop criteria and indicator for managing the natural and cultural biodiversity values of PAs

Fund Indigenous research and evaluation of joint managed national parks and IPAs, (including the relationships which are involved in partnerships at policy, operational and traditional owner levels, and the manner in which they influence each other and the adequacy of resources).

[35] Ross, H, Grant, C, Robinson, C, Izurieta, A, Smyth, D & Rist P 2009, 'Co-management and Indigenous protected areas in Australia: achievements and ways forward', Australian Journal of Environmental Management, vol. 16, no. 4, pp. 242–52 at 249.

THE EFFECTIVE GOVERNANCE OF MARINE BIODIVERSITY IN AUSTRALIA'S GREAT BARRIER REEF

Evan Hamman and Saiful Karim

1 SUMMARY OF THE CASE STUDY, INCLUDING KEY FACTS AND ISSUES.

This case study seeks to evaluate the effectiveness of marine biodiversity governance in Australia's Great Barrier Reef (GBR). The study draws from a trial method proposed by scholars associated with the International Union for the Conservation of Nature (IUCN).[1] The study focuses on the Convention on Biological Diversity (CBD) as well as other relevant legal and regulatory frameworks at the international, national and sub-national level. For the purposes of this study, 'governance' is defined broadly as:

> The formal and informal arrangements, institutions and mores which determine how resources or an environment are utilized; how problems and opportunities are evaluated and analysed, what behaviour is deemed acceptable or forbidden, and what rules and sanctions are applied to affect the pattern of resource and environmental use.[2]

The governance of the GBR's marine biodiversity takes place at multiple levels. There is, it seems, no shortage of international laws which are used (or could

[1] Paul Martin, Ben Boer and Lydia Slobodian (Eds.) (2016). Framework for Assessing and Improving Law for Sustainability IUCN, Gland, Switzerland. xii + 126 pp.

[2] Juda, L (1999) Considerations in Developing a Functional Approach to the Governance of Large Marine Ecosystems 30 *Ocean Development & International Law* 89, 90. Governance therefore includes the activities of both state and non-state actors (NGOs, corporations, scientific organisations etc.) and the question of how they interact with one another to tackle environmental, social and economic challenges.

be used) to increase protections and provide a basis for regulating human impacts on marine biodiversity at the site. In addition to international treaties like the CBD, the World Heritage Convention, Ramsar and others, there are several major national (Australian) and sub-national (Queensland) laws, programs and policies which are used or intended to be used to drive positive environmental outcomes.[3] Despite the commitments at multiple levels of governance, the biodiversity of the GBR continues to experience sharp declines. Water quality and marine ecosystem health are being severely impacted by terrestrial agricultural activities including fertiliser and sediment run-off (from sugarcane, banana and grazing activities).[4] Climate change and ocean acidification, overfishing, increased shipping and port development are also a concern,[5] as is the threat of marine debris impacting marine life in the far north of the site.[6]

Overall, this study suggests that the 'implementation' of international treaties like the CBD (as well as national and sub-national laws) could be significantly improved in Australia by: (1) better resourcing for regulators and planning authorities; (2) stricter regulation of 'upstream' activities which contribute to marine biodiversity declines (land clearing, sediment and fertiliser run-off) (3) more consistent and robust evaluations of existing government policies and programs, and (4) closer coordination between state, federal and international agencies.

2 SUMMARY OF THE MOST RELEVANT PRINCIPLES OF THE BIODIVERSITY CONVENTION (OR OTHER APPLICABLE CONVENTION) PRINCIPLES THAT SHOULD APPLY TO THE CASE STUDY PROBLEM.

There are a number of international conventions (and underlying principles) that are relevant for the conservation of marine biodiversity of the GBR including. These include the CBD, the World Heritage Convention, the Ramsar Convention,

[3] These laws, policies and programs are discussed in part C, below.
[4] For an analysis of the health of the GBR, see GBRMPA, Great Barrier Reef Outlook Report (2014) <http://hdl.handle.net/11017/2855>
[5] Ibid.
[6] Australian Government, Department of Environment, 'Background Paper for the Threat Abatement Plan for the impacts of marine debris on vertebrate marine life (2009) <www.environment.gov.au/biodiversity/threatened/publications/tap/marine-debris.html>

the Bonn Convention on Migratory Species, and the United Nations Convention on Law of the Sea (UNCLOS). Australia is a party to all these conventions. There are various 'principles of law' which underpin (or could be read into) these Conventions that have application to the case study. The main focus is in this study are on the principles of conservation of biodiversity and sustainable use of biodiversity (in a marine context). These two principles underpin the CBD. The primary objectives of the CBD are the conservation and sustainable use of biological diversity, and the fair and equitable sharing of benefits arising from its utilization, whilst recognising that the key to maintaining biological diversity depends upon using this diversity in a sustainable manner.[7] Thus, the CBD is concerned not only with the conservation of nature, *per se*, but recognises and promotes its responsible and 'sustainable use' as well. This might include, for instance, sustainable fishing techniques or sustainable eco-tourism ventures.

The World Heritage Convention 1972, which was established some two decades prior to the CBD, focuses less on sustainable use and/or conservation of biodiversity, and more on creating duties for member states to identify and preserve certain cultural and/or natural sites of Outstanding Universal Value (OUV). It provides, in essence, a protected areas approach to conservation. Within World Heritage sites, it is implicit that conservation and sustainable use of biodiversity ought to be a key goal for administering authorities. In terms of the case study, the GBR World Heritage area was established in 1981 and is the third largest World Heritage site in the world. It is one of only a handful of 'natural' World Heritage sites which meets all of UNESCO's natural criteria including relating to marine biodiversity:

> Contain(ing) the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

[7] Timothy Swanson, Global Action for Biodiversity: An International Framework for Implementing the Convention on Biological Diversity (1997, Earthscan Publications Ltd, in Association with IUCN, UK); David Farrier, 'Implementing the in-situ conservation provisions of the united nations convention on biological diversity in Australia: questioning the role of national parks.' 1996, The Australasian Journal of Natural Resources Law and Policy Vol 3, N1; The Secretariat to the CBC, Handbook of the Convention on Biological Diversity (2002, Taylor and Francis).

The Ramsar Convention (1971) was established at the same time as the World Heritage Convention. Like the World Heritage Convention it takes an approach which focuses on the identification and designation of protected areas. There are three Ramsar sites that fall within the wider GBR region, including the Great Sandy Strait; Shoalwater and Corio Bays; and Bowling Green Bay. Under Ramsar, Australia is required to notify the Secretariat of any negative changes to the ecological integrity of these sites. Australia has sought to implement its obligations to protect Ramsar and World Heritage sites through the provisions of the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act).[8] Further, the Bonn Convention on Migratory Species provides a global platform for the 'conservation and sustainable use of migratory animals and their habitats.'[9] Like the World Heritage Convention and Ramsar, Australia seeks to implement its obligations to conserve migratory species (including turtles, whales, sharks and marine birds) through the EPBC Act. Migratory species include 'those animals that migrate to Australia and its external territories, or pass though or over Australian waters during their annual migrations.'[10]

Finally, UNCLOS is also relevant insofar as it imposes a general obligation to protect marine envirment and conservation of marine living resources in the areas under national jurisdiction. It also imposes a general obligation on the state parties to develop appropriate international and regional legal instruments for the protection of the marine environment and encourages development of technical legal instruments. One such mechanisms is the declaration of certain marine areas as a Particularly Sensitive Sea Area (PSSA).[11] Declaration of PSSA allows the coastal state to introduce ship routing and reporting systems as associated protective measures with the consent of IMO. The "development and adoption of other measures aimed at protecting specific sea areas against environmental damage from ships, provided that

[8] See Part C below.

[9] Convention on Migratory Species <http://www.cms.int/en/legalinstrument/cms>

[10] Australian Government 'EPBC Act - Migratory Species' <http://www.environment.gov.au/epbc/what-is-protected/migratory-species>

[11] PSSA has been defined as: which defined as "an area that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific attributes where such attributes may be vulnerable to damage by international shipping activitiesResolution A.982(24), Revised Guidelines for the Identification and Designation of Particularly Sensitive Areas, IMO Doc A 24/Res.982 (6 February 2006).

they have an identified legal basis" is also allowed.[12] The GBR was declared as the world's first PSSA in 1990. In 2005 the GBR PSSA was extended to the Torres Strait.[13]

3 A SUMMARY OF THE RELEVANT LOCAL LAWS, AND HOW THEY SHOULD/DO APPLY TO THE PROBLEM.

There are several laws that relate to the marine biodiversity of the GBR. At the federal level, the EPBC Act is the principal mechanism for controlling human activities which might harm biodiversity of the site. As noted above, it is also the primary means by which the Australian Government gives effect to its international obligations under the CBD, Ramsar, the World Heritage Convention, the Bonn Convention and several other regional treaties.[14] The EPBC Act works by requiring assessment and approval if an activity has, or is likely to have, a 'significant impact' on several 'triggers'. For the GBR and its biodiversity, the most relevant of these include: (1) impacts on the GBR Marine Park; (2) impacts on the World Heritage values (OUV) of the GBR;[15] impacts on listed migratory species (dugongs, turtles, sharks etc.); and (4) impacts on endangered species and threatened ecological communities. In addition to the EPBC Act, there are several other federal laws that seek to protect marine biodiversity at the site including: the *Great Barrier Reef Marine Park Act 1975* (Cth) (GBRMP Act) which establishes the GBR Marine Park and GBR Marine Park Authority (GBRMPA); the *Environment Protection (Sea Dumping) Act 1981* (the Sea Dumping Act) which regulates the dumping of waste and dredge material at sea (including into the waters of the GBR) and the *Native Title Act 1994* (Cth) which allows Indigenous Australians, in certain circumstances, to take marine biodiversity (e.g. plants, turtles, fish, dugongs etc.), provided it is consistent with their customary practices.

At the sub-national level, the state of Queensland has passed several laws relating specifically to marine biodiversity protection and their habit in the GBR.

[12] Ibid.
[13] Resolution, MEPC 53/24/Add.2, Report of the Marine Environment Protection Committee On Its Fifty-Third Session, Annex 21, IMO Doc. MEPC 53/24/Add.2 (1 August 2005).
[14] These regional agreements include: ROKAMBA, JAMBA and CAMBA and the Apia Convention.
[15] The Marine Park and the GBR World Heritage Area are roughly the same size.

Many of these overlap with the protections afforded under the EPBC Act and the managerial responsibilities of the GBRMPA. *The Nature Conservation Act 1992* (NC Act) provides for the establishment of national parks in Queensland and the protection of native flora and fauna. Of the 980 islands in the GBR that Queensland controls, approximately 400 are declared protected areas (together, about 65 national parks). The NC Act creates offences for taking or interfering with these national parks[16] as well as protected wildlife outside of the national parks.[17] The *Marine Parks Act 2004* (Qld) plays a similar role in marine areas along the Queensland GBR coastline. It creates a framework for the establishment of marine parks (including the GBR Coastal Marine Park), within which certain conduct is prohibited such as taking or interfering with protected marine biodiversity within the area.[18] Moreover, the *Sustainable Ports Development Act 2015* (Qld) provides for master planning and construction of Queensland's 15 ports, most of which fall within the GBR region and are used for the exportation of coal, wheat, sugar, gas and other commodities. Finally, Queensland's *Environmental Protection Act 1994* (Qld) and *Planning Act 2016* (Qld) provide rules against deliberately or negligently causing harm to the environment without proper authorisation (including damage to marine environments)[19] and a system for environmental impact assessment (EIA).[20] There are special offences created under the EP Act for damage to the ecology of the GBR,[21] as well as regulations (which have not been enforced) aimed at stopping excessive fertilizer pollution entering the site.[22]

4 DISCUSSION OF HOW WELL, OR HOW BADLY, THE LAW AND OTHER GOVERNANCE ARRANGEMENTS ARE WORKING

There were four broad levels to the evaluation that were conducted for this study: (1) have the principles of the CBD (and related Conventions referred to above) been adequately reflected in formal arrangements and laws? (2) Has

[16] NCA, section 62.
[17] NCA, sections 88 and 89.
[18] MP Act, section 43.
[19] See for example, EP Act, sections 426,431,437 and 438.
[20] See EP Act, chapter 3 for example.
[21] EP Act, section 504.
[22] EP Act, Chapter 4A.

sufficient administrative and other action been taken to implement these Conventions and principles? (3) Is the behaviour of relevant state and non-state actors consistent with the proper implementation of the principles/Convention? (4) Do the biophysical and social outcomes demonstrate that implementation has been effective? By and large, the legal arrangements (level 1) for the protection of the marine biodiversity in the GBR are seen as adequate. There are some areas where the laws might be improved (or in the case of the EP Act, actually used), but relatively speaking, both state and national frameworks are sound and align with the principles and objectives of international frameworks like the CBD. Queensland's system for nature conservation, for instance, is underpinned by principles such as conservation of biological diversity and its sustainable use.[23] As might be expected, there are strict penalties for taking or interfering with marine biodiversity or its habitat without a proper licence under the NC Act, MP Act, Planning Act and EP Act. Likewise, federal government laws such as the EPBC Act (which seeks to implement the CBD, Ramsar, the Bonn Convention and the World Heritage Convention) are underpinned by the principles of the CBD such as conservation and sustainable use of biodiversity. Section 3A of the EPBC Act, for instance, requires that "the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making [under the Act]."

That said, when one moves to evaluate the institutional and behavioural stages of the problem (levels 2 and 3 above), it appears that considerable problems arise. There is no correlation, for instance, between the increased investment and actions of the regulatory actors and the outcomes being experienced by marine biodiversity (corals, dugongs, fish stocks etc). For example, it is well documented in the scientific literature that the GBR has lost more than 50% of its coral cover in the last 50 years.[24] These declines continue despite a record $500 million in investments over the last decade and new regulations to control fertilizer run-off.[25] Most of the declines in coral cover are due to ocean acidification (mass bleaching events),

[23] See NC Act, sections 4-13.

[24] Glenn De'atha, Katharina E. Fabricius, Hugh Sweatman, and Marji Puotinen (2012) 'The 27–year decline of coral cover on the Great Barrier Reef and its causes' 109(44) *Proceedings of the National Academy of Sciences of the United States* pp 17995–17999.

[25] See Queensland Government, Scientific Consensus Statement (2017) available online: http://www.reefplan.qld.gov.au/about/assets/2017-scientific-consensus-statement-summary.pdf

increased presence of Crown of Thorns Starfish (COTs) and increased sediment and nutrients (from farming) in the system.[26] Migratory marine species which rely on the overall health of the GBR system have also declined despite government efforts like Threat Abatement Plans which seek to tackle harmful marine debris such as derelict fishing equipment, plastics and other hazards.[27] The dugong, for instance, is thought to have declined due to 'human related threats' such as 'boat strike, incidental capture in fishing nets and marine debris, and habitat degradation due to coastal development and declining water quality.'[28]

Some of these issues are due to administrative failures of the Australian and Queensland Governments (and coordination therein) including historically relaxed fishing restrictions and a poorly planned approach to grazing and farming in the GBR catchments, but they are also due to factors seemingly outside of Australia's control that require international coordination and cooperation. Climate change and ocean acidification, which are amongst the biggest threats to biodiversity, for instance, require a global approach to resolution. Climate change is in fact a huge concern for the marine biodiversity of the site and one which Australia reported in its 5th report to the CBD:

> [Australian] species are highly sensitive to changes in climate and weather-related patterns and events. These patterns and events can disrupt seasonal food supplies and other resources, life cycle events, development, mortality, breeding and fertility, such that entire reproductive strategies become less successful.[29]

There are also cross-jurisdictional issues outside of Australia's immediate control that need to be addressed through bilateral and multilateral partnerships. For example, Australia's migratory bird species (integral to wetlands and coastal

[26] For an overview of the problems, see Great Barrier Reef Marine Park Authority, *Great Barrier Reef outlook report 2014* (GBRMPA, 2014). In the scientific literature, see also, for example, Brodie J and Pearson R (2016) Ecosystem health of the Great Barrier Reef: time for effective management action based on evidence' 183 *Estuarine, Coastal and Shelf Science* 438; and Dale A, Vella K, Pressey R, Brodie J, Gooch M, Potts R and Eberhard R (2016) 'Risk analysis of the governance system affecting outcomes in the Great Barrier Reef' 183 (3) *Journal of Environmental Management* 712.

[27] Australian Government, Department of Environment, 'Background Paper for the Threat Abatement Plan for the impacts of marine debris on vertebrate marine life (2009) <www.environment.gov.au/biodiversity/threatened/publications/tap/marine-debris.html>

[28] Australian Government, GBRMPA, 'Dugongs' <http://www.gbrmpa.gov.au/about-the-reef/animals/dugong>

[29] Australian Government, 5th National Report on CBD < https://www.cbd.int/doc/world/au/au-nr-05-en.pdf> p 19.

mudflats) which migrate to China, Japan and Korea have experienced sharp declines,[30] increasingly due to excessive land reclamation.[31] By a similar token, turtles, sharks, whales and other fish species which frequent the GBR region (and elsewhere) have experienced overfishing in other marine areas such as the South Pacific, Japan, China and Indonesia.[32]

5 DISCUSSION – THE ISSUES THAT SHAPE THE EFFECTIVENESS, EFFICIENCY AND FAIRNESS OF THE GOVERNANCE ARRANGEMENTS AS APPLIED TO THE CASE STUDY PROBLEM.

There are several key factors that seem to be shaping (or driving) declines in marine biodiversity which have not been adequately addressed. First, a thriving port and export industry along Australia's Eastern coast leads to significant shipping traffic through the GBR region. This phenomenon which is driven by global factors, must be made more sustainable, and where possible, risks of contamination, increased debris, oil spills etc. should be minimised. Second, maintaining Australia's sugar and grazing industries (which are considerable export opportunities for the country) has necessitated large areas of land dedicated to agricultural production and irrigation. There are fairness issues at stake here, as communities are often comprised of 3rd or 4th or even 5th generation farmers and sugar and grazing make up the community values and spirit that have been created. Third, it must be acknowledged that monitoring the state of marine biodiversity in and around the GBR is a mammoth financial and logistical task. The GBR is the same size as Italy or Japan and although zoning is considered 'world class'[33] resourcing and coordination between agencies at the state and federal level needs to be vastly

[30] Australian Government, GBRMPA, 'Seabirds and Shorebirds' (2008) <http://www.gbrmpa.gov.au/__data/assets/pdf_file/0006/4101/sea-birds-and-shore-birds-2008.pdf>

[31] See for example: Nicholas Murray, Robert Clemens, Stuart Phinn, Hugh Possingham and Richard Fuller, 'Tracking the rapid loss of tidal wetlands in the Yellow Sea' (2014) 12(5) *Frontiers in Ecology and the Environment*, pp. 267-272.

[32] On Indonesia, for example, see Satria, A. and Matsuda, Y. 2004. Decentralization of fisheries management in Indonesia. *Marine Policy*, 28: 437–450.

[33] Day, J., (2002) 'Zoning – Lessons from the Great Barrier Reef Marine Park' 45 *Ocean & Coastal Management* 139.

improved. The legislative and administrative basis for this to occur is already in place.[34]

6 DISCUSSION – DIAGNOSIS OF CAUSES AND EFFECTS, AND KEY SYSTEMIC RELATIONSHIPS RELEVANT TO E ABOVE.

The case study suggests that the key problems for marine biodiversity of the GBR are being driven by, on the one hand, external factors over which Australia has little control (climate change, globalisation, development and overfishing in Asia etc). However, on the other hand, many of the declines also represent Australia's historic failures in proper resourcing, collaboration and evaluation of government programs and policies, particularly in the GBR's key catchment areas. On the topic of resourcing, for instance, it has been suggested that funding for scientific research, planning and monitoring programs needs to increase exponentially to ensure the health of the GBR.[35] Nevertheless, money is not the sole concern for governments seeking to reverse the declines. There has also been a general lack of targeted and systematic evaluation of programs and policies by both the Queensland and Australian Governments.[36] A 2017 'Scientific Consensus Statement,' for instance, backed by the Queensland Government, recently found this to be the case:

> There has been little investment in social, economic and institutional research, or monitoring, evaluation and reporting of indicators related to Great Barrier Reef water quality management, and this constrains the ability to improve the effectiveness of programs.[37]

This lack of systematic evaluation is exacerbated by serious gaps in data concerning which species are most at threat, how and whether they are being 'sustainably used.' As Australia's fifth national report on the CBD (2014) pointed out:

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[34] See Australian and Queensland Government, Great Barrier Reef Intergovernmental Agreement (2015), available online < http://www.environment.gov.au/marine/gbr/protecting-the-reef/intergovernmental-agreement>

[35] J. Brodie & R. G. Pearson, 'Ecosystem Health of the Great Barrier Reef: Time for Effective Management Action Based on Evidence' (2016) 183(Part B), *Estuarine, Coastal and Shelf Science*, pp. 438–51.

[36] The Reef Report Card, which evaluates water quality entering the GBR is an exception to this. See Australian and Queensland Government, Reef Report Card (2016) www.reefplan.qld.gov.au/measuring-success/report-cards/2016/

[37] Queensland Government, Scientific Consensus Statement (2017) available online: http://www.reefplan.qld.gov.au/about/assets/2017-scientific-consensus-statement-summary.pdf p 16.

> '[Often] data is inadequate to draw firm conclusions about which groups may be declining and by how much. Many of the concerns stem from known pressures and their effects on biota rather than reliable data on the distribution and abundance of the species themselves.'[38]

7 DISCUSSION – RECOMMENDATIONS FOR MORE EFFECTIVE, EFFICIENT AND FAIR LEGAL GOVERNANCE

The study concludes that Australia's legal frameworks are, for the most part, effectively constructed to protect marine biodiversity but that further resourcing and stricter regulation in key areas (particularly land clearing and fertiliser run-off) would likely lead to improvements in species numbers. The following issues are considered integral to the good governance of the GBR:

- Timely, accurate and 'brutally honest' reporting under international conventions like the CBD, Ramsar and World Heritage Convention, including in regards to marine biodiversity;
- Increased investment in scientific research and 'data accumulation' about species declines and causes;
- Adequate resourcing for state and federal actors to monitor behaviour which is contrary to law;
- Improved cooperation between state, federal and international actors in terms of migratory marine species, shipping routes and tackling climate change;

Fairness and equity in the way established farming and coastal communities are treated with regards to changes to regulatory frameworks etc.

Some of these issues have already been acknowledged by governments[39] and other sources.[40] The development of a long-term strategic vision for the GBR -

[38] See Australian Government Department of Environment (2014), Australia's Fifth National Report to the Convention on Biological Diversity: Draft Report, Department of the Environment, 2014'.

[39] Department of Environment and Heritage Protection, *Broadening and Enhancing Reef Protection Regulations – Consultation Regulatory Impact Statement, September 2017* (Queensland Government, 2017), available at: http://www.ehp.qld.gov.au/assets/documents/reef/enhancing-reef-protection-regulations-ris.pdf.

including its marine biodiversity - is encouraging,[41] but financial investment is needed in 'the billions', not millions, to see real improvements.[42] The enrolment of non-state actors (NGOs, corporations, scientific institutions etc.) to play a key role in monitoring and remediation of already degraded areas could provide an excellent opportunity to fill some of the knowledge and resourcing gaps currently experienced by governmental bodies. The law has a role for legitimising their 'regulatory presence' in this regard.

[40] See J. Brodie & R. G. Pearson, above n 35. See also Hamman and Deane 'The control of nutrient run-off from agricultural areas: Insights into governance from Australia's sugarcane industry and the Great Barrier Reef' *Transnational Environmental Law* (forthcoming).

[41] Australian Government, Great Barrier Reef Marine Park Authority, Strategic Assessment and 25-Year Management Plan (2017), available at: http://www.gbrmpa.gov.au/managing-the-reef/strategic-assessment

[42] J. Brodie & R. G. Pearson, above n 35.

CO-GOVERNANCE FOR CONNECTIVITY CONSERVATION ACROSS PUBLIC AND PRIVATE RURAL LANDHOLGINGS IN AUSTRALIA

Andrew Lawson

1 SUMMARY OF THE CASE STUDY KEY FACTS AND ISSUES.

'Connectivity' – a fundamental principle of ecological conservation and restoration:

> [T]he maintenance of connectivity is one of the key principles for conserving biodiversity and ecosystem function and therefore a key principle in informed landscape management. (Pulsford et al 2015, 857).

In the environmental management sciences, it generally means:

> [T]he ease with which organisms move between particular landscape elements, the number of connections between patches of habitat relative to the maximum number of potential connections or the interlinkages of key processes within and between ecosystems. (Pulsford et al 2015, 853).

'Connectivity conservation'

> The maintenance and restoration of ecosystem integrity requires landscape-scale conservation. This can be achieved through systems of core protected areas that are functionally linked and buffered in ways that maintain ecosystem processes and allow species to survive and move, thus ensuring that populations are viable and that ecosystems and people are able to adapt to land transformation and climate change. We call this proactive, holistic, and long-term approach connectivity conservation. (IUCN World Commission of Protected Areas (WCPA) Connectivity Conservation Declaration, Papallacta, Ecuador, 2006).

'Collaborative governance' ('co-governance')

> A governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets. (Ansell and Gash 2007)
>
> The processes and structures of public policy decision making and management that engage people constructively across the boundaries of public agencies, levels of government, and/or the public, private and civic spheres in order to carry out a public purpose that could not otherwise be accomplished. (Emerson, Nabatchi and Balogh 2012).

Potential co-governance 'partners' – Individuals and non-government organizations involved in the:

- Administration of public law and regulation (taking an animal welfare example – RSPCA and animal welfare laws in Australia)
- Implementation of private standards, rules, programs (e.g. sustainability certification schemes, agricultural industry codes)
- Administration of customary law relating to environmental management
- Scrutiny of environmental performance as 'surrogate regulators' (e.g. media, environmental advocacy NGOs)

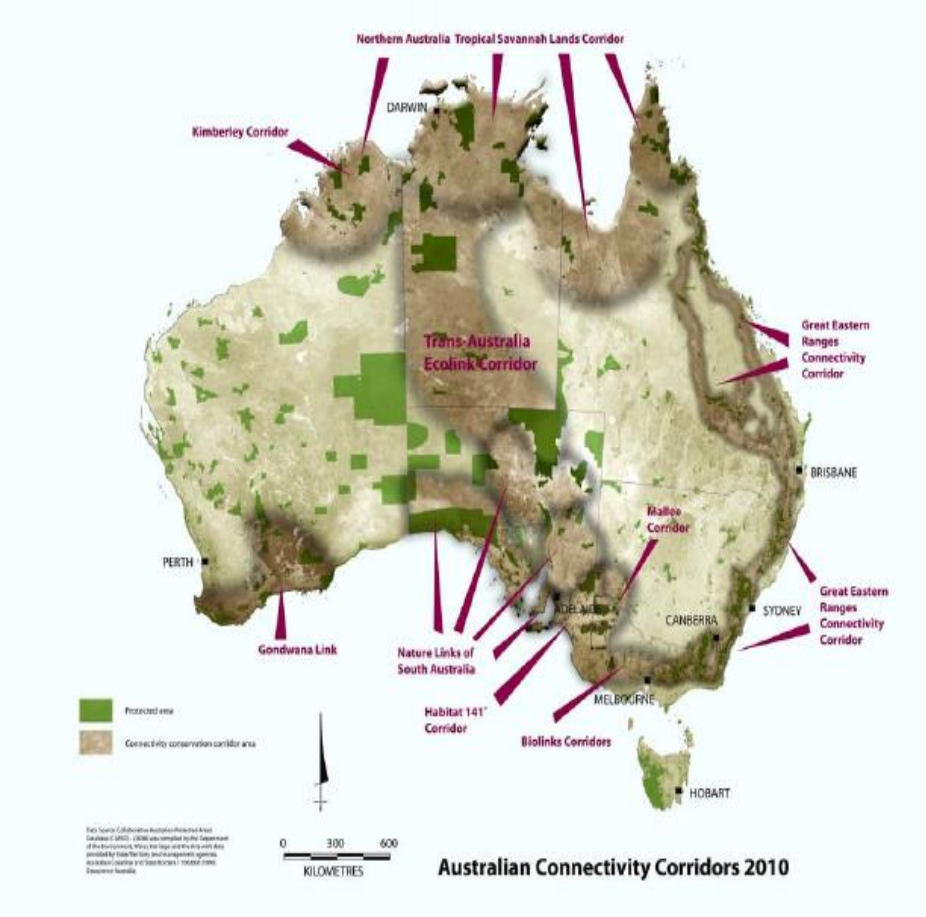
Private rural landholdings – Includes commercial farmers and pastoralists, miners, tourism ventures, organizations and individuals who own land for dominantly nature conservation purpose (e.g. Bush Heritage, Australian Wildlife Conservancy), and Aboriginal and Torres Strait Islander landholders (who may also be actively involved with any of these other enterprises – pastoralism, conservation, mining, tourism, etc.)

Some assumptions/ hypotheses:

- National parks and other publicly owned and controlled conservations areas will often be insufficient to secure landscape-scale conservation of biodiversity in rural areas.
- Connectivity conservation will require sympathetic conservation management on private rural landholdings.

- Command-and-control approaches to governing conservation – especially on private land, but also public lands – have proven difficult, giving impetus for other approaches such as co-governance.
- Co-governance has opportunities and risks.
- Co-governance works best in a governance milieu of strong public law and public legal administration.

Examples in Australia



(from Worboys and Pulsford, 2011)

2 RELEVANT CBD PRINCIPLES

(Keywords extracted)

- *CBD, art 8*: (c) outside protected areas; (d) viable populations; (e) areas adjacent to protected areas; (l) significant adverse effect on biological diversity
- *Aichi Biodiversity Targets*: (5) fragmentation significantly reduced; (7) agriculture managed sustainably; (11) well-connected … integrated into the wider landscape; (14) ecosystems that provide essential services; (18) indigenous and local communities.
- Relevant laws

Australian Constitution

- Outlines the relationship between the six federating States and the federal government
- Sets out the powers of the federal government ('The Commonwealth') but not the States
- No item explicitly dealing with 'environment' or 'biodiversity conservation'
- But the Commonwealth has taken on de facto power for some aspects of the environment (with limitations) using its other powers and the High Court's interpretation of them: e.g. trade and commerce, taxation, fisheries, corporations, external affairs (e.g. entering into international treaties on environmental issues such as the CBD), taxation, financial grants to states.

Commonwealth

- ***Direct involvement:*** *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) and associated legislation: Facilitates direct Commonwealth involvement in nine 'matters of national significance': listed threatened species and communities; listed migratory species; Ramsar wetlands of international importance; Commonwealth marine environment;

world heritage properties; national heritage places; the Great Barrier Reef Marine Park; nuclear actions; a water resource, in relation to coal seam gas development and large coal mining development.

- ***Indirect involvement:*** Through its fund-raising capacities (e.g. tax powers), grant-making powers (e.g. funding of regional natural resource management (NRM) bodies and other organizations) and convening roles (e.g. Murray-Darling Basin).

States

- Primary responsibility for environment and landuse planning framework.
- Many statutes and regulations, often fragmented into natural resource 'silos': water, native vegetation, fisheries, mining, petroleum, etc.
- Statutory basis for national parks, regional NRM bodies and local government, and their planning frameworks.
- Responsible for overseeing land clearing legislation, mainly affecting agricultural production on private lands but sometimes mining and other land uses on public and private lands.
- Vulnerable to the 'fiscal imbalance' (i.e. Commonwealth has most of the money but not responsibility for delivery of services; States don't have the money but are responsible for delivering services). This can encourage perverse outcomes whereby States have a strong financial interest to approve large developments in order to secure alternatives to Commonwealth grants (such as royalties from mineral and petroleum extraction)

3 DISCUSSION OF LAW AND GOVERNANCE ARRANGEMENTS, ISSUES AND PROBLEM DIAGNOSIS

a) Legislation and implementation

Connectivity conservation is not explicitly embodied in formal legislation in a coherent and consistent way but is implicit in discrete examples supported by government; e.g.

- Murray Darling Basin arrangements
- National Reserve System
- Regulation of landuse (e.g. sugar cane farming) in the catchments discharging into the Great Barrier Reef

There are national level policies, such as the Strategy for the National Reserve System 2009-2030, Australia's Biodiversity Conservation Strategy 2010-2030, and National Wildlife Corridors Plan (2012).

'Co-governance' is distinguished in this summary from 'co-management'. There are many examples of governments working with individuals, business and industry groups, and non-government organizations to achieve connected biodiversity conservation. Commonwealth and State/Territory governments have supported grant models for farmers, other landholders, and community groups to access relatively small amounts of ad hoc funding for on-ground works. This may be characterised as co-managing the problem. But it is not necessarily co-governance, unless the non-state partner has some decision-making role in the governance and regulation of impacts on conservation, and of the behaviours that positively or negatively affect environmental outcomes.

On-ground management is not the same as regulating or influencing on-ground behaviours. Of course, the distinction is sometimes difficult and a better term may be 'hybrid governance'. For instance, private conservation organizations buying and managing large properties according to values equivalent to national parks are both managing consistent with public interest environmental objectives, as well as regulating and influencing behaviours within their own domains.

Co-governance is also not explicitly addressed by formal legislation in any overarching fashion, though there are ad hoc examples where non-state players are incorporated into the governance arena: e.g.

- Regional NRM arrangements
- Water sharing planning
- Queensland's *Framework for the Accreditation of Farm Management System Programs*
- Indigenous Protected Areas
- State based non-government conservation trusts that undertake legal covenanting processes. Some States and Territories have mechanisms for private landholders to covenant parts of private property for conservation purposes in perpetuity. There are a number of conservation trusts that use various methods to achieve conservation goals on private land; e.g. rolling funds to purchase properties with significant conservation values that are then re-sold with covenant to sympathetic purchasers.

b) Behavioural influence

This key behavioural driver remains a great challenge: the costs and benefits of action on biodiversity are often mismatched. Market or regulatory incentives are weak. Public and private policy are not mindful of rewarding good environmental performance and sanctioning bad performance.

Some aspects of law and policy are not calculated to encourage collaborative activities across the range of private landholdings needed for connectivity. There is a lack of consistency in environmental expectations of landholders across the system of tenure. Even non-freehold tenures nominally owned by the state can be subject to highly variable rules and expectations; e.g. various forms of pastoral leases, mining tenements, unallocated Crown lands. In some jurisdictions, such as Queensland, there has been an attempt to introduce an overarching environmental duty of care in Crown leases, which does not directly address connectivity concerns but is sympathetic to biodiversity conservation generally.

Since the 1980s, the drive for efficiency embodied in policies such as the National Competition Policy have influenced governments' approaches to regulation and governance. One result has been the use of competitive grant procedures, such as tendering and reverse auctions. The jury is still out about whether competitive processes that pit landholders against each other for scarce funds encourages the co-operative ethos need to tackle collective action problems.

c) Outcomes

Overall biodiversity outcomes have been mixed at best and retrograde at worst according to the latest Commonwealth State of Environment Report (2016):

- 'The main pressures affecting the Australian environment today are the same as in 2011: climate change, land-use change, habitat fragmentation and degradation, and invasive species. There is no indication that these have decreased overall since 2011.'
- 'A legacy of extensive land clearing and the current clearing policies in some jurisdictions continue to cause loss of biodiversity (including the loss and fragmentation of native vegetation).'
- 'Australia's biodiversity is continuing to decline ....'
- 'Since 2011, there have been significant gains in the extent of Australia's terrestrial conservation estate. The National Reserve System now covers 17.9 per cent of Australia's land area, compared with 13.4 per cent in 2011.'
- 'Indigenous Protected Areas and conservation covenants on private land are playing an increasingly important role in our protected area estate, although concerns have been expressed regarding the availability of ongoing funding for Indigenous Protected Areas.'
- 'Effective management of the Australian environment in the future also requires efficient, collaborative and complementary planning and decision-making processes, with clear lines of accountability; improved support for

decision-making; a more strategic focus on planning for a sustainable future; and new, reliable sources of funding.'

d) Potential

There are many non-government programs with a sustainability angle available for private landholders, particularly farmers. These include certification schemes, such as organics, and sector-based schemes managed by peak bodies (e.g. for cotton, wine, sugar, beef, grains, dairy, and horticulture). Most of these are not specifically directed towards connectivity conservation. They are directed towards individual farmers defining environmental risks and goals, developing and implementing action plans, and assessing performance. Some of them involve demonstrating performance through a credible auditing mechanism. To date, they have not been incorporated into co-governance arrangements to any great degree, with a few qualified exceptions; e.g. organics (in export regulations) and the cotton industry's best management practice program.

However, with some goodwill, collaboration, and tweaking, they have the potential to align with objectives for connectivity conservation and to be incorporated into hybrid governance arrangements with benefits for the public interest and participating members. For example, programs applicable to enterprises implicated in run-off of sediments and farm chemicals into the Great Barrier Reef (e.g. sugarcane, beef production and horticulture) could potentially help farmer participants provide stronger and more credible demonstration of regulatory compliance. How private industry sustainability schemes can foster a sense of shared fate and contiguous collective action at appropriate scale remain challenges. Rice industry programs, and organic certification may be instructive in providing insights about how landholders, supported by other actors along the value chain, come to understand a shared fate and the importance of self-regulation.

4 OTHER OBSERVATIONS

Co-governance carries risks that must be monitored and if necessary addressed. These include:

- Loss of integrity – Research literature suggests voluntary programs runs the risk of fraud and greenwashing unless accompanied by transparent integrity processes; e.g. third-party auditing or other trust building mechanisms.
- Corruption – Close involvement and collaboration of interested, powerful stakeholders can capture the regulatory space.
- Abrogation of the public interest – Governments can be tempted to disguise their withdrawal or vacation from the governance arena as an exercise in collaboration. They may do this because of lack of funds, or the politically difficult nature of the problem being governed. Non-state parties can be left with responsibility for governance, at the same time lacking resources or authority to govern.

Connectivity also carries risks that sometimes conflict with conservation and commercial agricultural objectives. Connected corridors can facilitate the movement of agricultural and/or environmental pests – weeds, invasive animals, and diseases. There has been increased interest in area-wide boundary fencing by both commercial- and conservation-oriented private landholders; e.g. exclusion fencing for feral buffalo, feral cats, wild dogs and dingos, emus and kangaroos. How does exclusion fencing sit within a broader connectivity paradigm and what are the legal and governance consequences?

UTILISING TAXATION INCENTIVES TO PROMOTE PRIVATE SECTOR FUNDED CONSERVARTION

Kip Werren

1 KEY ISSUES

Much of the public discussion on natural resource management centres on the assertion that landholders should be motivated by ideals of sustainability and good environmental outcomes to sacrifice their individual interests in order to protect the collective interests of society. At the other end of the spectrum, many institutional designers take the view that they cannot rely on the virtue of landholders but instead must rely on regulations and market incentives which appeal entirely to the self-interest of landholders. Perhaps a better view is that individuals may be subject to self-interest but they are not bereft of other motivations or concerns such as community interest. Suitable incentives coupled with the goodwill of landholders, are the key ingredients to the promotion of conservation. The problem lies in finding sufficient funds to meet the ever expanding requirements of environmental conservation. The economic and environmental pressures facing Australia suggest that the underlying funding capacity of Australian governments and landholders to meet conservation activities will rapidly decline.

Taxation incentives may be the key to promoting private sector funded conservation. Of course it is noted that taxation incentives are not the only

mechanism which can be called upon to encourage conservation. As noted by Grahame J W Webb:[1]

> What history does tell us is there is no simple solution to wildlife conservation problems. No magic bullet applicable to all animals and plants in all contexts. No single authority that can provide and implement definitive solutions to all problems. No single philosophy, nor set of values, nor theory that we can turn to for ultimate guidance. Successful solutions to conservation problems are varied as the culturally diverse people who implement them.

In addressing the issue of utilising taxation incentives to promote conservation the following questions arise:

1. Contrary to economic conventions, is there a justification for a taxation based approach to economic incentives to encourage private rural conservation, from a policy and behavioural perspective?
2. Is there a policy rationale for an alternative to the existing approaches to funding rural natural resource conservation and restoration activities on private farmland?
3. To what extent is there a behavioural rationale for a tax-leveraged privately funded approach to rural natural resource governance?
4. Is there a basis for the hypothesis that there is an important behavioural difference between government grants, taxation incentives and a farmer-led taxation leveraged approach to rural natural resource governance?

A taxation incentive, also referred to as 'tax expenditure', 'is a provision of the tax law that provides a benefit to a specified activity or class of taxpayer that is concessional when compared to the "standard" tax treatment that would apply.'[2] Taxation incentives 'can be provided in many forms, including tax exemptions, tax deductions, tax offsets, concessional tax rates or deferrals of tax liability.'[3] Tax incentives can encourage expenditure, investment, and commercial activity.

[1] Grahame J W Webb, *Wildlife Conservation: In the Belly of the Beast* (Charles Darwin University Press, 2017) 36.
[2] The Australian Government the Treasury, 'Tax Expenditures Statement 2011' (The Australian Government the Treasury, 2012) 13.
[3] Ibid.

Tax incentives to encourage investment are beneficial to society where the rise in revenue from the relevant sector plus the social benefits (ie positive externalities) from the increased investment are greater than the loss in tax revenue produced by the incentive plus the indirect costs (ie administration, monitoring) of the incentive.[4]

The major difference between taxation incentives and government grants is the process for obtaining the benefits. The benefit of taxation incentives by their very nature are obtained under the tax system. However, in order for a particular tax incentive to be attractive and potentially change the behaviour of the targeted audience, the transaction costs of obtaining the benefit should be low. 'In some countries businesses forgo incentives because of the high indirect costs of obtaining them. For example, many Canadian firms gave up the tax incentive for research and development because the approval and audit processes were too costly.'[5] Sebastian James suggests that if government wishes to minimise costs to taxpayers, minimise monitoring costs, and mitigate tax evasion and avoidance, the following should be considered when designing a tax incentive:[6]

- **Automatic Endowment** – Eligibility should be based on clear and concise rules with taxpayers attaining the benefit upon satisfying the stipulations of the relevant tax provision. When tax incentives are discretionary in nature and based on an approval process then the taxpayer may face considerable costs in terms of time and administration. Moreover, under a discretionary provision there is no guarantee that the incentive will be granted, and as a consequence taxpayers may decide that it is not worth the bother of applying;
- **Incorporation of the Provisions into the Tax Legislation** – This will ensure that the incentive is administered by the tax agency that has the capacity and experience in such matters; and

[4] Sebastian James, 'Incentives and Investments: Evidence and Policy Implications' (Investment Climate Advisory Services of the World Bank Group, 2009) 3.
[5] Ibid 23.
[6] Ibid 20-4.

- **Compliance Mechanisms** – For monitoring purposes the lodgement of tax returns and relevant forms should be compulsory as a precondition for obtaining the tax benefit.

2 BASIC ASSUMPTIONS

The basic assumptions underscoring the discussion are that:

- The capacity of Australian Governments to fund conservation is limited;
- Private conservation funding is required to meet the requirements of national environmental conservation;
- Private landholdings are the linchpin of conservation on an extensive scale; and
- Behavioural motivators and drivers influence private landholder uptake of conservation schemes.

3 BEHAVIOURAL ASPECTS - PRIVATE LANDHOLDERS

The interaction between factors influencing private landholder participation and non-participation in conservation is complex and not yet fully understood. A prosaic view is expressed by Grahame J W Webb:[7]

> In any overview, although conservation depends on people caring, the majority of people will continue to care a great deal more about themselves and other people they do about animals and plants. There are sound survival reasons why this is so, and why it will remain. Starving people kill their animals to feed people and do not kill their children to feed animals. It is the very reason that conservation programs tailored to bring real and tangible benefits to people are much more likely to work than those that disadvantage poor people even further. It is the reason commercial incentives to conserve wildlife often meet with surprising levels of success.

Behaviour which deviates from the economic rational model may occur due to internal factors such as habits, emotions, personal capacity, and biases. Behavioural factors influence the outcome of policy arrangements in that they can either complement or constrain the effects of policies. Conservation activities are

[7] Webb, above n 1, 305.

subject to high transaction costs, uncertainty, and economic risk. The magnitude of transaction costs can affect landholder participation in conservation schemes as uptake is largely influenced by the perception of private transaction costs.

Conservation taxation incentives targeted at private landholders will contribute partially to the cost of conservation works, with the rest of the costs borne by the landholder. It is unlikely that the benefit of a taxation incentive would be higher than the agricultural returns from prime productive agricultural land. Marginal and non-productive land is more likely than high productive sections / areas to be turned over to conservation activities.

As to hobby farmers (life style landholders), at present in Australia no tax deduction is available for non-business expenditure incurred principally in improving or protecting ecological assets. A tax deduction may be allowable if the expenditure can be linked to primary production, mining or some other profit motivated enterprise. It is unclear whether the creation of a 'conservation business' with a view to participating in eco-services markets will allow tax deductibility of expenditure incurred in generating the eco-services.

4 BEHAVIOURAL ASPECTS - PRIVATE INVESTORS

The imposition of taxes and hence the availability of tax incentives, can influence the allocation of resources.[8] The policy behind investment tax incentives is that individuals in the pursuit of profit will find an investment more attractive if it costs less.[9] Research has found that while other factors are important determinants of investment behaviour, taxes have a significant influence.[10] In research conducted by Ang, Blackwell and Megginson on British investment trusts it was found that stock-dividend shares, which could be converted to cash dividend shares, sold at a premium when the tax system favoured capital gains. Where the tax system favoured

[8] Brett Freudenberg, *Tax Flow-Through Companies* (CCH, 2011) 2.
[9] Robert E Hall and Dale W Jorgenson, 'Tax Policy and Investment Behavior' (1967) 57(3) *American Economic Review* 391, 392.
[10] Alexander Klemm and Stefan Van Parys, 'Empirical Evidence on the Effects of Tax Incentives' (IMF Working Paper WP/09/136, Fiscal Affairs Department, 2009) 3.

income relative to capital gains the cash dividend shares sold at a premium.[11] Sundar, Hill and Lajaunie reviewed the impact of taxes on American stock prices. Favourable capital gains tax 'provided an increase in the demand for the smaller capital growth stocks, while the lower marginal rate on ordinary income fuelled an increase in the demand for value stocks which provide steady dividend income.'[12] Overall these studies indicate that investors alter their behaviour due to taxation.

Slemrod and Kopzuk state 'there is a growing body of evidence, that at least for high-income individuals, the elasticity of taxable income to marginal tax rate is substantial.'[13] Possible responses to higher marginal tax rates include increased leisure activities (ie the higher tax rate acts as a disincentive to work), tax evasion, incorporation (eg sole trader sets up a company to minimise tax liability), increased expenditure on deductible items (eg charitable donations), and rearrangement of salary package (eg salary sacrifice arrangements).[14] It is unclear to what degree higher marginal tax rates influence the propensity to invest in tax effective financial assets but it cannot be denied that taxation incentives have a significant behavioural impact upon certain individuals and can direct the flow of funds to targeted causes.

Example 1 - The Good

A real world example of a capital raising mechanism which uses taxation incentives to encourage investment in environmentally-friendly initiatives is the Netherlands' Green Funds Scheme (GFS). The GFS is a tax investment scheme which allows investors to contribute to green projects by placing their money with an approved financial institution (green institution) at below market interest rates. This is partly compensated by a tax incentive.[15] The green institutions lend money at below market rates to companies that undertake certified green projects. The green institutions must expend at least 70% of the total assets of the fund on certified green

[11] James S Ang, David W Blackwell and William L Megginson, 'The Effect of Taxes on the Relative Valuation of Dividends and Capital Gains: Evidence from Dual-Class British Investment Trusts' (1991) XLVI(1) *The Journal of Finance* 383.

[12] Cuddalore S Sundar, John M Hill and John P Lajaunie, 'Tax Incentives and Individual Investor Behaviour' (2000) 7 *Applied Economics Letters* 91, 93.

[13] Joel Slemrod and Wojciech Kopczuk, 'The Optimal Elasticity of Taxable Income' (2002) 84 *Journal of Public Economics* 91, 92.

[14] Ibid.

[15] NL Agency, 'The Green Funds Scheme: A Success Story in the Making' (Ministry of Housing, Spatial Planning and the Environment, 2010).

projects. The other 30% may be invested elsewhere to diversify the risk. To qualify as a green project certain conditions, laid down in the scheme, must be met.

Example 2 - The Bad

The demise of agricultural managed investment scheme operators Great Southern Plantations and Timbercorp raise thought-provoking issues. The schemes arose from the 1997 Plantations for Australia 2020 vision goal to treble Australia's plantation output by 2020 to meet future paper demand.[16] Taxation incentives (an upfront general tax deduction) were an important component in encouraging private investment into forestry as it was unlikely that without incentives investors would accept 'the agricultural risk, delayed returns and concentrated income events that create tax liability at harvest.'[17] Factors that contributed to collapse of the schemes included the high cost of land, volatile cash flows, and an unsustainable business model.[18]

Example 3 - The Ugly

According to the Times newspaper '[c]elebrities were conned into investing more than £100 million in Britain's biggest tax fraud'.[19] Allegedly, the promoters persuaded investors that the schemes would fund ethical environmental projects in Brazil and China. Investors were advised that they were eligible for tax incentives and claimed a total of £108 million.

[16] Parliamentary Joint Committee on Corporations and Financial Services, 'Inquiry into Aspects of Agribusiness Managed Invesment Schemes' (2009) 18.
[17] Ibid.
[18] Ibid; Mark Conlon, 'Hard Lessons Lie in Debris of Plantations', *The Weekend Australian Financial Review* (Sydney), 18-19 July 2009, 40.
[19] David Brown, 'Judge's Son 'Swindled Celebrities in £100m Eco Research Tax Scam, *The Times* (London), 14 March 2017, 21.

LANDHOLDER DUTIES OF CARE, BIOSECURITY AND BIODIVERSITY

Natalie Taylor

1 CASE SUMMARY

1.1. Biosecurity is often, by definition, in principle and in practice, misunderstood.

1.2. In Australia, biosecurity has been defined as the 'protection of the economy, environment and human health from the negative impacts associated with entry, establishment or spread of exotic pests (including weeds) and diseases'. Environmental biosecurity is involved with the protection of the environment and social amenity from the negative impacts of invasive species.

1.3. Invasive alien species (IAS) significantly impact the Australian environment and threaten biodiversity, impacting overall species abundance and diversity. Breaches of biosecurity, leading to incursions by invasive species, have the potential to cause substantial economic, social and environmental losses, including reduction in biodiversity. Improving biosecurity can reduce risk to biodiversity, while maintaining stable ecosystems through biodiversity can be a safeguard against biosecurity breaches.

1.4. The global costs of invasive alien species (IAS) have been estimated at around US$350 billion, while alien invertebrate and vertebrate pests and weeds are estimated to cost Australia at least $7 billion a year.

1.5. A key challenge in biosecurity management is the establishment of effective, equitable regulatory frameworks and systems across jurisdictions. Biosecurity issues

generally – and invasions specifically, including the spread of various pests, invasive species and organisms beyond their natural ranges, has become increasingly important as a regulatory and policy issue in Australia over the past decade.

1.6. Since 2005, various Australian jurisdictions have engaged in significant regulatory reform in the context of biosecurity. Such reforms have embraced as a guiding principle both the notion of 'shared responsibility' (a concept considered in another case study), but also legal constructs of stewardship, or duties of care, which underpin 'shared responsibility'. These constructs - general biosecurity duties or obligations, or "GBO/GBD" – present unique governance challenges.

1.7. This case considers these ideas and the relationship between biosecurity and biodiversity in the context of landholder duties of care.

2 RELEVANT CONVENTION AND OTHER PRINCIPLES

2.1. In a context of increasing global loss of biodiversity, the International Convention on Biological Diversity (CBD) was passed in 1992 with the objectives of: the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, (Art. 1, CBD).

2.2. The CBD provides decision makers with guidance based on the precautionary principle, ie. where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat. Another significant international principle of environmental law influenced by the precautionary principle is Ecologically Sustainable Development (ESD), from the Rio Declaration on Environment and Development.

2.3. Significant in this case are the CBD Principles of the Ecosystem Approach. This approach provides an integrated management strategy for land, water and living resources, which promotes equitable conservation and sustainable use. It is encouraged as a way, through systems implementation, to help 'reach a balance of the three objectives of the Convention'.

2.4. Principle 2 of the CBD Ecosystem Approach encourages decentralization of management 'to the lowest appropriate level'. This is argued to lead to greater efficiency, effectiveness and equity; with management that involves all stakeholders balancing local and wider public interests; with further creation of greater responsibility, ownership, accountability, participation and use of local knowledge.

2.5. Principle 10 of the CBD Ecosystem Approach is also relevant, encouraging balance between integration of, conservation and use of biological diversity. Past systems have focused on managing biodiversity as either protected or not-protected. More flexible approaches are promoted in which conservation and use are contextualised, applying a full range of measures 'in a continuum'.

2.6. Australia has a number of biosecurity obligations under international law (which are not discussed in this case), notably:

2.6.1. World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement)

2.6.2. International Plant Protection Convention (IPPC)

2.6.3. World Organization for Animal Health (OIE)

2.6.4. World Health Organization (WHO).

3 RELEVANT LOCAL LAWS

3.1 Biosecurity regulatory reform

3.1.1. Since 2005, following on from significant biosecurity reviews and reforms – namely the Beale Report, Nairn Review and the recent 2016 IGAB Review - a number of Australian jurisdictions actively engaged in reform of their respective Biosecurity legislation and regulations.

3.1.2. Reform saw the re-emergence of a 'general landholder duty' or environmental duty of care (EDOC), defined as a "general biosecurity duty or obligation" ("GBO/GBD").

3.1.3. The GBD as a statutory duty of care is said to better define, in the sphere of biosecurity, the responsibilities of landholders in any given jurisdiction, and as such,

to better align with and achieve ESD outcomes due to the 'focus on creating boundaries of responsibility that are adjudicated through an administrative process' where that focus 'places a duty of care at the centre of a new ethic of natural resource stewardship'.

3.2 EBPC ACT 1999 CWLTH

3.2.1. The Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places — defined in the EPBC Act as matters of national environmental significance. At its foundation is the principle of ecologically sustainable development (ESD), which encapsulates the precautionary principle and the principle of intergenerational equity.

3.2.2. The EPBC Act administers key issues relevant to IAS, including: key threatening processes, where, for example, invasive species such as foxes, chytrid fungi or others may threaten the survival, abundance or evolutionary development of a native species or ecological community; the development and implementation of threat abatement plans (TAPs), to reduce impacts of listed key threatening processes on affected listed threatened species and ecological communities, and recovery plans. As such, the Australian Weeds Strategy 2017 – 2017 and Australian Pest Animals Strategy 2017 -2027 fall under the bailiwick of the EPBC Act.

3.3 Biosecurity Act 2015 CWLTH

3.3.1. Post Beale Report in 2008, Australia commenced reform of Commonwealth biosecurity regulations.

3.3.2. The Biosecurity Act 2015 changed the existing environmental biosecurity functions under the EPBC Act, which primarily include the live import functions and related post-border management due to concerns the existing approach to invasive species control through biosecurity did not adequately address all phases of the

biosecurity continuum, particularly post-border. Stronger focus was sought through the reform for the prevention of introduction of invasive species into Australia.

3.3.3. Although largely still focussed on agricultural biosecurity, the Act aims to improve compliance, increase efficiency and decrease regulation and regulatory impact whilst meeting Australia's international obligations.

3.4. Polluter pays principle – consistent with risk based approaches, the risk creator should bear the burden of costs not the risk inheritor. This is also consistent with aspects of the principle of Environmental Justice

3.5. Participatory decision making

3.6. Consistent with principles of ESD are the concepts of inter and intra generational equity

3.7. Other Australian Commonwealth and State/Territory regulations and strategies eg. Biodiversity Conservation Strategy; notably State Biosecurity Acts eg. Biosecurity Act 2015 NSW, Biosecurity Act 2014 QLD, Biosecurity and Agriculture Management Act 2007 WA; Biosecurity Bill 2017 TAS

4 DISCUSSION OF GOVERNANCE ARRANGEMENTS (4 LEVELS)

4.1. Has the principle been translated into law?

4.1.1. Initial evaluation would suggest principles such as the precautionary principle are represented in recent Biosecurity reforms, along with ESD (and concepts of inter/intra generational equity given farms and farming families invest heavily emotionally in legacy. However, principles such as environmental justice and polluter pays are arguably less well represented.

4.2. Has the principle aligned into governance processes?

4.2.1. Risk based approaches do arguably represent a shift by government in regulatory reform toward more 'balanced and equitable' regulatory frameworks. Risk assessment processes underpin and represent the decision-making processes for identifying and prioritising invasive species risks most of the reformed jurisdictions. Pre or during reform consultation has been questionably inadequate, with stage

governments relying upon a 'top down' approach which is not consistent with the principles above.

4.2.2. The GBO/GBD aligns liability on the landholder – both private and public. As such, it does not equate well with polluter pays or environmental justice principles given the landholder (most often a farmer) is left with the burden of remediating an incursion. The duties usually require prevention of harm or containment – there are no duties to prevent entry nor to improve.

4.2.3. Some Emergency Outbreak scenarios involve resource support (or compensation) in some jurisdictions. Some support is provided via levies or compensation by Industry Groups for members in incursion circumstances. In WA the Regional Body structure forces regional groups to create corporate entities and apply levies for biosecurity funding (which is matched by the State government) using a risk based model to address regional or local invasives priorities. 4.2.4.The SA model (which does not have a GBO/GBD) uses more consultative approaches with industry groups, regional groups and stakeholders. 4.2.5.These types of regulatory approaches require strong knowledge and understanding – this is necessarily to meet the CBD and other principles. The lack of communication and training equates to insufficient knowledge and understanding. 4.3. Have key institutions made required behavioural changes?

4.3.1. Limited educational processes have occurred (NSW) via 'topline' legislative training.

4.3.2. No – behavioural studies, such as CBSM or other models would potentially significantly improve the delivery and implementation of biosecurity reforms. QLD is investing in significant behavioural research.

4.4. Outcomes of implementation of the principle

4.4.1. Inconsistency of application

4.4.2. Lack of understanding and knowledge

4.4.3. Fragmented approaches – lack of harmonisation across jurisdictions

4.4.4. Inconsistency of application

4.4.5. Lack of confidence in managing biosecurity concerns

4.4.6.Unbalanced, inequitable balance of burden especially costs 4.4.7.Reduced government resources

5 DISCUSSION ISSUES

A number of issues and challenges arise in the implementation of a duty of care in the context of biosecurity/biodiversity:

5.1. Duty crafting and language inadequacy

5.1.1. Clarity around roles and responsibilities and powers

5.1.2. What does 'shared responsibility' mean in practice?

5.1.3. Lack of understanding and engagement of key stakeholders

5.1.4. Questions as to legal certainty and doctrinal concerns regarding administrative law

5.2. Inconsistency with application of risk based approaches – are they more efficient?

5.3. Inconsistency with CBD principles:

5.3.1. Lack of balance in involvement, consultation of stakeholders, local and wider public interests

5.3.2. Inconsistency of application causing inequitable balance of engagement, limited understanding of responsibility, ownership, accountability, participation

5.4. Biosecurity plans should create greater local community involvement and use of knowledge.

5.5. Agricultural biosecurity focus remains

5.6. Fragmented approach

5.6.1. Cross jurisdictional and trans boundary problems arising due to different regulatory requirements, costs, regulatory styles, approaches and procedures

5.7. Inefficiencies, inadequacy of process and confusion

5.8. Polluter pays and Environmental justice: is the burden of containment borne by the risk inheritor and not the risk creator?

5.9. Challenges with implementation: training, communication, behavioural change

5.10. Lack of adequate, integrated data management and information systems

A. Discussion – causes & effects

5.11. Poor regulatory reform process (is it outdated and focused on the wrong things?) Does it meet the needs of new 'smart regulatory' approaches for the future?

5.12. Focus on regulation – are other implementation methods more effective?

5.13. Lack consultation/involvement industry groups, stakeholders, NGOs etc reform in identifying priorities, approaches, issues and decision making

B. Discussion – recommendations

5.13.1. Better incorporation of behavioural research into regulatory reform processes

5.13.2. Harmonised biosecurity duties in Australia aligned with 'smart regulatory' jurisdictional and industry issue approaches at the State/Territory, regional and local levels

5.13.3. More effective National Biosecurity Strategy supported by institutional structure

5.13.4. National system to include resourcing, compensation or funding, promotion of national market mechanisms or other market instruments

5.13.5. Creation clear indicators, reporting mechanisms supported by accessible data management system including access to information nationally

META-GOVERNANCE OF BIODIVERSITY PROTECTION IN AUSTRALIA

Paul Martin

1 CASE STUDY KEY FACTS AND ISSUES

Under the Australian Federal constitution states have primary carriage of environmental management within the jurisdiction, and are so the primary implementers of biodiversity protection arrangements. The federal government has the power to enter into international agreements, it has specific powers over issues like interstate trade and corporations, some water management, and also it can have powers referred to it by the states. Most important in practice is that income tax is collected by the national government and distributed to the states, giving it a lot of *de facto* power. The states and federal government operate 'cooperative federalism' through the Council of Australian Governments (COAG).

The Australian Government ratified the Convention on Biodiversity in xx, and passed national environmental legislation, the Environment Protection and Biodiversity Conservation Act (EPBCA) in xx, as the principle law for meeting its commitments. The Biodiversity Convention does more than prescribe specific principles: taken as a whole it commits the signatories to put in place a governance system to protect biodiversity, with some key characteristics of that governance system prescribed by the Convention. Taken together the convention and subsequent instruments in effect require that there will be an effective system of governance in place, to support implementation. **Governance**: the legitimate exercise of ongoing control (also management, supervision) over the operation of a social system (e.g. a

country, community, or organization) to direct how it behaves and to ensure its integrity.

Though not specified in the convention generally governance requires effective oversight of five aspects of performance: strategy, resourcing, accountability, risk and structure. **Meta-governance** is the governance of the governance system itself, generally focused around supervision of five aspects of performance: strategy, resourcing, accountability, risk and structure.

In this report I have investigated Australia's overall approach to governing for biodiversity, targeting three of the identified threats to exemplify that approach (freshwater and freshwater ecology, habitat, and invasive species). The aim is to examine the meta-governance of biodiversity protection. There is a detailed paper being prepared, which is already approaching 15,00 words! Some key documents are: *Australia' s Fifth National Report under the Convention on Biological Diversity;* Australian Panel of Experts in Environmental Law, 2017. Blueprint for the Next Generation of Australian Environmental Law particularly Farrier, D. et al., 2017. *Terrestrial Biodiversity Conservation and Natural Resources Management*; *Report on the Review of the first five years of Australia's Biodiversity Conservation Strategy 2010 –2030;* and the *Australia State of the Environment reports 2016* to the Australian Government Department of the Environment and Energy. The work also refers a large number of studies and reports on the three target issues.

2 RELEVANT PRINCIPLES

See particularly United Nations, 1992. Convention on biological diversity Articles 3, 6 (a) & (b), 7,8, 9, 10, 11, 12, 13, 14, 15, and 20. Governments are required to report on their progress, for example Department of the Environment, 2014. *Australia' s Fifth National Report under the Convention on Biological Diversity*, Canberra ACT. https://www.environment.gov.au/biodiversity/international/fifth-national-biological-diversity-report

3 RELEVANT LOCAL LAWS & HOW THEY SHOULD/DO APPLY.

Australia has a national biodiversity strategy, and state biodiversity strategies. It has a vast array of laws, policies and institutional arrangements to implement these. There are far too many to list here within the page limit. The national strategy identifies key threats to Australia's biodiversity as: habitat loss, degradation and; Invasive species; unsustainable use and management of natural resources; changes to the aquatic environment and water flows; changing fire regimes; and climate change. Each involves a number of subordinate activities, and each of these has its own national and state (and in some cases local government) law and policy structure. There are also many private sector institutional arrangements and rules which form an increasingly import part of the governance regime, such as private codes and standards, environmental philanthropy, private conservation reserves, and conditions imposed by supply chains. These are separately documented.

4 DISCUSSION - HOW ARRANGEMENTS ARE WORKING

The recent national State of Environment report provides a very detailed evaluation of many issues. The following extract from the final recommendations is informative.

In the past 5 years (2011–16), environmental policies and management practices in Australia have achieved improvements in the state and trends of parts of the Australian environment. Australia's built environment, natural and cultural heritage, and marine and Antarctic environments are generally in good condition. There are, however, areas where the condition of the environment is poor and/or deteriorating. These include the more populated coastal areas and some of the growth areas within urban environments, where human pressure is greatest (particularly in south- eastern Australia); and the extensive land-use zone of Australia, where grazing is considered a major threat to biodiversity.

That committee drew the following conclusions

An overarching national policy that establishes a clear vision for the protection and sustainable management of Australia's environment to the year 2050 is lacking. Such a program needs to be supported by

- specific action programs and policy

- strengthened legislative frameworks

- efficient, collaborative and complementary planning and decision-making with clear lines of accountability.

- Poor collaboration and coordination...
- Follow-through from policy to action is lacking.
- Data and long-term monitoring are inadequate.
- Resources for environmental management and restoration are insufficient.
- The understanding of, and capacity to identify and measure, cumulative impacts is inadequate.

In relation to the national biodiversity strategy the Report on the Review of the first five years of Australia's Biodiversity Conservation Strategy 2010 –2030 states (extracts only)

1. The Strategy did not engage, guide, or communicate its objectives to all audiences in a useful way, the Strategy's targets did not effectively guide the efforts of governments, other organisations or individuals….
2. The Strategy is too focused on preventing the loss of biodiversity in natural terrestrial environments and does not consider biodiversity contributions across all landscapes….
3. The Strategy has not effectively influenced biodiversity conservation activities….
4. Alignment of the Strategy with the Convention on Biological Diversity, and other related international obligations, could be enhanced.

5 DISCUSSION – THE ISSUES OF EFFECTIVENESS, EFFICIENCY AND FAIRNESS

A. Water

The National Water Initiative is the national policy. The Australian Productivity Commission is conducting an evaluation. The Productivity Commission current view on outcomes is:

> While ecological restoration is a long-term process, the benefits of having more water available for the environment are being realised. Environmental flows have contributed to better outcomes for native fish, frogs and waterbirds, while also improving native vegetation condition and helping to maintain water quality (Argent 2017; Watts et al. 2016). Without the provision of water for the environment, there would have been greater environmental degradation in the MDB during the Millennium Drought (MDBA 2011).

My overall assessment (detailed in the longer draft report) is that

1. Data on riverine health and biodiversity status indicate that substantial riverine and associated biodiversity problems remain.

2. Australia federal and state laws and policies convert its commitments under international conventions and its local biodiversity strategies into water law and policy instruments. The National Water Initiative policy provides an over-arching policy architecture. The legal instruments are supported by institutional arrangements such as the Murray Darling Basin Plan and the Great Artesian Basin Plan, and associated state water initiatives.

3. The strategy relies science-based assessment of extractive limits and largely privatized water extraction rights. Public funds are used to invest in infrastructures. Reduction of over-consumption is pursued through these investments and through the management of private extraction rights.

4. Implementation is being carried out through many organizational structures.

5. Substantial (but still insufficient) public funds have been invested through these organisations for investments to conserve water including compensation to the farm sector for reduction of water allocations (buyback of extraction rights) and capital investments to improve water systems. Fuelled partly by the marketised system and partly by government there has been substantial private investment in water conservation.

6. There has been substantial investment in land and riverine management to increase water quality and to restore or protect riverine habitats.

7. Structurally, the governance arrangements for the protection of aquatic biodiversity are fragmented and complex. However, there is an agreed policy architecture. Those arrangements are being implemented. Evaluations on the implementation of major water policy initiatives are occurring.

8. Problems of public and private accountability need to be better managed, which pose a serious risk to implementation. There are divergent views about the extent of non-compliance with legal arrangements. These factors, political dynamics, climate change potentials and possibility that the science-based decisions may prove to be unreliable or poorly implemented, all point to a material risk of public policy failure.

Australia has the elements of a system for governing freshwater biodiversity. There are significant risks to effectiveness notably political interest bargaining, funding limitations and scientific uncertainty.

B. Habitat

Public governance of habitat involves protected areas and threatened species management, controls over resource harvesting, land use planning, land clearing controls and the management of grazing pressure. These issues are governed as distinct, which reduces the effectiveness of legal arrangements.

Australia's of protected areas network is extensive and regulated. Threatened species and habitat management is formalised under the Environment Protection and Biodiversity Conservation Act. Legal protection of species and habitats follows a scientific process of analysis and listing, then the development of recovery or threat abatement plans. There is a legal requirement that a person "must not take an action that has, will have or is likely to have a significant impact on any of the matters of environmental significance or other protected matters without approval from the Australian Government Minister for the Environment and Energy (the Minister)". The protective system is substantially based on self-assessment, but there are significant penalties attached for breaches. Prosecution and enforcement has proven difficult and policing relies on state or local government field officers or citizen reporting.

Australia has a complicated land use planning system, with zoning and development impact assessment and approval adding to biodiversity protection for areas identified as environmentally important (for example where development may threaten threatened species and habitats under the EPBCA). Practical issues of environmental impact assessment and effective regulation reduce the integrity of assessment and approval processes.

A major impact on biodiversity is land clearing, particularly for grazing. The laws are the subject of heated contestation, enforcement difficulties and non-compliance, and land clearing has continued at a significant rate notwithstanding laws and policies. The 2015-16 Queensland statistics show *395 000 ha/year of woody vegetation was cleared, statewide. This represented a 33% increase from the 2014–15 woody vegetation clearing rate of 298 000 ha/year…*

Controls over land clearing are opposed by many farm organisations, and there is frontline resistance. This has resulted in the rolling back of land clearing controls particularly in NSW and Queensland, and caution on the part of public agencies and their staff in prosecuting breaches.

Taking into account the essential meta-governance elements, governance arrangements exist for the protection of specific species and habitats, and to control over-harvesting of resources. Implementation is frustrated by political conflict and

inadequate resources. The arrangements for land-clearing are poor: there is no coordinated national approach; law and policy frameworks are politically unstable; policy 'solutions' often fail; evaluation of effectiveness is contested; enforcement is variable; techniques for land-clearing approvals are unreliable partly because data gaps; there are pressures against enforcement; and resources are inadequate. Australia lacks transparent accountability for habitat protection.

C. Invasive Species

Invasive species governance involves preventative biosecurity, early response to incursions, and (often) ongoing management. There are different issues and institutional responses for invasive plants, animals, microbes, viruses or other taxa; whether the impacts are economic, human or animal welfare, environmental, or a mix of these; and whether the impacts are potentially disastrous. Management and funding arrangements differ between species that have significant economic impacts and those that cause ecological harms. Public funds availability is episodic and public programs shift focus with political or bureaucratic priorities. Volunteer action is important through private NGOs such as Landcare and local community groups, with coordination and subsidisation for some activities through federal, state and national programs.

A great variety of federal and state laws and strategies and programs targeting particular species. There are also iconic programs for invasive species eradication. Programs supporting community action are often deployed through regional natural resource management or catchment management bodies to enable community groups and local governments to carry out invasive species work. Australian national and state governments are redirecting their efforts away from investing directly in the management of established invasive species under a concept of 'shared responsibility'. Australia does face significant governance problems in trying to reverse the adverse trends noted by the State of Environment Reports.

> Invasive species …. already have a massive environmental, social and economic impact, and climate change is likely to enable new invasive species to thrive
>
> Impacts of invasive species have increased in importance as key threatening processes … general consensus is that the

> impact of invasive species is not diminishing and, in combination with other stressors, may be increasing.

For species that cause economic harm there is a motivation for private action that complements the incentive created by regulation. For species that cause only environmental harm the private incentive is missing, and enforcement has been problematic.

A national study of citizen impediments to effective invasive animals control pointed to many practical problems including: a lack of clarity about accountabilities; the lack of a funding strategy; systems that impose significant burdens on citizens; a lack of sophistication in people-management; and a failure of public communications. A recent government study pointed in a similar direction. We need: precision in accountability; an increased emphasis on environmental biosecurity; species and risk-specific nationally coordinated strategies; increased emphasis on governance innovation; more funding to enable a national system; a renewed national coordinating agreement on biosecurity; and objective evaluation and reporting on the performance of Australia's invasive species governance system.

6 DISCUSSION – CAUSES AND EFFECTS, AND RECOMMENDATIONS

The recent Australian Panel of Experts in Environmental Law, 2017. *Blueprint for the Next Generation of Australian Environmental Law*, and the associated detailed studies, http://apeel.org.au provide a starting point for addressing some of the issues. However, what is needed above all is

- Objective, regular and transparent accountability to the public (distinct from intermittent and sometimes politically 'crafted' reports) an investment plan for implementation of biodiversity protection commitments.

FOOD SECURITY AND BIODIVERSY

Sharllene Marimuthu

1 SUMMARY OF THE CASE STUDY, KEY FACTS AND ISSUES

1.2 Pasca Palmer said, “We discussed the ever-evolving issues surrounding biodiversity and its growing complex challenges around the globe, including the strong inter-linkages between ecosystems resilience, peace, security, and more broadly, the resilience of the human systems. In this vein, the link between biodiversity and food security was flagged as a key issue”.

1.3 The importance of food security and biodiversity, viewed broadly in the context of nourishment, human health and agricultural management can be noted from at least 4 goals of SDG, namely.

1.4 A few other SGD Goals refer to inter-linkages for supporting sustainable agriculture, such as tackling climate change, halting and reversing land degradation and implementation of resilient agricultural practices.

1.5 Food production (FP) and biodiversity (BD) are often overlooked in discussions regarding conservation however these two are connected; BD is the key to sustainable, efficient, resilience and nutritious food production.

2 RELEVANT BD CONVENTIONS/OTHER APPLICABLE PRINCIPLES AND LEGISLATION

2.1 Food security and biodiversity policies stretch across various policies from agriculture to trade, environment, climate change, regional development policies and many more. Those identified in relation to food production, safety and biodiversity includes;

- Convention on Biological Diversity
- International biodiversity conservation instruments
- Biodiversity for Food and Nutrition
- Biodiversity International
- Sustainable Development Goals
- Agricultural Biodiversity Index
- Aichi Biodiversity Targets of CBD

2.2 Relevant local laws

2.2.1 Biodiversity

- Biodiversity Protection Act 2016
- Biodiversity Conservation Regulation 2017
- Local Land Services Act 2017
- Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)
- Other federal and State laws.
- *Biosecurity Act 2016*
- *Imported Food Control Act* 1992.

2.2.2 General Food Related Laws

- Food Safety Law 1991

- Australia New Zealand Food Standard Code
- Food Act 2003 (NSW)
- Food Regulation 2015 (NSW)

2.2.3 Agencies and Departments

- The Department of Agriculture and Water Resources
- The Department of Health and Food Standards Australia New Zealand (FSANZ)
- State and territory governments
- Department of Industry and Science

3 DISCUSSION HOW WELL OR BADLY THESE AND OTHER GOVERNANCE POLICIES ARE WORKING?

A. The Problem of food insecurity, food wastage, biosecurity.

3.1 Food insecurity in the context of food shortages affecting a substantial

Population is a not an issue in Australia, *But* this is not true, a recent survey says there is food insecurity in Australia affecting a section of its population but is largely unnoticed.

3.2 Australia recognises that food security is a major global issue and has established itself as a significant agriculture food exporter.

3.3 Food usage is inefficient – high wastage. 1.3 billion tonnes of food is wasted every year while almost 1 billion people go undernourished and another 1 billion hungry'**. The goal of SGD is that not only to sustainably manage the natural resource to produce food, but also to ensure that the wastage is reduced. This is reflected in Goals 12.2, 12.3 and 12.5.**

3.4 The demand for food is likely to grow, both domestic and for export. Australia's population, 24 million in 2016, is projected to grow to 39.7 million by 2055.

3.5 The rise in demand is likely to lead to increased pressure on the environment. The environmental costs often overlooked, in the resources used, land strained, erosion of the eco system. The impact of food production is also felt in the marine environment.

3.6 The issue of food insecurity and biosecurity loss is all more vital.

3.7 Investment in BD

'Overall, the level of investment in biodiversity and conservation management is in decline'.

Investment broadly includes financial and in-kind commitments by all levels;

- government,
- private landowners and businesses,
- philanthropic and
- non - government organisations,
- Indigenous Australians,
- communities.

3.8 Inconsistent data for assessing effectiveness of investment in BD.

- Noticed widespread lack of consistent long-term data for assessing the effectiveness of investments in biodiversity management in Australia.
- the limited published evidence, and broader accessibility and sparse communication of success remain issues.

3.9 Inadequate understanding of the risk

- Failure of processes for adequate data collection on early warning of threats and opportunities, and pressures from urban and peri-urban growth.
- As a result management agencies unable to understand or deal with the cumulative impacts of multiple risks in biodiversity,

- ‘In the context of food production and agriculture, the major risk noted were increased allocation and storage of water to cope with more intense droughts and interaction of climate change and increased costs of energy creating major trade-offs between food production and biodiversity conservation’.
- ‘a minor risk was the Major changes in food-production technologies reducing the numbers of people living in regional Australia, and managing the land for personal and public benefit.’

3.10 In the context of food security and biodiversity what studies have been done thus far?

- Not many but these are some of the initiatives
- Food Insecurity Report 2016

4 CONTRIBUTION OF ACTIONS TOWARDS THE ACHIEVEMENT OF BIODIVERSITY THROUGH SUSTAINABLE GLOBAL FS.

Australia’s Biodiversity Conservation Strategy 2010 –2030 report identified 3 main priority and 6 sub priorities as critical components for addressing biodiversity issues. Those areas are as follow;

- ‘Priority for action 1: Engaging all Australians
  - ✓ Mainstreaming biodiversity
  - ✓ Increasing Indigenous engagement
  - ✓ Enhancing strategic investments and partnerships
- Priority for action 2 is Building ecosystem resilience in a changing climate
  - ✓ Protecting diversity
  - ✓ Maintaining and re-establishing ecosystem functions
  - ✓ Reducing threats to biodiversity
- Priority for action 3: Getting measurable results

- ✓ Improving and sharing knowledge
- ✓ Delivering conservation initiatives efficiently
- ✓ Implementing robust national monitoring, reporting and evaluation'

4.1 A mix of policies, effective management, technology and community engagement play a vital role in mitigating the impact of agriculture on the environment. In the context of food production, food and agricultural land management policies, water and climate change policy (and more), linked with environmental policy continue to be relevant.

4.2 The biodiversity Act 2016 aims to provide a more streamlined approach to supporting conservation on private land, amongst the objective and initiatives include;

- establishes a scheme for biodiversity certification of land,
- Delivers a range of initiatives and incentives to encourage landowners to manage and improve biodiversity on their properties.
- Establishes the biodiversity conservation trust. The trust oversees private land conservation programs across NSW, also plays an important role in the NSW offset scheme.
- It aims to provide advice and support to protecting high biodiversity value lands in a way it is beneficial to land owners for doing so.
- Provides opportunity to land owners to diversify their income source through protecting and managing areas of high environmental value on their properties along with other uses such as farming.
- The support is said to be in place for 5 years,
  - What seems still unanswered or unclear from the Act

✓ To what extent is this initiative maintainable? For how long can the resources be sustained?

- ✓ Will this work without community engagement?

- ✓ What if the citizen does not see the benefits of the scheme or initiatives, how can they be 'persuaded' to participate or asked to participate where they are not keen?
- ✓ What if citizen wishes to withdraw, the scheme is not beneficial
- ✓ How will compliance be monitored and breaches be enforced?

4.3 Sustainable Development Goals.

Australia has come at number 20 in in the world on progress towards sustainable development goals, fallen behind Canada, United Kingdom, Japan, Singapore and many European countries.

4.4 Aichi Biodiversity Targets of the Conservation of Biodiversity.

- Target 4 – Sustainable Production and Consumption
- Target 7 – Sustainable Agriculture and Forestry
- Target 13 - Agro biodiversity

4.5 Strategy for Australia's Aid Investment in Agriculture Fisheries and Water 2017.

The strategy identifies 3 priority areas of engagement, which been targeted: (1) strengthening markets; (2) innovating for productivity and sustainable resource use; and (3) promoting effective policy, governance and reform.

2017-18 Budget Estimate: **$243.4 million – amongst others, to i**mprove agricultural productivity and reduce post-harvest losses.

5 WITH REGARD TO ISSUES THAT SHAPE THE EFFECTIVENESS OR EFFICIENCY OR FAIRNESS OF THE GOVERNANCE, THERE NEED TO BE GOVERNANCE POLICIES SUPPORTING OR ADVOCATING THE FOLLOWING;

5.1 Maintaining diversity within agricultural system.

- Diverse production system - more resilient to climate change induced events and other shocks. This may be possible via Smart farm.

- Heterogeneous as opposed to homogeneous human dominated landscapes. This would sustain multi-functionality of landscape.
- Agro –ecosystem resilience will provide the capacity to reorganise food production after disturbance or disasters.
- Eco-friendly and sustainable techniques to manage highly diversified cropland.

5.2 A Biosecurity research would be beneficial to address some of the food insecurity and biodiversity concerns. Implementation policies.

5.3 Others

6 DISCUSSIONS OF CAUSES AND EFFECT, KEY SYSTEMATIC RELATIONSHIP RELEVANT TO THE ABOVE

6.1 Land management and biodiversity conservation reform aims to improve the legislative and policy framework for CBD and native vegetation management.

6.2 Reforms aims to do the following;

- build a network of conservation land on private property
- farmers receive incentives to conserve native plants and trees
- routine farm work exempt from regulation,
- Support farmers to manage land in a sustainable manner so as to improve productivity.
- Regulated land clearing scheme - native vegetation regulatory map established.
- others – still working

7 RECOMMENDATIONS FOR MORE EFFECTIVE, EFFICIENT AND FAIR GOVERNANCE

7.1 What needs to be achieved and/or what will be needed to achieve long term global food security whilst ensuring minimum BD loss. These were found lacking.

- National policy – clear vision for protection and sustainable management of BD and food production.
- Specific action program and policy
- Follow through policies
- Adequate monitoring
- Sufficient resources for environmental management and restoration

7.2 A legally binding framework for corporate social and environmental responsibility.

8 OTHER OBSERVATIONS

8.1 How other countries are addressing it

- FP and Agro biodiversity in other places by way of comparison?

THE IMPLEMENTATION OF SHARED RESPONSIBILITY (ADOPTED IN BIOSECURITY AND POLICY) FOR THE CONTROL AND MANAGEMENT OF INVASIVE ANIMAL SPECIES IN PERI-URBAN AUSTRALIA

Vivek V. Nemane

1 CASE STUDY: KEY FACTS AND ISSUES

Internationally, peri-urban areas harbour highly valued natural resources and biodiversity. Based on spatial attributes, peri-urban landscape is the area which is not demarcated with clear boundaries between urban and rural regions. It is considered as a continuum between urban and rural areas. Spatially, peri-urban regions are defined as 'the areas on the urban periphery into which cities expanded or which cities influenced' (Darryl Low Choy et al, 2007). In a systems context, peri-urban space is defined as 'the intersection of urban and rural communities with diverse social, political and economic interests and activities and mixed landscape characteristics' (Paul Martin, Elodie Le Gal, and Darryl Low Choy in Basant Maheshwari et al. (eds), 2016).

Invasive species are serious threats to biodiversity and ecosystem services which is evident from CBD, UN Sustainable Development Goals, 2015 and Aichi Biodiversity targets. The confluence of diverse sub-systems in peri-urban areas facilitates the establishment and increased mobility of invasive animals. Invasive species threat is addressed through a complex mix of international, regional and domestic legal frameworks including quasi-legal instruments as well as policies and programmes (Shine, Williams and Gündling 2000; European Commission 2011). In peri-urban areas, population creates greater demand for natural resources. Due to demographic, ecological, spatial and socio-economic characteristics, peri-urban

areas pose unique challenges in natural resource management including for the control and management of invasive species. These challenges include diverse sectoral interests, varied production aims, heterogeneous social composition, overlapping administrative jurisdictions, and lack of human resources with adequate experience in invasive species issues. Law and policy have to respond to complex legal and institutional situations in peri-urban areas. At the international level, multiple instruments or guidelines deal with invasive species including around 50 instruments identified by the IPCC (IPCC Secretariat, 2005) and the UN Convention on Biological Diversity, 1992 but none of these exclusively deal with peri-urban NRM issues (except UN-HABITAT III). Institutional arrangements for managing the introduction and spread of invasive species are considered essential for the maintenance and improvement of human well-being (IPBES - institutions and governance systems and other indirect drivers; Paul et.al. 2016).

Considering invasive animal species management in peri-urban Australia as an example, this report explores institutional complexity in implementing NRM laws and principles as enshrined in CBD. Invasive species are serious threats to Australia's biodiversity. Australia's most recent State of the Environment Report 2016 notes that the problem of invasive species has been growing worse over the past few decades. This observation has been consistently stated by the past four national State of the Environment reports. The CBD report whilst referring to Australia's State of the Environment Report 2011 states that "…in general, areas of urban development coincide closely with many areas of highest species diversity and endemism in Australia and with areas of greatest alterations to habitat and the greatest numbers and proportions of threatened species. This coincidence occurs because people have settled in areas of fertile, productive soils, which tend to occur around the mouths of major rivers. As a result of urban development, biodiversity in those areas is reduced". Control innovations including (technological innovations comprising control techniques, instruments and products; best managerial practices and policy support) are available for invasive species management. For effective control, the policy documents prescribe coordinated and collective action.

2 RELEVANT PRINCIPLES:

2.1 Principle of public participation

The principle of participation comprise of various elements that depict citizen power and capacity namely: access to information, public participation and access to justice. For this case study, the relevance of participation principle is:

Do invasive animal control stakeholders, including peri-urban citizens, have the capacity to access and comprehend all relevant information to the decision-making? Whether institutions facilitate informed decision-making?

The principle includes: the ability and capacity of stakeholders to participate in planning and on-ground control; access to information; and accountability.

2.2 Precautionary principle

The principle as enshrined in the preamble of CBD states that "lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize" threat to biodiversity. It requires state parties to detect and monitor such threats (article 7c) and sustainable development (article 8e). The principle is relevant to invasive animal control and management with reference to the following:

1. Whether stakeholders are well-informed about invasive animal risks and risks involved in control (based on the best available scientific evidence)?
2. Resources and expertise with the stakeholders to understand and appreciate risks of invasive animals as well as risks in implementing control.
3. Institutional (administrative as well as technical) framework to assess and communicate these risks
4. Transparency, accountability and inclusiveness in assessing and communicating invasive animal risk and uncertainty

2.3 Polluter pays principle

The cost of invasive animal problem should be covered by those responsible for the spread of invasive species.

2.4 Principle of equity: Inter-generational/Inter-species:

Evenness, fairness and justice in the process of decision-making while addressing invasive species risks.

3 RELEVANT LOCAL LAWS OF THE JURISDICTION, AND HOW THEY SHOULD/DO APPLY

Australia's Biodiversity Conservation Strategy (2010-2030) provides the overarching national policy framework for actions towards biodiversity conservation and invasive species management (Natural Resource Management Ministerial Council 2010); and provides a plan of action to fulfil Australia's international obligations under the United Nations Convention on Biological Diversity. These priorities include community engagement (e.g. by increased indigenous engagement and public participation, implementing markets for ecosystems services), building ecosystem resilience (e.g. by reducing the impacts of invasive species on threatened species and ecological communities), and obtaining measurable results to assess the effectiveness of biodiversity management strategies.

The Commonwealth Biosecurity Act 2015 promotes a 'shared responsibility' approach to biosecurity issues between the Commonwealth government, states and territories, local communities, and industry stakeholders; to maintain an integrated biosecurity continuum by focussing on pre-border, border and post-border activities to prevent and eradicate invasive species in Australia. To be effectively implemented, this approach requires the incorporation of participatory strategies into the Australian legal framework. The Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) identifies invasive animals that are hazardous or threaten the extinction of native animals and plants. It has established the mechanism of 'key threatening processes' to prioritize feral animals requiring immediate attention by developing 'threat abatement plans'.

The state/territory level legislative arrangements regulate pest control and environmental aspects in the respective jurisdictions. More than 80 laws govern invasive animal management in Australia.

4 DISCUSSION: HOW THE LAW AND OTHER GOVERNANCE ARRANGEMENTS ARE WORKING

The objective of case study is to analyse the effectiveness of the Australian governance framework in peri-urban invasive animal species control and management; and to analyse implementation of shared responsibility as well as other relevant principles stated above. Using a strategic approach and interdisciplinary legal-institutional perspectives from political economy, this study explored the dynamics of implementation of invasive animal management rules in peri-urban areas. Differences in state legislations, definitions and management responsibilities lead to variations in control practices across Australia. Thus, each state/territory has different set of laws and regulations to manage pest animals. Multiple laws governing invasive animal management create difficulties in identification and differentiation between invasive and non-invasive species (Marc L Miller and Lance H Gunderson, 2004) and to determine their relevance. Lessons from successes and failures in Australian context can be used to support a broader inquiry about feasible law reform approaches and institutional interventions for peri-urban areas in Brazil and/or other countries.

The empirical research and analysis revealed following institutional impediments which constrain implementation of control innovations in peri-urban areas:

a) Formal institutional arrangements

Institutional arrangements including (legislation; policies, strategies, plans, frameworks; roles and responsibilities; bureaucratic arrangements) are fragmented. Intersection of jurisdictions and competing perspectives pertaining to invasive animals and control measures creates difficulties in achieving unanimous decision-making amongst the community. Thus, diverse values and interests cause fragmentation at the institutional and community level leading to multiple complexities in establishing consensus over invasive animal control issues. These complexities restrict the flow of resources and information which are necessary for coordinated action.

b) Resources:

Resources including control measures, financial and human resources, pre and post control evidence are needed for on-ground implementation of control.

- Peri-urban specific control innovations get constrained due to lack of adequate support for coordinated and partnered research. Control innovations face difficulties in getting approvals due to strict and hierarchical/multiple regulatory hurdles. Available control measures face difficulties in adoption due to cost considerations as well as due to lack of easy access. Cumbersome regulatory process, political interference in the process of approval, stringent regulatory guidelines for implementation and perception of control measures over animal welfare considerations create difficulties in implementing controls.
- Data and information on pest animal issues comes through multiple sources and remains disintegrated. The subjectivity involved in communicating data constrains the capacity of obtaining objective evidence.
- Financial resources, human resources as well as lack of time constraints the availability of coordinated resources required for pest animal control

Thus, fragmentation in peri-urban areas affects resourcing. Multiple institutional structures and fragmented resources do not prove useful for pest animal control.

c) Accountability

For on-ground implementation stakeholders (both government and non-government) are required to be accountable for their roles and responsibilities. In peri-urban context, due to socio-economic priorities government agencies and public managers either fail to provide adequate attention to pest animal issues or these issues are addressed as part of other NRM issues. The accountability of non-government stakeholders can be assessed through effective action and enforcement of laws and regulations by the government agencies to secure compliance but difficulties in obtaining 'legal evidence' and the emphasis on 'voluntary compliance'

constrains the capacity of government agencies in securing compliance through regulatory enforcement.

d) Participation

Due to top-down approaches and ineffective community engagement strategies (e.g. engagement in planning processes, engagement while decision-making on resources) it is difficult to achieve citizen participation. Community resistance to control due to animal welfare considerations, resultant political dimensions including political lobbying and media intervention further complicates participation.

Four levels of evaluation (as suggested) have been used to analyse relevant CBD principles:

Level A – Whether the principle has been translated into law

Level B – Whether the principle has aligned into governance processes

Level C – Whether the key institutions have made required behavioural changes

Level D – Outcomes of implementation of the principle

a) Participation principle

The Biosecurity Law effectuates the principle of participation through shared responsibility. Legislations at the state/territory & local levels have adopted the participatory approaches.

The principle has been incorporated into governance processes. This is evident through strategies and plans. For e.g. Australian Pest Animal Strategy as well as the state/territory and local level planning instruments.

In theory, the principle of shared responsibility and stakeholder participation has been adopted but institutions haven't made required behavioural changes.

In practice, 'real' engagement and power transfer remains a distant reality. Instead of 'community-led decision making, the real decision making power rests with the government.

b) Precautionary principle

The precautionary principle is translated in the form of 'biosecurity risk' which forms the basis of biosecurity legislation at the commonwealth as well as state/territory levels.

The principle has been incorporated into governance processes. Difficulties in assessing the risks make it difficult for institutions to incorporate required behavioural changes. Risks relevant to invasive species and control are subjective. For e.g. risk of wild dog vis-à-vis feral deer is perceived differently by multiple stakeholders. Also, the risks in implementing control vary based on stakeholders' perception.

In peri-urban space, due to demographic and social diversity people have varied perceptions of invasive animal risks. Risks in implementing control add another dimension to invasive animal risks. For on-ground implementation of control, the empirical research revealed the following risks: Risk of accidental damage, Risk of liability, Bureaucratic risks, moral risks, risks of neighbourly conflict and political risks.

Lack of objective assessment of risks and inadequate institutional support in precisely communicating these risks to stakeholders limits the implementation of precautionary principle.

c) Polluter pays principle:

The principle is translated into biosecurity law as the law categorically states that prevention of biosecurity risk is a shared responsibility and the cost of biosecurity risk must be covered by those responsible for the damage. The Act prescribes voluntary measures as well as deterrence (in the form of fines) for compliance.

With reference to liability laws, a person legally responsible under the applicable law has to pay damages to compensate for his act or negligence. Due to peculiar characteristics of invasive animal problem (high mobility and animal intelligence), it is hard to configure 'individual liability'. Also, it is difficult to generate 'legal evidence' to prove liability. Taking this into account, enforcement

agencies put more emphasis on voluntary compliance. In peri-urban areas, the influence of politics and media creates further complexities in stringent regulatory enforcement. With lack of adequate awareness and coordinated resources, it is hard to rely on standard duty of care/stewardship norms to fulfil control obligations. The implementation of the Biosecurity Act is in its early stages at the State/territory levels although a separate study is being conducted (at the AgLaw centre on the 'implementation of biosecurity regulations').

5 RECOMMENDATIONS FOR MORE EFFECTIVE, EFFICIENT AND FAIR LEGAL GOVERNANCE:

5.1 The specific issue

a) Participation principle

- Simplification of rules and pro-community delivery of government services
- Effective management of community expectations through government services
- Development of trust
- Education and awareness

b) Precautionary principle

- Making it obligatory to follow the precautionary principle
- Incident-specific communications framework and long-term education and communication framework to establish a culture of being cautious with thorough understanding of pest animal issues and pest control

c) Polluter pays principle

- Law and policy reforms in a) property law b) planning law

5.2 For more effective biodiversity protection in the jurisdiction,

Regional coordination mechanisms

More efficient administration for citizens

Shared responsibility

- Community-led regional planning & local governments with more accountability
- Simpler, more specific legal obligations
- Political involvement at earlier stages of planning and control
- Conflict management
- More sophisticated behavioural approaches
- Integrated performance reporting

5.3 For more effective biodiversity protection and restoration generally

- Pragmatic/strategic research approach that combines traditional legal analysis with institutional analysis (to capture institutional dynamics as well as socio-economic & behavioural complexities)
- Recognize peri-urban area as a separate component to devise legal-institutional mechanisms (e.g. UN-HABITAT III) thus to facilitate coordination
- Effective Use of planning instruments
- Comprehensive risk management framework (systemic approach) to address legal liability risks & uncertainties
- Political economy/political risks as a key aspect of implementation
- Effective use of law to foster deliberative democracy approaches

PARTE II

BRAZILIAN DRAFTS

THE MINING IN FEDERAL CONSERVATION UNITS OF INTEGRAL PROTECTION OF BRAZIL

André Ricardo Rosa Leão[1]

ABSTRACT

In Brazil, Law n. 9985/2000 established that in the Protected Areas of Integral Protection there will be no extraction of natural resources for commercial purposes. Thus, there could be no mining in these localities, but this was detected in 19 Units of this category. In some cases, mining already existed prior to the creation of the protection area and was maintained and in other cases new concessions were authorized. This is illegal because there are units of protection that do not meet their objectives and exist only on paper. Inspection is not efficient and there are ideological conflicts between the mining body and environmental agencies. There are bills for the reform of the Brazilian Mining Code and recently the National Mining Agency was created. However, governance issues persist and the environmental issue remains undone.

1 INITIAL CONSIDERATIONS

Brazil has some of the largest natural reserves and largest potential minerals in the world, standing out for the mining in its territory. This profitable activity moves the economy of the country and its growth is one of the national priorities (VIANA, 2015).

Regardless of the location or technique used, mining always causes socio-environmental damages, but the problems involving licensing, lack of control and inspection, coupled with old and failed legislation, have contributed to the increase

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in irregularities involving this sector. Minerals are not renewable resources and it is almost impossible to conduct a mining that is sustainable (AGU, 2014).

One of the biggest environmental catastrophes occurred in November 2015, as 2 dams from the Samarco mining company in the municipality of Mariana (MG), dumped more than 62 million cubic meters of ore and mud tailings, passing through Espírito Santo and reaching the ocean. This resulted in the destruction of the district of Bento Rodrigues (MG), several deaths of people and animals, loss of income, pollution of the Rio Doce, damage to the flora and damage caused to more than three hundred thousand people along the river (MERIEVERTON, 2016). The report released by the Brazilian government in February 2016 pointed out that the direct socioeconomic impact of the 35 cities affected is approximately AU$ 374.5 million, not including the environmental damages and the damages that are due. Three Conservation Units (Environmental Protection Area Costa das Algas, the Wildlife Refuge Santa Cruz and Biological Reserve Comboios) were affected by the disaster (MARENCO, 2016).

In this report I present the results of the survey conducted between 2015 and 2016 on mining in the Brazilian federal rotected areas (Integral Protection), based on the study of the creation act and the Management Plan of each of them.

2 BRAZILIAN STANDARDS AND THEIR APPLICATION

The Brazilian Federal Constitution of 1988, in its art. 225, generated responsibilities for the State and for the community, because the balanced environment received the status of "fundamental right of the human person".

The Convention on Biological Diversity (CBD) provided for countries to establish a system of protected areas and to conserve biological diversity. In Brazil, Legislative Decree n. 2/1994 approved the content of the CBD and its application.

Law n. 9985/2000 (SNUC Law) was responsible for the creation of the National System of Nature Conservation Units. This standard, combined with Decree n. 4340/2002, is responsible for regulating the matter in Brazil.

The SNUC Law divides conservation units in two groups: a) Integral Protection Conservation Units Integral Protection and b) Sustainable Use Conservation Units. Each one is divided in different categories: 5 of Integral Protection (Ecological Station - ESEC, Biological Reserve - REBIO, National Park - PARNA, Natural Monument - MONA and Wildlife Refuge - RDSs) and 7 of Sustainable Use (Environmental Protection Area - APAs, Sustainable Development Reserves - RDSs, Extractive Reserves - RESEXs, Private Reserves of Natural Patrimony - RPPNs, National Forest - FLONAs, Areas of Relevant Ecological Interest - ARIEs and Fauna Reserves - REFAUs).

This law considers as Integral Protection the "maintenance of ecosystems free of changes caused by human interference, admitting only the indirect use of their natural attributes". Any interference that may trigger changes in local biodiversity is considered illegal and is therefore prohibited. Thus, it is not possible to conduct mining research on the site or mining.

Until March 2017 Brazil had 990 Federal Conservation Units (146 for Integral Protection and 844 for Sustainable Use). It occurs that several units exist only on paper and have not been implemented in practice, failing to meet their objectives. All this because there is a lack of interest of the government, lack of funds, lack of people, supervision, application of penalties and other problems (ICMBIO, 2017).

Created by Law n. 11516/2007, the Chico Mendes Institute for Biodiversity Conservation (ICMBio) is a federal agency linked to the Ministry of the Environment (MMA), which has the objective of executing actions of the national policy of Conservation Units and its function is diverse, as it creates, manages and supervises these areas.

The activity of the ICMBio manager is fundamental to the activities in the Conservation Units, since their opinion may influence the environmental licensing or even prevent negative actions in the area (ICMBIO, 2009).

3 BRAZIL AND ITS MINING CODE

In 2015 there were officially 8400 mines in Brazil (236 large, 1233 averages, 2815 small and 4116 micro), being explored 72 mineral substances (23 metallic, 45 nonmetallic and 4 energetic). At that time, there were 1820 prospectors, 830 extractions of mineral water and 13250 licenses for the extraction of products for the civil construction. In addition, there are thousands of other non-regularized, mainly gold, diamond and small clandestine extractions (VIANA, 2015).

The Brazilian Federal Constitution has determined that all mineral resources belong to the Union, and the interested party is allowed to carry out research, extraction and exploitation, provided that it obtains an authorization.

Under the Federal Constitution, the Mining Code (Decree law n. 227/1967) is primarily responsible for rules on mineral exploration and mining, but in Brazil this standard is very old and needs to be reformed.

The National Department of Mineral Production (DNPM) was created by Law n. 8876/1994, having a link with the Ministry of Energy Mines. The authorization, control and inspection of mining throughout Brazil was the responsibility of this body.

The number of mining applications and processes to be analyzed has always been increasing and there were no conditions to analyze them quickly or to inspect the areas in which the mining was authorized. Lack of supervision encourages non-payment of financial compensation amounts and this reduces collection. According to Technical Note n. 184, prepared by the Institute of Socioeconomic Studies (INESC) and presented in September 2015, only one in four areas of mineral extraction pays the Financial Compensation for the Exploration of Mineral Resources (CFEM). Of the 20700 mining titles active in the country in 2012, only 5400 made the payment of the tax (INESC, 2016).

Thus, the performance of this department was questioned in recent years, including, because it authorized mining research in places prohibited by law and failed to oversee mining in several regions. The agency had weaknesses due to the reduced budget and lack of employees.

In June 2017 the National Mining Agency (ANM) was created, which absorbed the activities carried out by DNPM and extinguished this body.

4 MINING IN THE INTEGRAL PROTECTION CONSERVATION UNITS OF BRAZIL

The Management Plan is a fundamental document to present the activities that can and can not be carried out in Conservation Units. It turns out that, despite the need for its elaboration within 5 years after the creation of each unit, there are few plans and this violates the Prevention Principle (SILVA, 2009).

Of the total number of existing Federal Conservation Units, only 154 Management Plans were created, 79 of Conservation Units of Integral Protection and 75 Units of Conservation of Sustainable Use, by February 2017. Neither plan presents specific forms of prevention and conservation, control of mining and this allows for several irregularities (ICMBIO, 2017).

The art. 28 of the SNUC Law prohibits activities that are in disagreement with the objectives of the area, its Management Plan and its regulations. In the absence of a Management Plan for Integral Conservation Units, only activities can be practiced to preserve and protect the unit.

According to the DNPM Register and the progress of the mining applications, 47 Integral Protection Conservation Units with research authorizations were created after the creation of the SNUC Law: 6 ESECs, 1 MONA, 29 PARNAs, 8 REBIOs and 3 REVISs. Several of these authorizations occur after the SNUC Law and some of them are recent (DNPM, 2016).

In 2015 there were 19 Conservation Units of Integral Protection with some type of mining in place: 15 PARNAs, 3 REBIOs and 1 MONA. Of these units, 10 are part of the Atlantic Forest Biome, 5 of the Cerrado Biome, 3 of the Amazon Biome and 1 of the Caatinga Biome (ICMBIO, 2016).

In some National Parks, mining occupies a large area. This is the case of PARNA Mapingari (with 10815.63 hectares of the unit containing authorization for

mining) and PARNA Serra da Gandarela (with 12247.5 hectares for mining, equivalent to 39.15% of the total area of the unit) (LEAO, 2016).

In 8 of the Integral Protection Conservation Units with mining, this activity existed before the unit was created and was not interrupted. Despite the mining ban in these areas, DNPM granted new mining authorizations in 12 of these units after the SNUC Law. They are, therefore, illegalities (ICMBIO, 2016).

In addition, 7 of the Integral Protection Conservation Units with mining (5 PARNAs, 1 REBIO and 1 MONA) do not have a Management Plan (ICMBIO, 2016).

It was verified that the Decree creating 4 Protected Areas for Integral Protection contains in its text the mining forecast only in the Damping Zone and provided there is authorization from the National Department of Mineral Production (DNPM) and environmental licensing (ICMBIO, 2016).

According to information from the Ministry of the Environment, the land situation is unregulated in 6 of the Integral Protection Conservation Units with mining. This regularization occurred totally in 1 of these units and partially in 7 units (MMA, 2016).

The most researched or extracted ores in these areas are nonmetals, used for civil construction, such as sand, granite, gravel, clay, but also involve noble ores such as gold and diamond (DNPM, 2016).

In addition to the Integral Protection Conservation Units, there are Conservation Units considered as Sustainable Use, in which the SNUC Law also prohibits mining in its art. 18. The express prohibition occurs in Extractive Reserves (RESEXs) and, despite this, mining was detected in 2 RESEXs (LEAO, 2016).

Understanding the SNUC Law, the Brazilian Federal Public Prosecutor's Office understands that in RDSs, FLONAs and RPPNs it is also prohibited from mining, as this activity conflicts with the objectives of each of these units. Analyzing the situation of these areas, it was verified the existence of mining in 7 FLONAs (ISA, 2016).

5 HOW THE BRAZILIAN GOVERNMENT IS WORKING

Among the law projects with the objective of reforming the Mining Code, the following stands out: law project n. 5306/2013 and law project n. 5807/2013. It occurs that proposals for a new Mining Code are still subject to criticism such as: receiving funding from mining companies for use in the election campaigns of several parliamentarians involved in the Special Commission of the New Mining Code. This situation generates uncertainties about the influence and priorization of the mineral sector in the elaboration of standards, since the reference to sustainability is very generic in these documents. Therefore, it is questioned whether, in fact, there will be advances in favor of the environment and when the changes will be voted, since the processes have been halted since 2015 (LEAO, 2016).

In addition, the recent creation of a National Mining Agency (ANM) aims to implement national policies and the National Mining Plan 2030. However, it is still in the implementation phase.

Internally, there are conflicts of interest between ICMBio and the mining body. Meanwhile, governance problems contribute to this and other environmentally damaging activities, even though they are prohibited by the SNUC Law. Even the Federal Public Ministry, which is also responsible for protecting the environment, could take action to prevent the continuation of mining in these areas, but this does not always occur.

6 APPLICABLE PRINCIPLES – CONVENTION ON BIOLOGICAL DIVERSITY

Some of the main CBD Principles that should be applied in relation to mining, but which are not effectively implemented:

A. "Article 6 - General Measures for Conservation and Sustainable Use

Each Contracting Party shall, in accordance with its own conditions and capabilities: (a) to develop strategies, plans or programs for the conservation and

sustainable use of biological diversity or to adapt to that end existing strategies, plans or programs which shall reflect, considering other aspects, the measures established in this Convention concerning the Party concerned; and (b) integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity in relevant sectoral or intersectoral plans, programs and policies."

B. "Article 8 - In situ conservation

Each Contracting Party shall, as far as possible and as appropriate: (a) establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity; b) Develop, if necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity; (c) regulate or manage biological resources important for the conservation of biological diversity, within or outside protected areas, in order to ensure their conservation and sustainable use; d) To promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in their natural environment; e) Promote sustainable and environmentally sound development in areas adjacent to protected areas in order to strengthen the protection of these areas; (f) recover and restoring degraded ecosystems and promoting the recovery of endangered species through, considering other aspects, the development and implementation of plans and other management strategies; (...) (i) seek to provide the necessary conditions to reconcile current uses with the conservation of biological diversity and the sustainable use of its components; (...) (m) cooperate with the provision of financial and other support for in situ conservation (...)."

C. "Article 10 - Sustainable Use of Components of Biological Diversity

Each Contracting Party shall, as far as possible and as appropriate: (...) (b) Adopt measures related to the use of biological resources to avoid or minimize negative impacts on biological diversity; (...) (d) Supporting local populations in the design and implementation of corrective measures in degraded areas where biological diversity has been reduced; and e) Encourage cooperation

between its governmental authorities and its private sector in the development of methods for the sustainable use of biological resources."

D. "Article 14 - Evaluation of Impact and Minimization of Negative Impacts

1. Each Contracting Party shall, as far as possible and as the case may be, shall: (a) establish appropriate procedures requiring the environmental impact assessment of its proposed projects that may have significant negative effects on biological diversity in order to avoid or minimize such effects and, as appropriate, to allow public participation in such procedures; (b) take appropriate measures to ensure that due account is taken of the environmental consequences of its programs and policies that may have significant adverse effects on biological diversity; (...) (e) Encourage national measures on emergency measures in the case of natural or other activities or events which represent a serious and imminent danger to biological diversity and promote international cooperation to complement such national efforts and, as appropriate and, in agreement with the States or regional economic integration organizations concerned, to establish joint contingency plans.

2. The Conference of the Parties shall examine, on the basis of studies to be carried out, questions of liability and redress, including restoration and indemnification, for damages caused to biological diversity, except where such liability is strictly internal."

E. "Article 18 - Technical and Scientific Cooperation

1. The Contracting Parties shall promote international technical and scientific cooperation in the field of the conservation and sustainable use of biological diversity, as appropriate, through competent national and international institutions.

2. Each Contracting Party shall, in implementing this Convention, promote technical and scientific cooperation with other Contracting Parties, in particular developing countries, inter alia through the development and implementation of national policies. In promoting such cooperation, particular attention should be given

to the development and strengthening of national resources through capacity-building of human resources and institutional strengthening (...)." [CDB]

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UNSOUND DISPOSAL OF WASTE AS A CAUSE OF BIODIVERSITY LOSS TO BE CONSIDERED

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Garbage dumped in the environment threatens fauna, flora, soil, underground, atmospheric air, groundwater and surface water and human beings health. The unsound disposal of materials discarded in the "dumps" and landfills especially in places near protected areas or within them has brought serious consequences related to loss of biodiversity, which has as main causes: loss and degradation of habitats, introduction of exotic species; unsustainable use and over-exploitation of resources; pollution; and climate change.[2]

This paper works on two points: some waste issues in Brazil and Brasília's waste problems related with protected areas.

In an attempt to make the disposal of solid waste more environmentally sound and sustainable, in addition to non-generation, reduction, reuse and recycling, recovery and composting of solid waste, we stand out two mechanisms commonly used around the world: landfill sanitary ware and incineration (with energy recovery). Most developed countries has been using incineration.

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In developed countries, landfills are seen as a bad solution. In this sense the "Council Direct of 15 July 1975 on waste (75/442 / EEC)"[3] determines the prevalence of the development of clean technologies and the use of waste as a source of energy[4]. Incineration has been used in several countries such as England, Germany, France and Austria[5].

In Germany, wastes that no longer cause damage to the environment are dumped in landfills"[6] and the waste is reused in power plants[7]. Another example is Denmark: 48% of waste goes to incineration and goes through an energy recovery process. Recycling accounts for 34% of the waste and only 4% goes to the landfill.[8] On the other hand, some studies argue that incineration is not sustainable for dealing with waste[9], as they can cause serious pollution.

Overall, there is a garbage atlas that does a study of the inadequate disposal of waste around the world.[10] In this regard it was found that most developing countries and vast territory there is a greater percentage of improper disposal of waste. Otherwise, let's see:

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[3] Council Directive of 15 July 1975 on waste. Disponível em: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1975L0442:20031120:EN:PDF>. Acesso em 29 OUT 2018.

[4] *Article 3*.1. Member States shall take appropriate measures to encourage: (a) firstly, the prevention or reduction of waste production and its harmfulness, in particular by: — the development of clean technologies more sparing in their use of natural resources, the technical development and marketing of products designed so as to make no contribution or to make the smallest possible contribution, by the nature of their manufacture, use or final disposal, to increasing the amount or harmfulness of waste and pollution hazards, — the development of appropriate techniques for the final disposal of dangerous substances contained in waste destined for recovery; (b) secondly: (i) the recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials, or (ii) the use of waste as a source of energy.

[5] SALATI, Eneas; SANTOS, Ângelo Augusto dos; Klabin, Israel. *Temas Ambientais Relevantes*. ESTUDOS AVANÇADOS 20 (56), 2006, p. 107-127; Disponível em: http://fbds.org.br/fbds/Apresentacoes/TemasAmbientais.pdf >. Acesso em 26 OUT 2018.

[6] Revista Veja. Edição 2274. Ano 45. Número 25. 20 de junho de 2012. Disponível em: http://veja.abril.com.br/brasil/aterros-ainda-sao-o-destino-de-41-do-lixo-no-brasil/.>. Acesso em 26 OUT 2018.

[7] TELES, Paula Vieira. *Análise Jurídica da Disposição de Resíduos Sólidos em Área de Preservação Permanente*. Dissertação. Mestrado. Escola Superior Dom Helder Câmara Programa De Pós-Graduação em Direito. 106 p. Belo Horizonte 2015, p. 73.

[8] Revista Veja. Edição 2274. Ano 45. Número 25. 20 de junho de 2012. Disponível em: http://veja.abril.com.br/brasil/aterros-ainda-sao-o-destino-de-41-do-lixo-no-brasil/.>. Acesso em 26 OUT 2018.

[9] MACHADO, Gleysson. Incineração de resíduos – uma tecnologia a desaparecer. 25 abril 2014. Disponível em: < http://www.portalresiduossolidos.com/incineracao-de-residuos-uma-tecnologia-desaparecer/ >. Acesso em 28 OUT 2017.

[10] WASTE ATLAS. Disponível em: < http://www.atlas.d-waste.com >. Acesso em 29 OUT 2018.

COUNTRY	PERCENTAGE OF INADEQUATE DISPOSAL
GERMANY	0 %
FRANCE	0 %
AUSTRALIA	0%
AUSTRIA	0.9%
BRAZIL	42%
PERU	56.5%
CHINA	70%
INDIA	85%
PHILIPPINES	85%
MALAYSIA	85%
BANGLADESH	100%

For the European Community, the deposition in landfill is the least preferred option for waste management and should be used as little as possible.[11] Where it is necessary to deposit the waste in landfills, health should be observed to prevent and reduce as far as possible negative effects on the environment such as pollution of surface water, groundwater, soil and air, and the global environment, including the greenhouse effect, as well as any resulting risk to human health throughout the life

[11] TELES, Paula Vieira. *Análise Jurídica da Disposição de Resíduos Sólidos em Área de Preservação Permanente*. Dissertação. Mestrado. Escola Superior Dom Helder Câmara Programa De Pós-Graduação em Direito. 106 p. Belo Horizonte 2015, p. 74.

cycle of the landfill as provided for in Article 1º[12], Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.[13]

In Brazil, although it appears in the objectives of the National Policy on Solid Waste - PNRS recovery and exploitation energy[14], the alternative chosen by the authorities and provided for in Law 12,305 of 2010 for the disposal of solid waste is the implementation of landfills. However, should not be regarded as definitive.

The landfill is an engineering project designed to receive household trash, which involves the services of earthmoving, lining of the ground with waterproof material (clay), channeling of rainwater and slurry, piping for gas outflow, grass planting and finally installation of a fence around the service area[15]. When done properly, landfills minimize the damages caused to medium environment. In turn, they decrease the accumulation of gases inside the cells, since the earth cover isolates the debris and prevents the proliferation of insects, avoids bad smell and does not leave papers and plastics to be loaded by the wind or the floods, completely different from the currently occurring in the dumps.

Inadequate disposal of tailings attracts disease-transmitting animals, such as flies, mosquitoes, cockroaches, rats, buzzards, pigeons, and snails. Besides contamination of the air by biogas (composed of CO^2, methane and water vapor), soil and groundwater with waste slurry (black toxic liquid) and the consequent loss of biodiversity. Among other impacts to the protected biota, the landfill is a stronghold of invasive alien species such as *Agave* sp. Eucalyptus, L*eucaenaleucocephala*(Lam.) De Wit (leucena), *Pinus* sp.(pine), *Tithonia*

[12] Article 1 Overall objective. 1. With a view to meeting the requirements of Directive 75/442/EEC, and in particular Articles 3 and 4 thereof, the aim of this Directive is, by way of stringent operational and technical requirements on the waste and landfills, to provide for measures, procedures and guidance to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health, from landfilling of waste, during the whole life-cycle of the landfill.

[13] Directive 1999/31/EC of 26 april 1999 on the landfill of waste. Disponível em: < https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31999L0031 >. Acesso em 29 OUT 2018.

[14] BRASIL. Lei 12305, de agosto de 2010. Disponível em: < http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2010/Lei/L12305.htm>. Acesso em :25 OUT 2018.

[15] RODRIGUES, Francisco Luiz. CAVINATTO, Vilma Maria. Lixo. *De onde vem? Para onde vai?* São Paulo: Moderna, 1997, p. 51.

diversifolia (Hemsl.) A.Gray (Mexican sunflower) and *Ricinus communis* L. (castor oil).[16]

In addition to all these environmental problems that can be caused by the implementation of landfills, there is still another issue. The sites chosen for waste disposal in the country, which before the waste policy were made without criterion and care through "dumps" and then in a more organized way through landfills, are sometimes close to protected areas or even within them. This reality has a serious environmental consequence: loss of biodiversity.

In Brasilia, the old uncontrolled dump called Aterro do Jóquei (Lixão da Estrutural) was used as final waste disposal area between 1960 and 2017, receiving almost all the waste collected in Distrito Federal, Brasília (2,800 tons / day of municipal waste and about 6,000 tons / day of construction waste). Even with its exhausted capacity, with twelve meters of garbage above the stipulated level, its deactivation was constantly delayed, under the justification of the authorities in the sense of being the only option and that were negotiating with the garbage collectors[17], and was finally closed on January 20, 2018.[18]

The location of "Lixão da Estrutural" was totally inadequate, since, besides being close to the Cabeceira do Valo and camp streams, smallholder farms and low-income informal settlements (Vila Estrutural) was also very close to the Parque Nacional de Brasília. One of the main protected areas of Brazil, it protects 43 thousand hectares of thick, has several species of animals, plants and important water basins, besides being a much sought after leisure area.[19] The disposal of waste in this region for so long has generated numerous impacts to the physical, biological and anthropic environment. The groundwater under the rubbish dumps is

[16] HOROWITZ, Christiane; OLIVEIRA, Antonio dos Santos; DA SILVA, Vilmar. *PACHECO, Gilson e Sobrinho, Raimundo Iris.* Manejo da Flora Exótica Invasora no Parque Nacional de Brasília: Contexto Histórico e Atual P. 217-236. *In:* Biobrasil diversidade brasileira revista científica Ano 2 (2013).

[17] Auditoria Operacional no Serviço de Limpeza Urbana do Distrito Federal. Tribunal de Contas do Distrito Federal. Sumário Executivo. 2013, p. 48. Disponível em: <http://www.tc.df.gov.br/segecex/flip/sumarios/semag/servlimpurb/servlimpurb.pdf>. Acesso em 11 OUT 2018.

[18] Memorando SEI-GDF n. 12/2018 - SEMA/SEARS. Sistema Eletrônico de Serviço de Informação ao Cidadão – SIC em 09 abr. 2018.

[19] SALGADO, Gustavo Souto Maior. Análise da situação atual do Lixão da Estrutural. Assessoria Legislativa/Câmara Legislativa do DF, 2016 (Textos para Discussão 9). Disponível em: - http://biblioteca.cl.df.gov.br/dspace/han dle/123456789/1806. Acesso em 17 OUT 2017.

compromised, with emphasis on heavy metals. Much of the leachate formed by the uncontrolled dump reaches the streams of the region through the surface flow, especially in periods of intense rainfall.[20]

"Lixão da Estrutural" was replaced by Aterro Sanitário Oeste. Located next to Sewage Treatment Station - ETE from Samambaia, in Distrito Federal, whose access is by the DF-180, 1 km near the Melchior River. It is an area close to houses and waterways.[21] This is an area close to homes and water courses.

Thus, in Distrito Federal the transportation of non-recyclable waste went from an area adjacent to the National Park to near the Permanent Protected Area - APP of Melchior River. APP sites are fragile and any change can compromise their characteristics physical and biological. [22] Situations like this show that there is still a lack of care on the subject. Even though there were authorizations from the competent authorities and approval by means of environmental licenses.[23]

The implementation of sanitary landfills near rivers, lakes and other sources of water resources is expressly prohibited under Article 294 of the Organic Law of Distrito Federal. So the choice for the installation of landfills requires ratings prior and compatibility of various factors. The balance between social aspects, changes in the environment and the costs involved. An adequate area besides low social impacts, should present lower risks to the environment.

The Forest Code has brought the following forecast: "Article 3 For the purposes of this law: (...) VIII - public utility: (...) b) infrastructure works for concessions and public transport services, road system, including that necessary for urban land parceling approved by the Municipalities, sanitation, waste management, energy, telecommunications , broadcasting, installations necessary for the realization

[20] SALGADO, Gustavo Souto Maior. Análise da situação atual do Lixão da Estrutural. Assessoria Legislativa/Câmara Legislativa do DF, 2016 (Textos para Discussão 9). Disponível em: - http://biblioteca.cl.df.gov.br/dspace/han dle/123456789/1806. Acesso em 17 OUT 2017.

[21] Memorando SEI-GDF n. 12/2018 - SEMA/SEARS. Sistema Eletrônico de Serviço de Informação ao Cidadão – SIC em 09 abr. 2018.

[22] TELES, Paula Vieira. *Análise Jurídica da Disposição de Resíduos Sólidos em Área de Preservação Permanente*. Dissertação. Mestrado. Escola Superior Dom Helder Câmara Programa De Pós-Graduação em Direito. 106 p. Belo Horizonte 2015. p. 81.

[23] http://www.mpdft.mp.br/portal/pdf/noticias/agosto_2016/Aterro_Sanitário_-_Reunião_Samambaia_-_junho_2016.pdf

of state, national or international sports competitions, as well as mining, except, in the latter case, the extraction of sand, clay, gravel and gravel (...) ". However, on February 28, 2018, the Plenary of the Federal Supreme Court partially upheld the Declaratory Action of Constitutionality 42 to declare the unconstitutionality of the expression "waste management", contained in art. 3, VIII, b, of the Forest Code (Law 12.651 / 2012).[24] In this sense, the authorization brought by the 2012 Forestry Code to allow sanitary landfills to be implemented within protected area was declared unconstitutional by Supreme Court.

A similar situation to that of Distrito Federal occurred in Rio de Janeiro. The Landfill of Gramacho, in the municipality of Duque de Caxias - RJ, with the purpose of receiving household waste from the municipalities of Rio de Janeiro, Duque de Caxias, Niterói, São Gonçalo, São João do Meriti and Nilópolis. It is situated in a mangrove area developed on recent fine marine sediments deposited in the estuary of the Iguaçu River, on the shores of Guanabara Bay. These sediments are superimposed on a sequence of sandy sediments. With 1,300,000 m2, it was implemented in 1976 and closed in 2012.[25]

In addition, there are studies of landfills that have caused direct contamination of soil and water quality in the region by leachate thrown into the bodies of water: Landfill of Ariquemes in Rondônia[26] and Controlled Landfill of Muribeca in Pernambuco .[27] This situation is aggravated by the fact that there is no sorting of the materials that arrive at the landfill, so residues with different contaminants are sent. In Ariquemes, shallow wells from which the waters for the supply of the rural properties are captured do not present adequate constructions,

[24]http://stf.jus.br/portal/informativo/verInformativo.asp?s1=c%F3digo%20mesmo%20florestal&numero=892&pagina=2&base=INFO

[25] GUTMAN, André de Mattos. Utilização do método geofísico eletromagnético transiente (tem) no aterro sanitário de Gramacho, Duque de Caxias, Estado do Rio de Janeiro. Rio de Janeiro: 2003. Dissertação. Mestrado. Ministério da Ciência e Tecnologia. Observatório Nacional. Pós-Graduação – Coordenação de Geofísica. Disponível em http://www.on.br/conteudo/dppg_e_iniciacao/dppg/ferramenta_teses/teses/GEOFISICA/[141_49-42_C]andreguttmann.pdf Acesso 25 OUT 2018.

[26] Estudo de Impacto Ambiental. Disponível em: http://www.sedam.ro.gov.br/images/publicacoes/COLMAM/RIMA%20-%20Aterro%20Sanitário%20de%20Ariquemes.pdf >. Acesso em

[27] ALMEIDA, Rosana Batista. *Estudo da poluição de águas superficiais causadas pelo lançamento de percolado, proveniente do aterro controlado da Muribeca-PE.* Mestrado em Engenharia Civil. Universidade Federal de Pernambuco. Recife, 2008. 116p.

being able to affect their potability.In the soil, metals cadmium and lead had higher concentrations than those established as reference for quality and the amount of Chromium is higher than other studies in the state that did not focus areas of waste disposal.[28]

It is observed that there is no caution with regard to environmental issues in the choice of waste disposal sites. The fact is that there didn`t forecasts will in laws, even in national solid waste policy with respect to the type of areas that should be chosen for the implementation of landfills. In this sense, permits and licenses are granted near protected areas indiscriminately. It seems that the consequences are not measured as the liquids and gases produced in landfills can reach rivers, seas and the ground, causing serious consequences of pollution, evacuation of species and even loss of biodiversity.

Although the environmental bodies claim that the licenses were granted by the competent authorities, there is a need for compatibility between the intended location for the landfill and all the instruments that form the proper environmental management, such as the National Environment Policy, National System of Conservation Units of Nature - SNUC, Convention on Biological Diversity - CBD. So much so that the Supreme Court had to manifest, as it did in the abovementioned ADC 42, to prevent that the Forest Code allowed the implantation of sanitary landfills in areas of permanent preservation.

CONCLUSION

Inadequate disposal of tailings and waste in the environment causes loss of biodiversity even when sent to landfills regularized by the competent authorities.

Brazil attempts to regularize the situation of inadequate garbage disposal, especially since the implementation of the solid waste policy in August 2010. However, the focus is on the implementation of landfills. The problem is that it is not known for sure if this is the best way. Incineration also directly affects the

[28] CONDE, Thassiane Telles. Impacto ambiental do aterro sanitário do município de Ariquemes – RO. Dissertação. Universidade Federal de Rondônia. Programa de Pós-Graduação em Ciências Ambientais. Rondônia. 2016.

environment. Besides being an expensive structure, some studies show that the amount of energy produced in the plants is very small.

On the other hand, sites used for the implementation of landfills are sometimes very close to protected areas, which is inconceivable, especially for damaging biodiversity.

There was a setback in the New Forest Code regarding the protection measures in the Permanent Preservation Areas -APP. The possibility of sanitary landfills within them was highlighted, which was remedied by Supreme Court through the judicial decision in ADC 42.

One solution for the waste would be the implementation of energy-producing incineration plants. However, in Brazil, municipalities are not meeting deadlines for the implementation of landfills, under allegation of lack of financial resources, let alone for incineration plants, which are even more expensive.

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Council Directive of 15 July 1975 on waste. Disponível em: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1975L0442:20031120:EN:PDF>. Acesso em 29 OUT 2018.

Directive 1999/31/EC of 26 april 1999 on the landfill of waste. Disponível em: < https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31999L0031 >. Acesso em 29 OUT 2018.

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LEGAL AND ENVIRONMENTAL MANAGEMENT INSTRUMENTS CONCERNING THE AREA OF ENVIRONMENTAL PROTECTION OF THE DESCOBERTO RIVER BASIN

Celia Maria Machado Ambrozio[1]

ABSTRACT

The Federal Environmental Protection Area of Descoberto River was created with the objective of guaranteeing greater protection to the Descoberto River Basin and its dam. This APA involves the urban and rural areas of the Administrative Region of Taguatinga (RA III), Brazlândia (RA IV) and Ceilândia (RA IX) of the Federal District and municipalities of Águas Lindas of the State of Goiás. Among the legal and environmental management instruments that focus on this unit of environmental conservation the creation of the Biological Reserve of Descoberto River in the year of 2005 and the approval of the Management Plan of the APA of the Descoberto in 2014 should be highlighted. Among the projects developed it is necessary to mention the Descoberto Coberto Project in 2009 that includes a series of actions to guarantee the quality and quantity of water of Lake Descoberto and the environmental sustainability of the main source of supply of the Federal District.

Keywords: APA of the Descoberto River Basin, environmental management, legal instruments.

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1 INTRODUCTION

The Environmental Protection Area of the Descoberto River Basin (Figure 1), Cerrado biome, with an area of 41,064.23 hectares, is a federal environmental conservation unit, created on November 7th, 1983, through Federal Decree no. 88,940/83, Article 1 defines as its main objective, to provide for the future well-being of the populations of the Federal District and part of the State of Goiás, as well as to ensure satisfactory ecological conditions to the dam of the region, therefore with the main objective of guaranteeing greater protection to the Descoberto River Basin and the water sources that form it[2].

The operation of the water supply system supplied by Lake Descoberto, under the responsibility of the Environmental Sanitation Company of the Federal District (CAESB), supplies the urban areas of the Administrative Regions of Taguatinga, Gama, Ceilândia, Samambaia, Gama, Núcleo Bandeirante, Park Way, Santa Maria, Recanto das Emas, Riacho Bottom I and II, Candangolândia, Guará, Águas Claras and Colônia Agrícola de Vicente Pires of the Federal District[3].

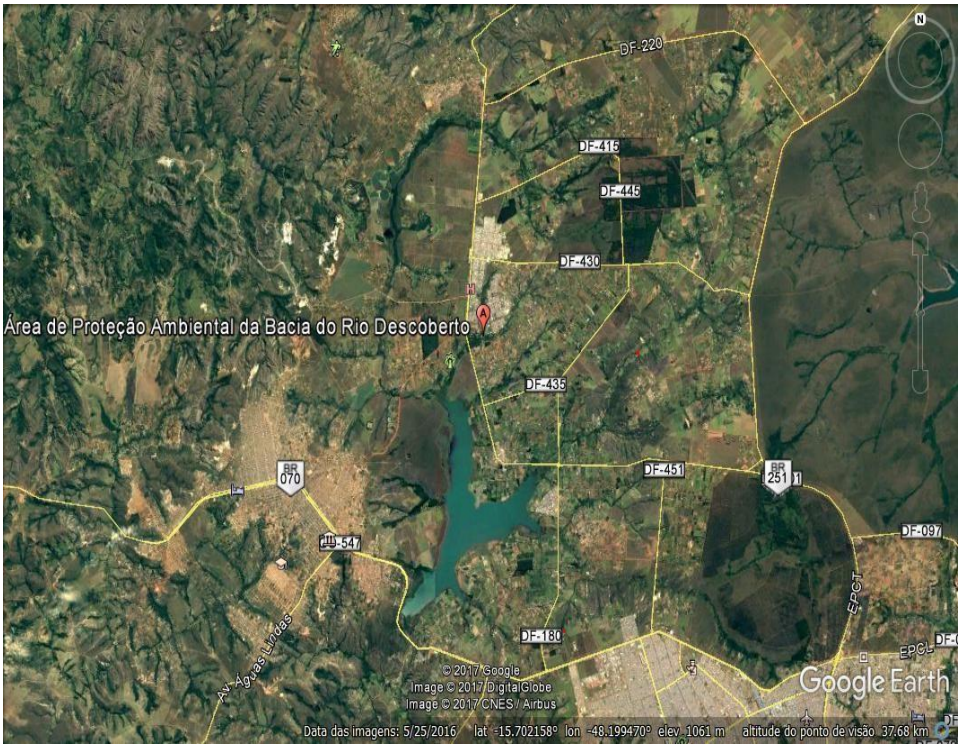
The area covered by the APA of the Descoberto River Basin encompasses other environmental conservation units belonging to the National System of Environmental Conservation Units (SNUC), including the Brasilia National Forest and the Rio Descoberto Biological Reserve[4].

[2] Federal Decree no. 88,940 of November 7th, 1983. Available at http://www.planalto.gov.br/ccivil_03/decreto/1980-1989/1980-1984/D88940.htm. Access on August 5th, 2017.

[3] Caesb. Environmental Sanitation Company of the Federal District. **Water Treatment Stations. ETA Descoberto River**. Available at: http://atlascaesb.maps.arcgis.com/apps/MapJournal/index.html?appid=4d06131962ca482a9d51502c630e195f. Access on August 5th, 2017.

[4] ICMBIO. Chico Mendes Institute for Biodiversity Conservation. MMA Available at: http://www.icmbio.gov.br/portal/images/stories/docs-planos-de-manejo / apa_bacia_do_rio_descoberto_pm_encartes_12_e_3.pdf. Access on August 12th, 2017.

Figure 1 – Google Earth Year 2017 Image of the Environmental Protection Area of the Descoberto River Basin.



Source: Google Earth. Available on Google Earth. Access on July 7th, 2017.

2 LEGAL INSTRUMENTS CONCERNING THE APA OF THE DESCOBERTO RIVER

The Environmental Protection Area of the Descoberto River Basin, a federal environmental conservation unit created by Federal Decree no. 88,940/83, was initially delimited by SEMA/SEC/CAP/no. 01/88, in eight containment, preservation, control and occupation zones specifying the activities to be encouraged, limited, restricted or prohibited by zone, creating a range of protection 125 meters wide on the shores of Lake Descoberto called the Preservation and Recovery Zone (ZPR)[5].

In 1999, with the objective of extending the protection of the cerrado biome in the APA of the Descoberto River, the National Forest of Brasilia was established,

[5] ISA. Conservation Units of Brazil. APA of the Descoberto River Basin. Legal History. Available at: https://uc.socioambiental.org/uc/582547. Access on August 19th, 2017.

with a total area of 9,346 hectares, divided into geographically separated areas and designated as Areas I, II, III and IV[6].

The Descoberto River Biological Reserve, with an area of 434.5 hectares, covering the 125-meter strip of Lake Descoberto, in 25 km of perimeter, in 73 rural farms located in the Administrative Regions of Ceilândia and Brazlândia was created on July 5th of 2005, by the Government of the Federal District (GDF) through Decree no. 26,007/05, with the objective of contributing to the protection of lake waters, especially the preservation areas and promote the recovery of degraded areas and their revegetation with native species[7].

On December 11th, 2014, Bill no. 133 was approved, which approves the APA Management Plan for Descoberto, and the zones defined within the APA Descoberto River Basin were described in order to organize the activities permitted or not within its limits. Six (6) Zones and four (4) segments were determined (Figure 2), and also the Conservation Units inserted in the APA Descoberto River Basin that are not part of the zoning, among them, the National Forest of Brasilia, the Descoberto State Park and the Descoberto Biological Reserve[8].

The elaboration of the APA Management Plan for Descoberto, under the responsibility of the ICMBio - Chico Mendes Institute for Biodiversity Conservation of the Ministry of the Environment, consists of a technical document whereby, based on the general objectives of a Conservation Unit, establishes and updates its zoning and the norms that should govern the use of the area and the management of natural resources, including the implementation of the physical structures necessary for the management of the unit. The company Bio Teia counted on several partners for the elaboration of this study, and should emphasize the Regional Administration of Brazlândia, Regional Administration of Taguatinga, Municipality of Águas Lindas

[6] ICMBIO. Chico Mendes Institute for Biodiversity Conservation. MMA. **Flona from Brasilia**. Available at: http://www.icmbio.gov.br/portal/images/stories/imgs-unidades-coservacao/flona_brasilia.pdf. Access on August 19th, 2017.

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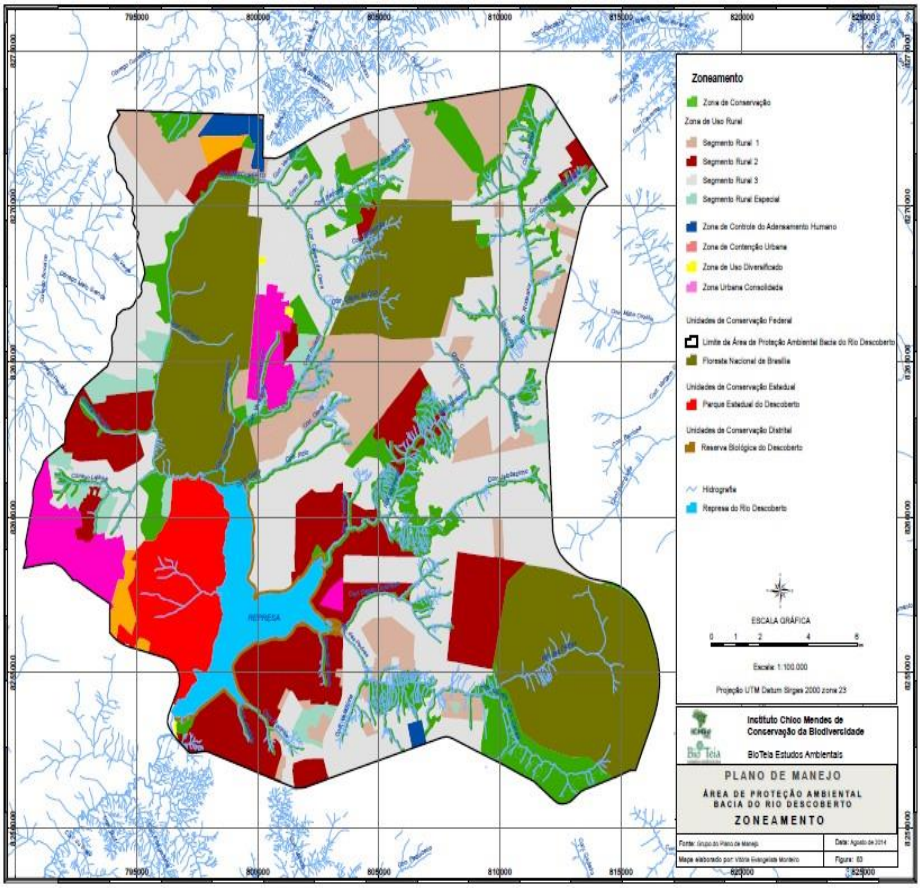
de Goás, CAESB – Company of Environmental Sanitation of the DF, IBRAM – Instituto Brasília Ambiental, Pró-Descoberto – Association of Descoberto River Basin Producers, AGE – Association of Ecological Agriculture, Company of Technical Assistance and Rural Extension of the Federal District – EMATER, Secretariat of Agriculture and Rural Development - SEAGRI and Brazilian Institute of Environment and Renewable Natural Resources - IBAMA[9].

Figure 2 - APA Descoberto Zoning Map based on Bill no. 133, from December 11th, 2014.



Source: http: //www.icmbio.gov.br/portal/images/stories/docs-planos-de-gestao/apa_bacia_do_rio_descoberto_mapas.pdf. Access on July 8th, 2017.

[9] Bio Web Blog environmental studies. **Bill of the Management Plan of the APA Descoberto River Basin**. News posted by Fabiana Dallacorte on January 9th, 2015. http://www.bioteia.com.br/blog/portaria-do-plan-of-management-of-the-basin-of-the-water-covered/. Access on September 2nd, 2017.

Master Plan of Territorial Planning of the Federal District

The macrozoning defined in the Territorial Planning Master Plan – PDOT of the Federal District (Supplementary Law 803 of April 25th, 2009 and amended by Complementary Law 854 of October 15th, 2012) establishes in its Article 91 the Rural Area of Controlled Use III, where the special condition of Lake Descoberto must be observed, which establishes guidelines, as follows: I. Prohibition to parcel rural areas in lots of less than the size permitted in the APA environmental zone of the Descoberto River, including farms; II. Prohibition to develop extensive short cycle crops in areas of declivity greater than 30% (thirty percent); III. Requesting from the buildings, when permitted by current legislation, to implement an adequate collection, treatment and disposal system for sanitary sewers; IV. Prohibiting the final disposal of municipal solid waste[10].

Section IV of the PDOT defines, in its Article 95, the Water Resources Protection Areas (APM), such as those destined for environmental recovery and the promotion of sustainable use in the upstream areas of the water catchment points for public supply, without prejudice to activities and actions inherent to the competence of the concessionaire public service authorized to capture and distribute good quality water in sufficient quantity to serve the population[11].

The MPAs located in the boundaries of the APA Descoberto River are called APM of Barrocão and APM of Capão da Onça, located in Area IV of the National Forest of Brasília, whose abstractions are submitted to the Water Treatment Station of Brazlândia, on 01/04/1995. As well as the MPs of Currais and APM das Pedras, they are located in the area of the National Forest of Brasília (Areas I). The Descoberto River rises from the Barrocão and Capão da Onça streams in Brazlândia and divides the Federal District of the state of Goiás by the west side. The Lake

[10] SEGETH. Secretary of State for Territory and Housing Management. **Master Plan of Territorial Planning of the Federal District - PDOT**. Available at: http://www.segeth.df.gov.br/preservacao-e-urban-planning/pdot.html. Access on September 3rd, 2017.

[11] SEGETH. Secretary of State for Territory and Housing Management. **Master Plan of Territorial Planning of the Federal District - PDOT**. Available at: http://www.segeth.df.gov.br/preservacaoo-en-and-pdot.html. Access on September 3rd, 2017.

Descoberto is formed from the bus or reservoir of the Descoberto River, presents 17 km²[12].

2.1 Environmental Management Instruments

The occupation of the APA of the Descoberto territory is basically characterized by farms producing fruit and vegetables in the rural area. The implementation of measures to control the use and occupation of the soil in the basin is essential to reduce negative impacts on the Lake Descoberto caused by erosion and soil sealing, deforestation, forest fires, urban sprawl (disorderly expansion of urban areas), (in installment) irregular rural areas and the inadequate final disposal of solid waste generated by the population living in the basin[13].

2.2 Descoberto Coberto Project

The Descoberto Coberto Project was established by the Federal District government in 2009, at the request of the Public Ministry of the Federal District and Territories, through the partnership of various federal government and civil society bodies, aiming to reverse the process of environmental degradation in the area of the influence of Lake Descoberto, observed in the last years in the water abstracted and treated at the Water Treatment Station of Descoberto River. This project comprises a series of actions designed to guarantee the quality and quantity of Lake Descoberto and the environmental sustainability of the main source, responsible for serving approximately 66% of the population of the Federal District[14].

This project comprises a series of actions aimed at guaranteeing the quality and quantity of water at Lake Descoberto and the environmental sustainability of the main source, responsible for the care of approximately 66% of the population of the

[12] MACHADO AMBROZIO C.M. et al. **Case Study: Descoberto Coberto Project**. Technical Meeting AESABESP, 2013, São Paulo. Access on September 3rd, 2017.

[13] ICMBIO. Chico Mendes Institute for Biodiversity Conservation. MMA. **Management Plan. APA of the Descoberto River Basin**. Available at: http://www.icmbio.gov.br/portal/images/stories/docs-planos-de- manejo / apa_bacia_do_rio_descoberto_pm_encartes_12_e_3.pdf. Access on September 7th, 2017.

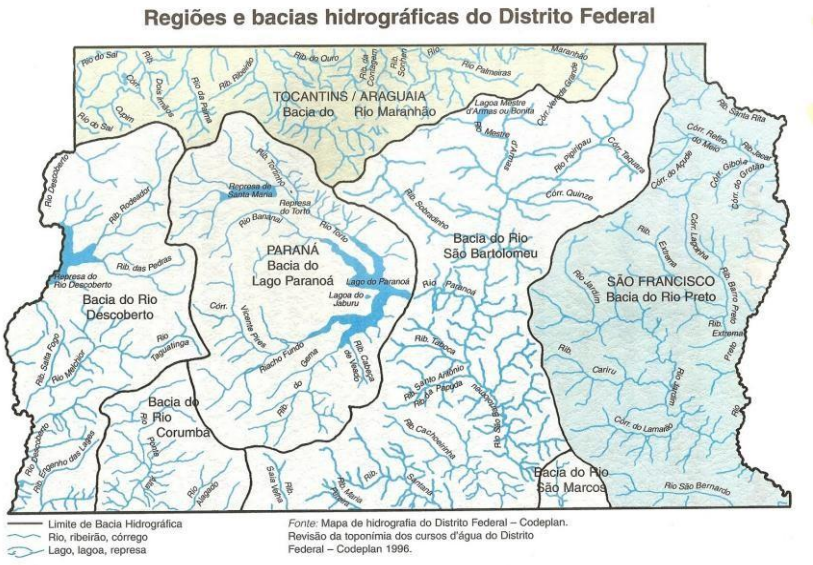
[14] Descoberto Coberto. Historic. Available at: http://www.recursoshidricos.df.gov.br/descoberto_coberto/ mapas.asp. Access on September 7th, 2017.

[15] Environmental Adequacy of the Biological Reserve and Rural Properties on the Shores of Lake Descoberto Document. August 2009. Available at: http://www.recursoshidricos.df.gov.br/descoberto_ coberto/documentos/AdequacaoAmbiental_VersaoFin al.pdf. Access on September 7th, 2009.

Federal District. The main objective of this project is the reversal of the environmental degradation process of the Lake Descoberto Basin by means of the definitive implantation of the environmental protection strip of the rural properties of the Descoberto Lake Basin, in a continuous range to the permanent preservation of the lake and its tributary and legal reserves, through the planting of native essences of the cerrado integrated to an awareness program and environmental education of the surrounding community[15].

The Descoberto Coberto Project develops its actions in the area of the northern and central portion of the Descoberto River Basin (Figure 3), within the boundaries of the Descoberto River Environmental Protection Area, involving the Taguatinga Administrative Region (RA III), Brazlândia (RA IV) and Ceilândia (RA IX) of the Federal District and municipality of Águas Lindas de Goiás[16].

Figure 3 - Location of the Descoberto River Basin - Federal District



[15] Environmental Adequacy of the Biological Reserve and Rural Properties on the Shores of Lake Descoberto Document. August 2009.http: //www.recursoshidricos.df.gov.br/descoberto_coberto/documentos/AdequacaoAmbiental_VersaoFinal.pdf. Access on September 7th, 2009.

[16] MACHADO AMBROZIO C.M. et al. **Case Study: Descoberto Coberto Project**. Technical Meeting AESABESP, 2013, São Paulo. Access on September 7th, 2017.

Source: http://ceilandiamaisverde.blogspot.com.br/2013/02/bacia-hidrografica-do- rio-descubberto.html. Access on September 7th, 2017.

Monitoring curve of the useful volume of the Descoberto reservoir for the year 2017

The current situation of the Descoberto River Basin has become even more critical with invasions and settlements in specially protected areas, causing accelerated deforestation, and consequently affecting in a negative way the quantity and quality of water of the reservoir (Figure 4). In the year 2017, the Federal District faced the worst water crisis in its history, having begun rationing water throughout its territory[17].

In June this year, the level of the Descoberto reservoir closed at 47.98%, respectively, two points above the target established in the Monitoring Curve of 46.0%. This study aims to monitor the status of water source levels from predefined parameters such as flow of tributaries and water abstraction by Caesb – Environmental Sanitation Company of the Federal District. The assessment of compliance with the monthly targets is made based on the levels of the reservoir, whose alteration occurs due to water intake, consumption by the population and farmers and the water situation. The Follow-up Curve was established in Adasa Resolution no. 9, from May 15th, 2017[18].

[17] BRAZILIAN AGENCY. Government of Brasilia. **Understand Water Rationing in DF.** News posted on January 18th, 2017. Available in: https://www.agenciabrasilia.df.gov.br/2017/01/18/endenda-o-ration-of-water-in-df /. Access on September 7th, 2017.

[18] ADASA. Regulatory Agency of Water, Energy and Basic Sanitation of the DF. The Evacuation Reservoir Monitoring Curve is above the target in May. News posted on June 2nd, 2017. Available at: http://www.adasa.df.gov.br/area-de-imprensa/noticias/791-reservatorios-do-df-fecham-o-mes- arriba-of-goals-again. Access on September 9th, 2017.

Figure 4 - Location of the Environmental Protection Area of the Descoberto River Basin

Source: http: //www.bioteia.com.br/blog/portaria-do-planelo-de-manejo-da-apa-bacio-do-rio-covered/. Access on September 7th, 2017.

2.3 Advisory Council of the APA Descoberto River

The Bill no. 104, from October 9th, 2014 creates the APA Consultative Council of the Descoberto River Basin, in the Federal District, chaired by the head or institutional chief of the APA, ICMBio – Chico Mendes Institute for Biodiversity Conservation of the Ministry of the Environment, under the Regional Coordination/Linkage CR 11 – Lagoa Santa located at BR 070 Km 0.3, Taguatinga Norte, CEP 72.000-000. This council aims to contribute to the effective fulfillment of the objectives of creation and implementation of this conservation unit[19].

Cerrado Biosphere Reserve in the Federal District

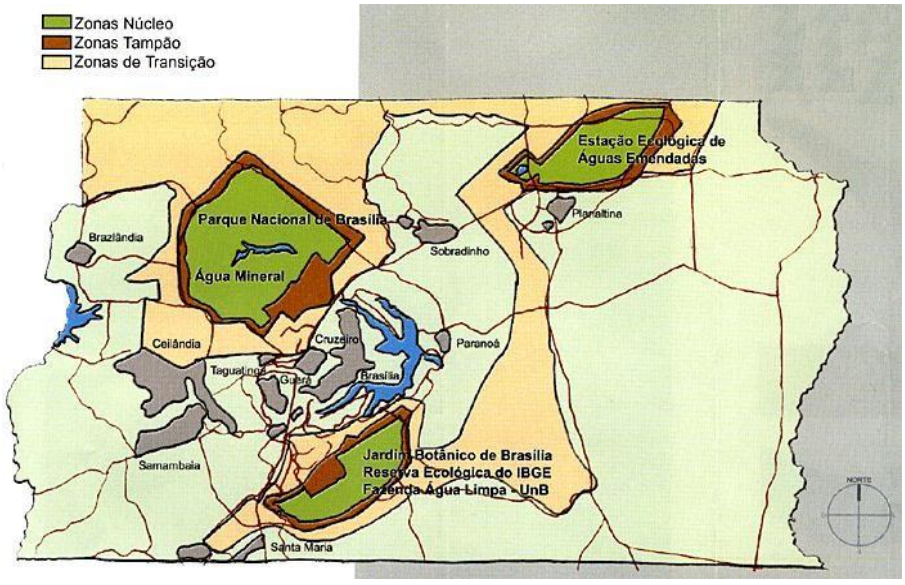
The Cerrado Biosphere Reserve in the Federal District (RBC-DF) consists of three areas, called the Nucleus Zone, Buffer Zone and Transition Zone. The APA of the Descoberto River Basin, together with the APA of the São Bartolomeu River Basin, APA of the Gama and Cabeça de Veado Basin and the APA of the Cafuringa form the Transition Zone, which is located in around the Buffer Zone, which surrounds the Core Zone as a protective ring. The core zones of RBC-DF are

[19] ICMBIO. Chico Mendes Institute for Biodiversity Conservation. MMA. Available at: http://www.icmbio.gov.br/portal/images/stories/docsucs/conselhos_consultivo núcleo da RBC-DFs/apa_bacia_do_rio_descoberto. pdf. Access on September 9th, 2017.

composed of 02 district units (Ecological Station of Amended Waters and Ecological Station of Botanical Garden of Brasília) and 03 federal units (National Park of Brasília, Ecological Station of IBGE and Fazenda Água Limpa of UNB that total 51,247 hectares[20].

The Cerrado Biosphere Reserve in the Federal District (RBC-DF), which occupies 226,000 hectares, represents 40% of the territory of the Federal District. Its studies were approved by the Brazilian Commission for the UNESCO's Man and the Biosphere Program on November 27th, 1992, and by the International Coordination Council of the MAB Program in Paris on October 8th, 1993. The limits, functions and management system of the Cerrado Biosphere Reserve of the Federal District (Figure 5) was defined through the District Law no. 742, from July 28th, 1994[21].

Figure 5 - Location of the Core Zone, Buffer Zone and Transition Zone of the Federal District Biosphere Reserve.



Source: http: //www.rbma.org.br/mab/unesco_03_rb_cerrado.asp. Access on September 7th, 2017.

[20] IBRAM. Environmental Brasília Institute. **Cerrado Biosphere Reserve in the Federal District**. Available at: http://www.ibram.df.gov.br/informacoes/meio-ambiente/reserva-da-biosfera.html. Access on September 10th, 2017.

[21] 21MaB / UNESCO. The Man and the Biosphere Program. **Reserve of the Cerrado Biosphere**. Available at: http://www.rbma.org.br/mab/unesco_03_rb_cerrado.asp. Access on September 10th, 2017.

3 CONCLUSION

The legal and environmental management instruments that focus on the APA of the Descoberto River Basin are fundamental to guarantee greater protection for the Descoberto River Basin and its dam, considered the main source of water supply in the Federal District, and to suffer strong impacts environmental problems caused by the occupation of cluttered soil, real estate speculation and contamination of its water resources. These environmental protection tools should also prioritize the conservation and environmental restoration of this conservation unit, in harmony with its sustainable development, enabling the generation of employment and income for the local population.

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BRASÍLIA AGENCY. Government of Brasilia. **Understand Water Rationing in DF**. News posted on January 18th, 2017. Available in: https://www.agenciabrasilia.df.gov.br/2017/01/18/endenda-rating-of-water-no- df /. Access on September 9th, 2017.

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Decree no. 26,007, from July 5th, 2005. Available at: http://www.recursoshidricos.df.gov.br/descoberto_coberto/documentos/Decreto_260 07_RE BIO_Descoberto.pdf. Access on August 20th, 2017.

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IBRAM. Environmental Brasília Institute. **Cerrado Biosphere Reserve in the Federal District.** Available at: http://www.ibram.df.gov.br/informacoes/meio-ambiente/reserva-da-biosfera.html. Access on September 10th, 2017.

ICMBio. Chico Mendes Institute for Biodiversity Conservation. MMA. **Flona from Brasilia**. Available at: http://www.icmbio.gov.br/portal/images/stories/imgs-unidades- coservacao / flona_brasilia.pdf. Access on August 19th, 2017.

ICMBio. Chico Mendes Institute for Biodiversity Conservation. MMA. **Management Plan. APA of the Descoberto River Basin.** Available at: http://www.icmbio.gov.br/portal/images/stories/docs-planos-de- handling / apa_bacia_do_rio_descoberto_pm_encartes_12_e_3.pdf. Access on August 20th, 2017.

É UM. Conservation Units of Brazil. **APA of the Descoberto River Basin. Legal History.** Available at: https://uc.socioambiental.org/uc/582547. Access on August 19th, 2017.

MaB/UNESCO. The Man and the Biosphere Program. **Reserve of the Cerrado Biosphere**. Available at: http://www.rbma.org.br/mab/unesco_03_rb_cerrado.asp. Access on September 10th, 2017.

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SEGETH. Secretary of State for Territory and Housing Management. **Master Plan of Territorial Planning of the Federal District - PDOT.** Available at: http://www.segeth.df.gov.br/preservacaoo-en-and-planjamento/urbdo/pdot.html. Access on September 3rd, 2017.

Bill no. 104, of October 9th, 2014.ICMBIO. Chico Mendes Institute for Biodiversity Conservation. MMA. Available at: http://www.icmbio.gov.br/portal/images/stories/docsucs/conselhos_consultivos/apa_bacia_d o_rio_descoberto.pdf. Access on September 9th, 2017.

NATURE'S RIGHTS
A NON ANTHROPOCENTRIC INTERPRETATION OF THE BRAZILIAN CONSTITUTION

Flávio Aurélio Nogueira Júnior[1]

ABSTRACT

This study aims to analyze the application of non - anthropocentrism in Brazil, especially in judicial processes, as an ethical theory for the issue of legal entity in Brazilian Environmental Law. The hypothesis is that theories of non-anthropocentrism and anthropocentrism can coexist harmoniously in the Brazilian legal system. The right to exist and protect biodiversity, especially species seriously threatened with extinction, should be considered when dealing with specific cases where conflicts of fundamental rights exist. This is possible because the Brazilian Constitution aceppts special interpretation to protect the environment.

Keywords: Biocentrism. Anthropocentrism. Environmental Law.

1 INTRODUCTION

Countries and international organizations are seeking legal, scientific, social and political means that protect environment[2] and the "Mother Earth"[3] demonstrating that it is not an isolated concern. For the UN, this is the decade of biodiversity.[4]

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[2] "Climate Summit. UNEP. Available in: <http://www.pnuma.org.br/noticias_detalhar.php?id_noticias=1637 > visualized on 09/28/2014

[3] Expression used in RIO + 20 to recognize that the planet is the life support, realizes "the need to restore the health and integrity of the Earth's ecosystems in a holistic and integrated, ie, systemic way. (OLIVEIRA, 211)

[4] The UN launched in 2011 the Strategic Plan for Biodiversity 2011-2020, available at: https://www.cbd.int/2011-2020/ ., Viewed on August 04, 2017.

Several procedures and legal and ethical obstacles, previously insurmountable, are being exceeded in favor of the environment.

Although there is already debate in various parts of the world on the aspects of the recognition of a new type of holistic Diffuse Law, in interpreting Law in relation to "Mother Earth" (OLIVEIRA, 2016), the present work does not expand the study outside the Brazilian legal borders. It will be not able to compare what is happening in other countries, this paper concentrat to a hermeneutic-constitutional analysis based on normative aspects of orde Brazilian tioning. Here, classical anthropocentrism is questioned in a normative aspect, to relate the holistic view, or even of biocentrism, an existentialist ethics that bases a theory that goes beyond simple philosophical understanding.

This existentialist theoretical base stands out in several branches of the sciences, but it is in Brazilian Environmental Law that it begins to create a new conception about legal personality. In solving the issues surrounding environmental matters, the Brazilian magistrates must obey the Federal Constitution whose normatization on the subject is extensive and of a broad and deep hermeneutic charge. Norms and principles of fundamental rights and guarantees are direct sources of law, which suggests, among others, the use of the method of “weighing” constitutional values.

Thus, non-anthropocentric aspects of Law may be used to enforce and guarantee environmental protection, even though there is a “Rule of Law for Nature[5] this right to protect the environment when faced against any right to the dignity of the human being will be brutally mitigated, because, as a rule, in Brazil the environment has been treated as a simple good of moral and material indemnity.[6]

The theoretical construction of a rule of “The state of Ecological Law” still shows utopianism in less developed states such as Brazil, especially if the factual aspects of the social, administrative and political field are observed. Therefore, the

[5] The concepts and differences on the Constitutional State of Law, Rule of Law for nature, among others, will be addressed in item 2 of this article.

[6] An understanding taken from the Federal Supreme Court's judgments, in particular from the ADI 3540 judgment that dealt with the scope of Environmental Law in Brazil and which will be discussed later in this article.

right to exist of the species critically endangered is defended as a way of questioning an initial paradigm shift, the first step towards a dehumanization of the fundamental norm and the recognition of rights to nonhumans. Could be the first aspects of Nature's rights.

2 THE MAN AND THE ENVIRONMENT: AN ETHICAL AND PHILOSOPHICAL CHANGE ALLOWING A BIOCENTRIC PERCEPTION.

In 2016, the CBD reaffirmed that "Mother Earth"[7] is a common expression in various nations used to demonstrate the need to preserve and reclaim the planet that is home to humans. This decision by the CBD recognizes the need for preservation due to the relationship between man and the natural environment. There is a clear overturn throughout history about man's relationship with the natural environment.

From the nineteenth century, the concern with the environment began to be settled in the need to value the natural areas. The idea of preserving the areas considered untouched, wild, or less altered, as a way to compensate for the pollution that was emerging came to be developed. Two opposing views on the way human beings relate to the environment began to manifest themselves: the anthropocentric current, intrinsic to prevailing rationalism, in which man is the center of all existence, and the second, the naturalist (which advocated biocentrism, ecocentrism, or deepecology), in which a relation of respect to nature, of interrelation was preached (BURSZTYN; BURSZTYN, 2012, page 72) was preached.

The official creation of the first natural parks in the world, such as Yellowstone National Park in 1872[8], and the Yosemite National Park in 1890 (BRAGA, 2014) corroborate, in the United States - US, with the emergence of

[7] " Recalling also paragraph 59 of the 2030 Agenda on Sustainable Development, which states that 'we recognize that there are different approaches, visions, models and tools available to each country, in accordance with their national circumstances and priorities, to achieve sustainable development; and we reaffirm that planet Earth and its ecosystems are our common home and that "Mother Earth" is a common expression in a number of countries and regions'. Available at: <https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-03-en.pdf>. Accessed on: 04 October 2018.

[8] NATIONAL PARK SERVICE - YELLOWSTONE. Available at: < http://www.nps.gov/yell/index.htm > Accessed on: 16 Jul. 2016

wildlife protection idea, defending the wilderness(wilderness.net)[9]. At that time, in the USA, among the environmentalists, two currents began to stand out: preservationists and conservationists. The first current linked to naturalism, or conservation of the wilderness, served for the development of biocentrism. The second, argued, among many aspects, the rational exploitation of natural resources, economic rationality and the need to establish adequate bioeconomic rules. (BURSZTYN, BURSZTYN, 2012, page 73).

The classic anthropocentric thinking begins to be rethought, especially among environmentalists. Emerges a vision of man as part of a system in which the most radical current, ecocentrism, which biocentrism is part, becomes to be debated.

Despite this supremacy of anthropocentrism be directly connected to own philosophical rationalism, some historians place in the Christian religion much of the blame. Drummond points out that White, in his work 'The Historical Roots of our Ecological Crisis', concluded that Jewish and Christian religions are in themselves fundamental parts of the contemporary environmental crisis and that in Roderick Nash's The Rights of Nature These statements are due to an interpretation of the Christian religions and Judaism in which man is placed as the center of everything and nature is only to serve it. in a way that these religions treat life on earth as something fleeting that would, therefore, withdraw from man the preoccupation with future generations (DRUMMOND, BARBOSA, 1994).

As opposed to anthropocentrism, among the theories created, biocentrism stands out as a vision of the relation of the human being to nature, since this has

[9] The meaning of wilderness can be understood by the following excerpt from the Wild Life Act: "The Wildlife Act is one of the most successful environmental laws in the United States, in effect for almost 50 years without a substantial change, and as such continues to be the guiding piece of legislation for all areas of wilderness . The Law describes wilderness as follows:
'... Assigned lands for preservation and protection in their natural state ...' Section 2 (a) '... An area where land and its community of life were not degraded by man ...' Section 2 (c) '... An undeveloped Federal land area that retains Influence of primitive character, without permanent improvement or human habitation ...' Section 2 (c) '... In general it seems to have been primarily affected by the forces of nature, with the mark of man's work Almost imperceptible ... 'Section 2 (c)' ... It has excellent opportunities for solitude or a primitive and unconstrained kind of recreation ... 'Section 2 (c)' ... must be dedicated public use purposes of recreation, scenic, scientific, educational, conservation and historical use.

surpassed the barriers of philosophy to branch out in the science of Law.[10] In general, it should be noted that biocentrism for the Burzstyn (2012, p.50) was born with the idea of deep ecology developed in 1973 by Arne Naess. This thought was based on ecosophy (philosophy of existence) and considers that all forms of life, without exception, have the same right to existence.

Thus, the discussion of existence stands out in the biocentric model of relationship between man and nature, since this theory contains a new moral theory, in which Drummond and Barbosa (1994) highlight two main aspects: 1 - The categories nature and culture change of importance, and nature becomes the radiating focus of meaning for the whole. 2 - positive appreciation of nature in its "untouched", "uncultivated" or "wild" fauna, which would be somewhat revolutionary for Western society. At any rate, it can be observed that both Burtzstyn and Burtzstyn and Drummond and Barbosa portray biocentrism as the displacement of the human from the center to part of nature, although the second goes further, since it places biocentrism as a defender of "untouched"[11] , and in this case man is withdrawn from nature itself by being harmful to it. (Bensusan, 2006).

No moving away from presented above, Sonia T. Philip to conceptualize biocentrism identifies three aspects of contemporary ethics:

> (...) anthropocentric, characterized by the emphasis on the possession of reason as a criterion for joining the moral community as a subject of moral rights; the simpocentric one, characterized by the emphasis in the sentience as parameter for entrance in the community of the beings worthy of moral consideration; and finally, the biocentric one, which does not privilege neither rationality nor mental sensitivity, when defining who are the moral subjects, but the good, considered as an inherent value of life, something that ethics must preserve. (FELIPE, 2009, p.15).

Despite the above classification, it is not necessary to argue solely on the necessity of ratio to be a holder of rights. Back to the point of understanding that

[10] It is emphasized that Environmental Law suffers a great interdependence of other Sciences. So much so that Brazilian material law, as will be seen later, has exceeded the limits of the simple juridical construction of its exegesis, when viewed the concepts on protected areas, or the water code, traditional populations put into law, there is no how to dissociate such concepts from Biology, Geography, Natural History, Anthropology, among other sciences.

[11] This term is used, although it does not agree, because some authors defend the inexistence of lands isolated or untouched by the

every biotic and abiotic element would have its own value, Environmental Law began to question the possibility of nature being a person of law, no longer a mere object. The construction of this understanding could also be understood from the development of the concepts of classical Anglo-Saxon liberalism as something cogent, a scale of evolution in human thought. The commoners, the slaves, the blacks, the women, these became the holders of rights, they began to have personality, although in history they were compared to objects. In this regard, by granting certain recognition[12] to "legal objects", animals, trees, etc., could become holders of rights. This line of thought is brought by Drumond and Barbosa (1994, pp. 272-273):

> It is almost impossible to disagree with Nash's reading of biocentrism as an extreme evolution of classical liberalism. (..)
>
> Progressively, across centuries, he included in the list of rights-holders "minority" groups previously excluded, tacitly or explicitly: urban and rural workers, illiterates, ethnic groups (blacks, indigenous people), women and young people. according to Nash's sharp analysis, is to extend the natural rights of classical liberalism to the elements of the natural world (DRUMOND, BARBOSA, 1994, pp. 272/273).

The recognition of nature as the holder of the right was defended, from the 20th Century, in 1915, by the lawyer Hyde Bailey, for whom there is a need to recognize an ethical attitude to everything on Planet Earth. In this same step, John Muir (1917) and Aldo Leopold (1949), when considering the need to recognize the right of the *Wilderness*, the untouched landscapes, to remain without the interference of the human being (FITZSIMMONS, 1999, 115).

As can be observed, the non-anthropocentric model served to rethink ethics, especially in Law. In spite of not being an ethical model of valuation, the view of the Law must suit the environmental revolution, which, unlike Sachs (2009, p. 48), which had the consequence of a change in thinking about development, there must be a change in the vision of the human being as part of the world.

[12] We do not want to deal here with the right to recognition used by Honeth (2011), because it is obvious that he also deals with the internal recognition of the human being himself. However, a parallel can be drawn to how the author demonstrates the need for certain social groups to cease to be treated as objects to be treated with personality, so that they can enjoy the rights inherent in the dignity of the human being, life.

Using this holistic view, the UN General Assembly proclaimed April 22 as the "*Mother Earth*" day from 2009, encouraging a discourse program called *"Harmony with Nature"*[13]. transfers to the law a need to distance anthropocentrism, within the ethical concepts analyzed, the responsibility to influence the subjects of law within the Environmental Law.

Finally, as we shall see below, the present work does not deal with a philosophical concept, but with a practical translation for constitutional interpretations in the Brazilian legal system, using as a bias the historical excuse of the already existing construction of an ethical philosophy on biocentrism: the right to exist for species threatened with extinction, as a way of protecting biodiversity.

3 ENVIRONMENTAL LAW IN BRAZIL AND THE PRESSING NEED FOR BIOCENTRISM TO PROTECT BIODIVERSITY

Law is a "fundamental science to drive paradigm shifts," yet it is not used as it should, as the defenders of environment get more attached to technological innovations, social and economic adjustments, forgetting government programs. It is in this context of understanding the Law more in practical rather than theoretical aspects that biocentrism is presented in this work, not as philosophy, but within the understanding that "law is not only a mechanism for conflict resolution, but also a powerful instrument for inducing social change "(ARAGÃO, 2017, 28).

Leaving aside the philosophy and considering the constitutional interpretation of environmental protection, this as constitutional value, fundamental rule. Especially with the influence, in modern law, of recognizing the need to change the posture of the application of environmental laws, it is possible the right to guarantee a posture of greater protection, to the point of identifying the precepts of the law of "mother earth" already included in our planning.

[13] The program " Harmony with Nature "is available at: http://www.harmonywithnatureun.org

3.1 From "state of law" for the "law for nature": neo-constitutionalism and the constitutionalisation of law

Modern constitutionalism arose from the idea around to overcome the absolute power of the State and guarantee the fundamental rights of its citizens[14]. There is, therefore, from the constitutionalism a social order of respect to the norm. In Brazil, several factors and theories were added and used in the process of building the concept of constitutionalism used here, especially in the process of recognition of the Constitution of 1988 as a fundamental rule of full effectiveness and application. Theories, such as that of constitutionalism of effectiveness, the "affirmation of the normativity of the Constitution ..." or even of the directive constitution, helped "to overcome a pre-existing theoretical common sense, which saw the Constitution more as a rhetorical proclamation than as a legal norm "(SOUZA NETO, SARMENTO, 2016, p 198).

By positioning ourselves in this article, we see that Brazil has evolved into a State of law, seen as "a virtue or moral quality present in some legal systems which establish a legitimate way to proceed in the use and application of legal norms." (GALVÃO, 2014, p.309). In addition, the most recent constitutional models, especially the Brazilian ones, have elevated environmental protection to the category of a fundamental right, on an equilibrium, or above property right, by the formula of the fundamental right for ecologically balanced environment, (Benjamim, 2011, p. 132). Sarlet (2011) argues that protection of the environment has evolved within the model of contemporary Law State and has made the Social State becomes a Socio-environmental State, in which society undertakes not only environmental stabilization, but also prevention with the framework of risks and environmental degradation.

There is no way to discard from this evolution of Constitutional Law, notably in Brazil, a growing appreciation of Environmental Law, due to a worldwide flow of paradigm change on the protection of the fundamental rights of human dignity, seen in its social and environmental aspects. It is interesting to note that there are several

[14] "(...) as a way of overcoming the Absolutist State, where the monarchs were not subject to the law" (SOUZA NETO; SARMENTO, 2016, p. 72)

approaches to this evolution of Environmental Law. There is the defense of the Ecological State of Anthropocene Law (ARAGÃO, 2017), in which a general obligation of all juridical actors of that State must be recognized to contribute to a result of maintaining planetary limits.[15]

Regarding the structure of a State of Environmental Law, it should be recognized after the establishment of the Democratic State of Law, which requires greater participation of society in the discussion of matters involving structural aspects of the human condition, such as nuclear energy. (KRELL, 2017). In addition, the idea defended is based on developed states, in which the basic question is no longer based on social aspects of the human being, so that the idea of the environment can be seen more effectively.

Under these conditions, it is emphasized that in Brazil social rights are not even respected, so there would not be a purely environmental State of Law, there must be an idea of a Social-Environmental State, since "The challenge lies precisely in the convergence of social agendas and ecological approach to a unified legal-political project towards sustainable human development. "(KRELL, 2017, 45). In this context, it could be said that "the value of the State of Environmental Law preponderantly occurs as theoretical construction, which projects itself in the real world still as becoming " (Morato, 2007, p. 148)

The "State of Environmental Law is a theory that arises from an understanding and criticism of modern environmental degradation and the modern state. Thus, the State becomes responsible for the conservation of the environment and the protection of the planet "by means of specific duties; and a change of rationality and attitudes, seeking to raise awareness through the empowerment and institutionalization of policies of respect nature "(BETTEGA, MORATO LEITE, SILVEIRA, 2017, p. 68). In order to conceive of this theory, an ethical change is already necessary, in which "awareness of the intrinsic value of nature, independently of its usefulness or of human value attributed, in the adoption of a biocentric ethics" (BETTEGA, MORATO LEITE, SILVEIRA, 2017, p. 68). It is

[15] For a better understanding of the topic see: ARAGON, Alexandra. ECOLOGICAL RULE OF LAW IN Anthropocene AND LIMITS OF THE PLANET.

interesting to note that the authors affirm that, at this point, the biocentric character does not go beyond the simple recognition that man is part of something greater, of a system, therefore, because he belongs and depends on it, he must be responsible for the conservation of nature.

In any case, although solid theories have been constructed over the last decades on the evolution of the State of Environmental Law, where environmental protection is viewed under the aspect of fundamental right, there is no way of overcoming the factual aspect, especially with the aggravation of environmental challenges. (BETTEGA, MORATO LEITE, SILVEIRA, 2017).

The purely theoretical discussion served to rearrange legal understandings on the protection of the environment, but when confronted with the practical part, the facts, it cannot advance the necessary, especially in relation to the speed of degradation of the environment. It is in this context that some academics defend the need to evolve from the current State of Law to the "Law for Nature". According to Bettega, Morato and Silveria, when analyzing Bugge, three points must necessarily be modified and strengthened: "the dominant values of economic growth and resource consumption, the way nature is treated (ethical dimension)," and the discrepancy between the ideal (established in political rhetoric, environmental objectives and legislations) and reality. " (BETTEGA, MORATO LEITE, SILVEIRA, 2017, p. 70 and 71).

In almost all the perspectives previously presented on the theories in which greater protection for the environment is defended, the reallocation of the role of man as centre, the anthropocentrism, is discussed. So much so that, to strengthen or revise the theory of the traditional state of law, or the environmental one, to the Law for nature, one must first "strengthen its biocentric character by incorporating new understandings arising from the challenges of the era of the Anthropocene. "(BETTEGA, MORATO LEITE, SILVEIRA, 2017, 83).

In any case, this phase of recognition of the constitutional text as an effective and enforceable norm has been superseded and the construction of several stages of the State of law has taken shape. The constitutionalism has evolved in Brazil for what can be considered as post-positivism, or neoconstitucionalism. This new model

can be summarized by some aspects: the legal principles are now valued in the law enforcement process, to be recognized as legal force; formalism shall be replaced by the more open methods; there is what can be considered as "constitutionalization of law, with the irradiation of constitutional rules and values, especially those related to fundamental rights, for all branches of legal order;" Law and Moral come together again; Finally, there is the "judicialization of politics and social relations" in the latter case the judiciary begins to exercise many of the functions of the other branches. (Souza Neto; SARMENTO, 2016, p. 198).

In this respect, recognizing the potential of the judicialization of social politics as a way of protecting the environment, and the need to strengthen biocentrism, we should, before highlighting global aspects, seek to understand Brazilian's problems, especially the notions for practical application of legal protection and interpretation of constitutional rights and conflict solutions which involving constitutional values, as will be suggested next, under aspect of the new vision of neoconstitucionalism.

3.2 The Biocentrism: a simple matter of pondering of constitutional values.

The Supreme Court of Brazil, in the trial of constitutional action 3540 (ADI), scanned the subject of recognition of guarantees and intrinsic fundamental rights to environmental protection and others constitutional principles, in particular, dealt with the constitutional right to protection of the environment of the article 225 of the Constitution and the constitutionality of norms, which in theory, limit protection areas. Interestingly, many principles, concepts and fundamentals are extracted by the Constitutional Court of the fundamental rule, the main trial content can be summarized in the following excerpt:

> (...) Everyone has the right to an ecologically balanced environment. This is a typical right of third generation (or brand new dimension), which assists the entire mankind (RTJ 158 / 205-206). It is up to the State and the community itself, a special duty to defend and preserve, for the benefit of present and future generations, this right of collective ownership and transindividual character (RTJ 164 / 158-161). The due performance of this charge, which is indispensable, is the guarantee that do not put in place, in the collective bosom,

serious intergenerational conflict marked by disregard for the duty of solidarity, that everyone is needed on protection of this essential good of common use of people in general. Doctrine. The ECONOMIC ACTIVITY CAN NOT BE EXERCISED IN MISMATCH WITH THE PRINCIPLES FOR A BECOME EFFECTIVE PROTECTION TO THE ENVIRONMENT. - The safety of the environment can not be compromised by corporate interests do not become dependent on purely economic nature of motivations, especially if you have in mind that the economic activity, considered the constitutional discipline that governs, is subject, among other general principles, to that which favors the "environmental protection" (CF, art. 170, VI), which translates broad and comprehensive concept of the concepts of the natural environment, cultural environment, the artificial environment (urban areas) and environmental labor. Doctrine. The legal instruments legal character and constitutional aim to enable the effective protection of the environment, so it does not alter the properties and attributes that are inherent, which would cause unacceptably compromising the health, safety, culture, work and well- being of the population and cause serious ecological damage to the environmental heritage, considered this in its physical or natural. THE QUESTION OF NATIONAL DEVELOPMENT (. CF, ART 3, II) AND PRESERVATION OF NEED ENVIRONMENTAL INTEGRITY (CF, ART 225.): DEVELOPMENT OF THE PRINCIPLE OF SUSTAINABLE AS FAIR BALANCE OBTAINING FACTOR BETWEEN THE ECONOMIC REQUIREMENTS AND THE ECOLOGY. - The principle of sustainable development, and eminently constitutional character impregnated, is supported legitimizing international commitments made by the Brazilian government and is factor of getting the right balance between the demands of the economy and the ecology, subject, however, the invocation this postulate, when occurring conflict situation between relevant constitutional values, to an unremovable condition, compliance with which does not compromise or empty the essence of one of the most significant fundamental rights: the right to preservation of the environment, which reflects the common use most people, to be safeguarded for the benefit of present and future generations. ART. 4 OF FOREST CODE AND PROVISIONAL MEASURE No. 2166-67 / 2001: A BREAKTHROUGH IN SIGNIFICANT PROTECTION OF PERMANENT PRESERVATION AREAS. - The Provisional Measure No. 2166-67 of 24/08/2001, to the extent that introduced significant changes in the art. 4 of the Forest Code, far from compromising the constitutional values enshrined in art. 225 of the Basic Law, established, on the contrary, mechanisms that allow a real control by the State of activities within the areas of permanent preservation, in order to prevent predatory actions and harmful to the environmental heritage, whose most vulnerable complains protection more intense, now made possible, appropriate and compatible with the constitutional text mode, the legislative instrument in question.

> - Only the change and the deletion of the relevant legal regime for specially protected territorial spaces are eligible, the effect of art entered in clause. 225, § 1, III, of the Constitution as matters subject to the principle of legal reserve. - Is it lawful for the Government - whatever the institutional dimension in that position in the federal structure (Union, States, Federal District and Municipalities) - to authorize, license or permit the execution of works and / or performance of services in the framework of territorial spaces especially protected, since in addition to the restrictions, limitations and requirements abstractly established by law, result not compromised the integrity of the attributes which justified in relation to such territories, the legal framework for the establishment of special protection (CF, art. 225, § 1, III).[16] (**emphasis added**)

As can be seen, the Supreme Court recognized as one of the most significant fundamental rights, 3rd generation rights, the environmental protection, "which translates common use of most people to be safeguarded for the benefit of present and future generations. " in other words, makes it clear that this protection right is related to a legal good. The Court understands that the Brazilian legal system treats the environment as an object, because of the wording of art. 225[17] of the Federal Constitution by providing that the environment is "good of common use." This finding, although initially obvious, it is not. Moreover, this perception of the environment guides the conduct of the judge in the application of the fundamental right in resolution of a dispute.

As stated previously, in Brazil over the past few years there has been a kind of evolution of constitutional law, the development of a neoconstitutionalism and a consequent “constitutionalization of law”. In this context, as a rule, it uses the pondering, which is a form of constitutional interpretation when there are conflicting values. For Souza Neto and Sarmento (2016), in a democracy, the legislature is the first to make this consideration, when examining the requirements of the standards and the existing constitutional values, but on the day to day, when there are several situations that public officials of the administration will be forced to pondering constitutional values.

[16] (ADI MC 3540, Rapporteur (a): Min. CELSO DE MELLO, Full Court, judged on 01/09/2005, DJ 03-02-2006 PP-00014 ement VOL-02219-03 PP-00528)

[17] art. 225 of the Constitution reads as follows: All (Everyone) has the right to an ecologically balanced environment and of common use and essential to a healthy quality of life, imposing to the Government and the community shall have the duty to defend it and preserved it for present and future generations.

However, due to the large number of principles, fundamental rights and other constitutional values are being discussed directly in virtually all of the common relations, "the trend of pondering the right casuistry raises some questions as it increases the risk of judicial arbitrariness, and harm the predictability of law, undermining the legal certainty of the citizen. " (Souza Neto, SARMENTO, 2016, p. 521).

Souza Neto and Sarmento (2016, p. 523) propose an intermediate solution, which is not nearly as open to the interpreter and as little strictly formalist, understanding that the balance is a "necessary evil". It presents some tools to be used by judges. The first is the "determination of parameters for the measurement, which are likely to universal, that is, application to comparable cases. (...) it is important because it reduces the risk of judicial discretion, "(2016, p. 523). The second instrument pointed out by the authors is directed to the judicial consideration, dismisses many generic the arguments that can not justify or clarify the reasons to give more weight to an interest on the other, that is, "there must be an additional concern with the motivation of judged that must be transparent, and very careful use in technical uses. "(2016, p. 523). The third is respect to the other branches of government, is to avoid judicial activism when already done by other political institutions, only in cases of serious errors is that it could interfere with justice, seeks a self-restraint of the judiciary. For the authors, the weight and the rule of law itself restricts the functions of the magistrate. Both neoconstitutionalism advocates as critics point out the need for some measures to curb arbitrary decisions.

Moreover, "the setting of parameters is extremely important for consideration by reducing the risk of error and judicial discretion, increase the predictability of decisions in favor of legal certainty, and save time and energy of legal professionals in future cases." (Souza Neto; SARMENTO, 2016, p 526).. The authors highlight three types of parameters: a) the rules have preferences on the principles; b) must be differentiated norms establishing fundamental rights of others, those have preferences over these; c) there is a kind of preventive scheduling between the fundamental rights, the existence, those related to democracy, and life takes precedence over the merely patrimonial or economic content.

Such notes on weight if they do need to show that just not try to impose theories on the evolution of law, recognizing the evolution of the need to protect the environment, without an ethical shift, as the position of that value. Almost all rights today are regarded as constitutional, at least in Brazil. As can be seen, no matter who defend the lack of a fundamental rights scheduling when there is a conflict between them, the right to life and existence has precedence over the merely economic or equity. In other words, as a rule, on a balance of constitutional values, everything that involves the dignity of the human person, in theory, they take precedence over legal interests.

Thus, in order to focus more on the fundamental right to protection of the ecologically balanced environment, Benjamin (2011, p. 132), this right is not limited by Article 225 of de Constitution of Brazil, but reappears in the constitution, in the "green" function of society in the protection of life, health. Moreover, the word "all" contained in Article 225, the author believes that should give an interpretation "arising from the holistic and universalist vision of the environment, [...]". This recognition of the holistic theory is seen discreetly and on some prisms. The expansion he proposes is, initially, only that the fundamental rights must be recognized to any person in the world, not only to Brazilians. (Benjamin 2011, p. 133). However, after weaving the reviews on this first holistic behavior, the author discusses the position of biocentrism within the Federal Constitution and sets this initial view. For the author, Article 225 of the CF / 88, unlike Article 5, has only the word "all", instead of using 'every human being ", which would give rise to the interpretation of the word" all "as" all living beings "(Benjamin 2011, p. 133).

Interestingly, Benjamin (2011, p. 134) at the end makes it clear that at the moment the word "all" does not pierces the anthropocentric character, for the ethical foundations of environmental protection still have not overcome the anthropocentric ethic of Brazilian society to the point of be raised to constitutional level that thought. However, such a view did not prevent be on forms of a "biocentrism mitigated."

The prevailing dualism in the Constitution as advocated by Benjamin (2011, p. 136) was very well thought out in that article, which requires the transcription of a stretch for better understanding:

> The truth is that the Constitution, just to insert in time to overcome paradigms, rests at once in anthropocentric, biocentric and ecocentric to standards. Before taking the "unreasonable conclusions", such a stance is in perfect harmony with the scientific knowledge of nature and its elements.
>
> The (mitigated) constitutional anthropocentrism 1988 coexists with expressions of unequivocal biocentrism and ecocentrism brings symbol equity or intergereacional solidarity on, umbilical so, it Konder Comparato calls the "community civilization." Just understanding that "this approach, while important, is not enough to understand yourself and accept the promotion of the environment as a fundamental legal right.", The constituent did soak in the text of the Constitution, clearly endowed with membership devices not anthropocentric. (BENJAMIN, 2011, 136)
>
> (...)
>
> In other words, the constituent drew a anthropocentric membership rights regime temporarily mitigates (also conferred entitlement to future generations), trailer, surprisingly, a bundle of obligations to beneficiaries beyond, far beyond, the reduced sphere of what what is called humanity. If you are sure you do not get, by the direct route, assign rights to nature, the constitutional legislator did not hesitate to her to recognize intrinsic value, ruling duties to be charged from the subject-human in favor of biotic and abiotic elements that make up the foundations of life. One way or another, the paradigm of man as *prius* is irreversibly cracked. (BENJAMIN, 2011, 136/137)

The transcribed is consistent with the new ethic of environmental protection. Anyway, you can go beyond in Brazil, could some interpretations are already surpassing the barrier of anthropocentrism to a biocentrism, when faced with the need biodiversity protection, especially when involving endangered species extinction.

This new phase, could be seen as an evolution scale that could even surpass the theory of Law for Nature. In a first step, the fundamental rights inherent in the dignity of "human being"[18], such as the right to decent home, culture, were being

[18] According to Queiroz (2009), the fundamental right expression when it appeared simply served to recognize the rights of the human being, such rights as natural. So it could also be seen, the fundamental right of the plants, for example, when they recognize the right of existence of other living beings, or the wilderness, so the quotes). The fundamental rights expression appeared in the German constitution approved in the Church of St. Paul in Frankfurt, in 1848. There, in effect, in accordance with the provisions of Article IV / § 25, we proceeded to the establishment of a list of "fundamental rights German People "(Grundrechte des deutschen Volkes). The "fundamental" qualifying intended to emphasizes the character of "recognition" and not the "creation" of rights by the State.

suppressed in favor of the right of the wilderness, or the unspoiled nature in Brazil represented by protected areas integral in which the human presence is prohibited, such as biological reserves. In other words, using a legal logic construction, fundamental right, as in antinomy with other constitutional norms, is placed on a pedestal overlapping infraconstitucional rules, so could only be mitigated, not suppressed, for other fundamental right (MARTINS; DIMOULIS, 2012). Also in this context, for example, removing traditional populations according to Law 9.985, of 2000, after the creation of an integral protection area, is indirectly the application, although timid, of biocentrism in Brazil.[19]

Despite defend the application of biocentrism in the Brazilian legal system, this can not be juxtaposed obligatory, it is salutary a balanced relationship between anthropocentrism and biocentrism looking for a holistic view in which the planet should be a whole and the human being must be immersed in the system, because of its repair liability. Biocentrism mitigated, as advocated by Benjamin should germinate in Brazil. Some authors believe that the "new order"(PEDRO, 2014)[20] would be installed in the ideals of the prosecutors and the judges who prolate decisions denying fundamental rights in favor of nature. For these, the environmental standards are undergoing a process of dehumanization and criticize the use of administrative dishonesty action, in which the prosecutor would be dehumanizing standards by applying a biocentrist theory, without preserving the human being, just by looking at the dogma of law.

In this step, without much deepening in the concepts and varied anthropocentric and biocentric currents, it can be seen that in Brazil, both the infraconstitutional norms and the Constitution already have a biocentric ethical load, resulting from the concepts included in the norms, or even from the own practice. Thus, it cannot be ignored that the biocentric theory became part, although diluted, or indirectly, of the Brazilian legal system when faced by the jurist with concrete cases that involve environmental protection.

[19] As occurred, for example, in the creation of PARNA JAÚ, judicial process 2004.32.00.001762-9, in which the judge of the 3rd Federal Civil Court of Amazonas recognized moral and material damages to the families that were relocated from the Jaú National Park

[20] Available at: http://www.conjur.com.br/2013-abr-03/pinheiro-pedro-ordem-biocentrista-transforma-regra-dogma >. Accessed on 06 MAR 2017.

Otherwise, as one might understand, for example, that the simple discovery of an endangered species endemic to a region, a small frog, could suspend the construction of a work to meet the needs of a large number of people. As a concrete case, in order to study the impact of the construction of the BR-101 on frogs in danger of extinction, the entire construction of the highway was embargoed for six months until environmental impact studies could demonstrate that they would not suffer with the creation of the highway.[21] Another example is the public civil action lawsuit requiring the suspension of construction of a hydroelectric plant because it could affect an area of "*extremely high relevance for biodiversity conservation."*[22]

If these examples were not enough, it is important to emphasize that the theme addressed in this article is very important nowdays. In the last 10 years, the discussions and the evolution of the construction of non-anthropocentric thinking has grown rapidly in the international community. The Federal Constitution of Ecuador in 2008, for example, became clear about a Law of Nature.[23] (ECUADOR, 2008, 55). Several other countries have begun to legislate or discuss in-house about the possibility of Nature, biotic and abiotic beings becoming law-holders.[24] It is from 2009 that the UN really starts a program to discuss the Law of Nature in the internal

[21] The news can be seen at the following websites: http://zh.clicrbs.com.br/rs/noticias/economia/noticia/2013/04/animal-raro-emperra-construcao-de-usina-no- vale-do-taquari-4110032.html
https://noticias.terra.com.br/ciencia/animais/especie-rara-de-sapo-im-instalacao-de-hidreletrica-no-rs,595d746d63d1e310VgnVCM20000099cceb0aRCRD.html

[22] The news, with the case number and copy of the petition can be accessed at the following site: http://conflitosambientaismg.lcc.ufmg.br/noticias/ministerio-publico-federal-entrou-coma-aca-civil -publica-contra-o-licensing-hydro-power-plant-of-san-manoel /

[23] In Art. 71 e 72 the Constitution of Ecuador has norms about nature's rights: Art. 71.- La naturaleza o Pacha Mama, donde se reproduce y realiza la vida, tiene derecho a que se respete integralmente su existencia y el mantenimiento y regeneración de sus ciclos vitales, estructura, funciones y procesos evolutivos. Toda persona, comunidad, pueblo o nacionalidad podrá exigir a la autoridad pública el cumplimiento de los derechos de la naturaleza. Para aplicar e interpretar estos derechos se observarán los principios establecidos en la Constitución, en lo que proceda. El Estado incentivará a las personas naturales y jurídicas, y a los colectivos, para que protejan la naturaleza, y promoverá el respeto a todos los elementos que forman un ecosistema.
Art. 72.- La naturaleza tiene derecho a la restauración. Esta restauración será independiente de la obligación que tienen el Estado y las personas naturales o jurídicas de indemnizar a los individuos y colectivos que dependan de los sistemas naturales afectados. En los casos de impacto ambiental grave o permanente, incluidos los ocasionados por la explotación de los recursos naturales no renovables, el Estado establecerá los mecanismos más eficaces para alcanzar.

[24] The UN will make available a list of already approved laws of several countries in which the Nature Law is recognized, in the design of the " Harmony with Nature "at the site: http://www.harmonywithnatureun.org/rightsOfNature/

legislations of the countries, the landmark is the approval by the UN General Assembly of April 22 as the day of *"Mother Earth"*.[25]

Interestingly, the UN considers as only the laws that expressly provide for somehow "*Harmony with Nature"*. There are on that list the Federal Constitution of Brazil, a country which came into force the Convention on biological diversity in 1998[26], so the standards set in the Convention are internal and cogent application and should be used in harmony with the Constitution. For these reasons, in Brazil it is necessary to overcome the understanding that biocentrism is "mitigated" and to give more protection to its biodiversity, especially to endangered species.

What is defended in this article is an ethical change of position to seek to recognize, as seen in the case of frogs, that a species threatened with extinction can be seen as having the right to exist, through non-anthropocentric constitutional interpretation of the caput and of items II and VII of § 1 of art. 225[27] of the CF and the standards of the CBD.

The right to exist of a species in extinction is something more palatable and evident in the eyes of the ordinary man, although existent social problems as is the case of Brazil. It is observed that when considering the endangered species only as goods, it is being condemned with the possibility of materially and morally indemnifying the human being and future generations for the extinction of these species, which clearly is not. In addition, in the consideration of constitutional values, when confronting the magistrate with conflicts in which on one side is the existence of a whole species and a highway, or an electric power plant, the option for the first has been verified, which demonstrates an open path for the recognition of the right of a species to exist, of biocentrism.

[25] http://www.harmonywithnatureun.org/rightsOfNature/

[26] Published in Brasil: DECRETO Nº 2.519, de 16 de março de 1998.

[27] CF / 1988: Art. 225. All has the right to an ecologically balanced environment, a common use of the people and essential to a healthy quality of life, imposing on the Government and the community the duty to defend and preserve it for present and future generations.
Paragraph 1 In order to ensure the effectiveness of this right, it is incumbent upon the Public Power: (...)
II - Preserve the diversity and integrity of the genetic heritage of the country and supervise the entities dedicated to the research and manipulation of genetic material; (...)
VII - protect fauna and flora, prohibited by law, practices that jeopardize their ecological function, cause extinction of species or subject animals to cruelty.

In any case, there must be a more abrupt change in the position of lawyers, law enforcers, prosecutors, and society at large. Even, to defend a modification in the Law. There needs to be an evolution of Brazilian thinking and vision about environmental protectionist ethics. It urges this work against the slowness, especially, of Brazilian jurists to evolve in the ethical thinking of environmental protection, to affirm that it is possible to use a hermeneutics applied to constitutional and environmental norms within a biocentric perspective that subsumes classic anthropocentrism.

4 CONCLUSION

Returning to the initial reflections, it is observed that the human being passed from a social order in which the natural environment, that is, the nature had a spiritual value that was intertwined with a healthy dependence of exchange of experiences for, from the century, a classic anthropocentric view that nature would be no more than an object of consumption, of domination, for the fulfillment of all its needs, whether essential or not.

Nowadays, as of the twentieth century, the emergence of a global concern with the environment. Due to the global environmental crisis which, confronting man with the possibility of his own end, the human being has a concern for the environment that goes beyond his own well-being. It was restored- the need to transport to environmental protection its own ethics, highlighting the biocentrism. This thought came to be used in Environmental Law as a way of giving greater protection to the natural environment.

It can be stated, after what was discussed in this paper, that Brazil is ahead of many countries for having included in its constitutional text notions of biocentrism. The anthropocentrism evolved to increase the protection of the environment to a constitutional level, ensuring an ecologically balanced environment as a fundamental right in a constitution, at least considered for interpretation, in a democratic state of environmental law. On the other hand, biocentrism contributes to opposing the fundamental rights of human beings when used in a way that excludes protection of the environment. It could even be said that other beings living beings

formed by biotic and abiotic communities became subjects in Environmental Law, and their rights to exist protected, especially when considered as endangered species.

Having said that, it is concluded that anthropocentric and biocentric theories can and should be employed in Brazil. In any case, it is especially the legal community to make this evolution in the application of the techniques of hermeneutics within the norms of Environmental and Constitutional Law.

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PARADIGM OF THE SOCIETY OF RISK AND THE CHALLENGES FOR PREVENTION OF ENVIRONMENTAL DAMAGES
THE DISASTER IN MARIANA /MG in 2015

Jacqueline Maria Cavalcante da Silva[1]

ABSTRACT

The main objective of this study is to understand, based on the doctrine, the norms and in the specific case cited, the operation of the institutional arrangements intended to concretize the prevention of environmental damage in the Brazilian State, focusing on the mining tailings dams.

1 INTRODUCTION

Ulrick Beck's point of view was that in 1986 he was taking the position that current risks are not characteristic of the industrial period, nor the invention of modernity, or the personal risks of the time of the great discoveries with their connotation of bravery and adventure, they threaten the self- destruction of every form of life on earth and can be defined as a systematic way of dealing with the dangers and insecurities introduced by modernization. Some people are more affected than others by the distribution and growth of risks, but in general they are all affected. (BECK, 1986). In Brazil, a recent example of the situation arising from the risks of modernity was the disaster involving the dismantling of the Fundão dam, in Mariana, State of Minas Gerais.

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Brazil has 449 (four hundred and forty-nine) mining dams inserted in the National Policy on Dams Safety (PNSB)[2], of which 220 (two hundred and twenty), corresponding to 49%, located in the State of Minas Gerais. (BRAZIL, DNPM, 2016). The following are some of the disasters in that state, caused by tailings dams:

Location	Dam	Year	Ode to death	Examples of relevant damage
Nova Lima/ MG	Verde Rivertailings dam	2001	5 mining workers	i) Leak age of 600,000 m3 of tailings causing: - siltation of 6.4 km and contamination of Taquara stream water; - destruction of approximately 80 hectares of Atlantic Forest; - disruption of a water pipeline from the Minas Gerais Sanitation Company (COPASA).
Cataguases/ MG	Pomba River paper industry tailings dam	2003	-	i) Liberation in the tortoise stream and the PombaRiver, a tributary of the Paraíba do Sul River, about 1.4 billion liters of lye (black liquor), an industrial surplus of pulp production; ii) Three States are affected; iii) The supply of water is interrupted to 600 thousand people.
Miraí/MG	São Francisco Waste water Dam, owned by Mineração Rio Pomba	2007	-	2 million m3 of wastes were dumped: i) impact on the Fubá stream, the BomJardim stream and the MuriaéRiver, a tributary of Paraíba do Sul, with flooding of the municipalities of Miraí and Muriaé ii) 1,200 houses affected iii) 4 thousands people evicted
Itabirito/MG	Herculano Mineração ore tailings dam	2014	3 company employees	i) water contamination ii) sedimentation of streams and rivers
Mariana/MG	Tailings dam from Fundão, used by the company Samarco Mineração S.A.	2015	19 people, between residents and employees of the company	i) 663.2 km of directly impacted water bodies: • total or partial interruption of the water supply of 12 cities that capture water directly from the

[2] It should be noted that there are 390 structures that are not included in the PNSB. (BRAZIL, DNPM, 2016).

				DoceRiver, affecting an estimated population of 424,000 people; • 143 water abstractions granted by ANA may have been impacted, being 88 for industrial purposes, 46 for irrigation purposes, 3 for breeding animals, and 6 for other uses; ii) extension of environmental damage to the states of Espírito Santo and Bahia; iii) in Bento Rodrigues, an area adjacent to the dam, in 12 seconds about 80% of its 257 buildings were destroyed.

Source: Several[3]

Globally, according to Azam and Li (2010), of 20 disasters involving tailings dams, occurred after 2000, Europe together with Asia account for 60%, attributed the decline in relation to North America, South America, Africa and Australia to the improvement of engineering practice. Despite this data, in Brazil, as it happens, this type of disaster has occurred with average frequency of a case every three years, evidencing the fragility or insufficiency of preventive actions, which require improvement to increase effectiveness.

The disaster in Mariana/MG, on November 5th, 2015, classified as "very large" (BRAZIL, IBAMA, 2015), occurred through the rupture of the Fundão Dam, used by the company SamarcoMineração SA, whose share control is divided equally between BHP Billiton BrasilLtda and Vale SA, and operates in low-grade open-pit iron ore, with activities concentrated in two municipalities: i) Mariana/MG, where the Germano and Alegria and the concentration plant; ii) Anchieta, in the State of Espírito Santo, a town located at the mouth of the BeneventeRiver, where one of the largest mangrove swamps in the state is located, where the pellet plant and the Ponta do Ubu maritime terminal are located. Samarco's mineral reserves total 2.3 billion metric tons of itabirite iron ore, which exports mainly to Europe, Asia, Oceania, the Middle East, Latin America and North America (TAVEIRA, 1997). In 2015, the third in the list of the largest iron producing companies in Brazil, accounting for

[3] i) Municipalities Nova Lima, Cataguases Miraí and Itabirito, from Minas Gerais: BRAZIL, ANA, 2015; ii) Mariana/MG: BRASIL, IBAMA, 2015; BRAZIL, ANA, 2015; and BRANCO, 2016.

3.98% of the total value of the commercialization of the production of this mineral[4]. (BRAZIL, DNPM, 2016).

The three companies signed with the Federal Government, the states of Minas Gerais and Espirito Santo and other environmental bodies/entities, on March 2nd, 2016, the Transaction and Conduct Adjustment Agreement (TTAC), ratified by the courts, on March 16th, 2017, with a provision of R $ 2,200,000,000.00 (two billion and two hundred million reais) in court as security. The compromisers recognize several social and environmental impacts resulting from the disaster, as follows: i) impact of habitats and fish fauna along the Gualaxo River, Carmo River and DoceRiver, covering 680 km of rivers; ii) impact on estuaries and mangroves in the mouth of DoceRiver; iii) impact on the state of conservation of species already listed as threatened and entry of new species as threatened; iv) impairment of the fish stock, with an impact on fishing; v) impact on the way of life of indigenous peoples, riverine, estuarine, and other traditional populations; and vi) impacts on Conservation Units. (BRAZIL, IBAMA, 2016). It is worth noting the incidence of a daily fine on the company for noncompliance with this TTAC, regarding the cleaning and removal of the wastes deposited in the reservoir of the Risoleta Neves Hydroelectric, known as Candonga. (BRAZIL, IBAMA, 2016).

2 THE BIODIVERSITY

The “National Strategy and Plan of Action for Biodiversity (NBSAP) - 2016 to 2020”, authored by the Ministry of the Environment (MMA), is part of the action “Support for the development and implementation of the tool for analysis of financial risk in investments and financing related to natural capital”, which is relevant to the case under study for dealing with the problem of natural capital risk, with a focus on the private sector. In order to carry out this action, the National Confederation of Industry (CNI) is foreseen as a possible partner and has two objectives: i) to provide elements so that financial decision makers, both in companies and in the financial sector, can formally and explicitly consider the risks

[4] Total value exported by the country in 2015: 14,076,103,623 (values in US dollars [US$ - FOB]). (BRAZIL, DNPM, 2016, page 15).

associated with natural resources and ecosystem services in their processes of risk identification, analysis and evaluation; and ii) provide subsidies for reflections on public policies of command and control and economic incentives in Brazil for the incorporation of natural resources and ecosystem services in the decision-making processes in the private sector. (BRAZIL, MMA, 2016).

3 APPLICABILITY OF LAWS AND REGULATIONS

The Brazilian Constitution recognized the strategic character of mining for the economy and the country's security, hence the determination in subsection IX of Article 20 that mineral resources are the Federal Government's assets, and also the establishment in Paragraph 1 of Article 176 that it is an activity of national interest. On the other hand, it provides in Article 170, subsection VI and Article 225, sustainable development[5].

Mining exploration has a historical tradition in the country, especially in the State of Minas Gerais. With the growth of gold production, in the late 1970s, environmental legislation increased correspondingly, and that state has greater control over the environmental impacts of mining. (HANNAI, 1999).

Among the main normative instruments that regulate the safety inspection of dams for disposal of mining wastes are: i) Law 12,344/2010, which establishes the PNSB; ii) Resolution of the National Council of Water Resources (CNRH) no. 143/2012, which establishes the general criteria for classification of dams by category of risk and associated potential damage; iii) DNPM Ordinance no. 416/2012, which created the national registry of mining dams and arranged on the security plan, periodic safety review and regular and special inspections; iv) DNPM Ordinance no. 526/2013, on the periodicity, qualification of the technical responsible, the minimum content and level of detail of the emergency action plan;

[5] Federal Constitution, Article 170, (principles of economic order). [...] VI - defense of the environment, including differential treatment according to the environmental impact of the products and services and their processes of preparation and delivery. Article 225. Everyone has the right to an ecologically balanced environment, a common use of the people is essential to a healthy quality of life, imposing on the Government and the community the duty to defend and preserve it for the present and future generations.

and v) DNPM Ordinance no. 14/2016, which specifies the cases that may be issued by a DNPM. (BRAZIL, TCU, 2016).

According to Law no. 12,334/2010, the responsibility to control dams is divided into groups, according to the purpose: i) for power generation, are supervised by the National Electric Energy Agency (Aneel); ii) for the containment of mineral waste, supervised by DNPM; iii) to contain industrial waste, by the Brazilian Institute of Environment and Natural Renewable Resources (IBAMA) and state environmental agencies; and iv) those of multiple uses, under supervision of the National Water Agency (ANA) or state water resource management bodies. (BRAZIL, 2010).

Pursuant to Article 16 of Law 12,344/2010, it is incumbent upon the oversight bodies, namely: i) to implement and maintain records of the dams under their jurisdiction; ii) to demand from the entrepreneur the technical liability annotation (ART), by a professional qualified by the Federal System of Engineering, Architecture and Agronomy (Confea), of the studies, plans, projects, construction, supervision and other reports required by the legislation; iii) to require the entrepreneur to comply with the recommendations contained in the inspection and periodic safety review reports; and iv) to require the entrepreneur to register and update information on the dam. (BRAZIL, 2010). There is also a specific attribution to ANA of organizing, implementing and managing the National Information System on Dam Safety (SNISB), promoting coordination between the inspection bodies and coordinating the preparation of the Dams Safety Report, sending it, annually, to the CNRH which, in turn, directing it to the National Congress, also having the function of establishing guidelines for the implementation of the PNSB. (BRAZIL, TCU, 2016, online).

Regarding the management of risks of tailings dams, CNRH Resolution no. 143/2012 establishes the general classification criteria, which will be classified by the inspection bodies based on the general criteria, with a final result of both the risk assessment and a potential high, medium or low damage, with a revaluation forecast of no more than every five years. (BRAZIL, CNRH, 2012).

4 THE MARIANA/MG – CRITICAL POINTS (LAWS, NORMS, GOVERNANCE)

In order to identify the risks of the disaster in Mariana/MG, there are questions about possible gaps or regulatory failures, as well as negligence or irregularities practiced by the Public Power, starting with the Operational Audit Report carried out by the Federal Audit Court (TCU) with the National Department of Mineral Production (DNPM), which contained three foci of analysis, in verbis: a) to what extent the DNPM's attributions and limits regarding its competence within the PNSB are defined in a clear and objective way; b) to what extent the regulatory framework defined by the DNPM, according to its competence, meets the objectives of the PNSB; and c) to what extent the inspection carried out by the DNPM meets the objectives of the PNSB. (BRAZIL, TCU, 2016 online).

The audits of the TCU audit (BRASIL, TCU, 2016 online) concluded that, in general terms, the policy for compliance with the regulatory objectives set forth in Article 3 of Law no. 12,334/2010, from a legal-institutional point of view, is adequate, in particular with regard to the definition of safety standards with the aim of reducing the possibility of accidents, but the DNPM's performance in safety oversight is fragile, deficient and does not meet the PNSB objectives, from the records, just to exemplify, as follows: a) the registration of tailings dams occurs through declaratory data provided by the entrepreneurs without checking it first, except when audited (surveyed), implying vulnerability and fragility of the classification itself, especially regarding critical risk; b) in relation to the disaster in Mariana/MG, the DNPM's performance was flawed and lacked because it was not able to guarantee control over the implementation of safety standards by the entrepreneur established in the PNSB, especially in relation to the plan (PAE)[6], a document of fundamental importance to mitigate damages in accidents; c) DNPM has not satisfactorily fulfilled its role as a monitoring body for the safety of mining

[6] Federal Constitution. Article 3 of DNPM Ordinance no. 526/2013 (BRAZIL, DNPM, 2013), the PAE consists of a technical document that identifies emergency situations that may jeopardize the integrity of the dam and establish the procedures. Federal Constitution. Article 3. The DNPM consists of a technical document that identifies the emergency situations that may jeopardize the integrity of the dam and establishes the preventive and corrective procedures to be adopted, including dissemination strategy and alert to potentially affected communities, also indicating the agents responsible for each action. Its purpose is to avoid or minimize damages with loss of life, properties and communities downstream.

tailings dams in accordance with the PNSB rules, and since the flaws and irregularities verified involve the performance at the institutional level, there is a latent and potential risk of new accidents involving mining tailings dams in the country.

5 RESULTS

The accident under study revealed gaps in the normative apparatus, regarding the situations that may be issued for a prohibition order, and DNPM, aiming at a more vigilant position, promulgated Ordinance no. 14/2016, stating that the absence of a declaration of stability and of the protocols of delivery of the PAE to the competent organs and entities lead to the drawing up of a prohibition order, which resulted only in the first four months of 2016, in relation to the Minas Gerais dams, in 36 (thirty-six) being 26 (twenty-six) due to the lack of a declaration of stability of the dam and ten due to the lack of proof of the protocol of delivery of the PAE to municipal governments and civil defense agencies. (BRAZIL, TCU, 2016 online).

After the accident, DNPM hired a company to reassess the risk analysis criteria currently employed in the classification of mining dams, as well as evaluation of standard procedures, including proposals for improving legislation, if applicable (BRAZIL, TCU, 2016 online), thus demonstrating that the technical knowledge of the municipality's functional body may be insufficient to fulfill the institutional mission. On the other hand, there is a new Mining Code underway in Congress, and it will include amendments that require mining companies to intensify the monitoring of their tailings basins. (VEJA online, 2017).

In the judicial sphere (BRAZIL, TRF/1st Region, 2017), there are two public civil actions, one filed by the Union and Others, whose amounts total R$ 20 billion and another by the Federal Public Prosecutor, whose value revolves around R $ 155 billion.

6 FINAL CONSIDERATIONS

Although the activity developed by the company Samarco is risky and the TCU, when analyzing the policy of compliance with the regulatory objectives of Law no. 12,344/2010, regarding the definition of safety standards, has considered its adequacy, it has not been demonstrated that the disaster has resulted from risks which, even if subjected to all available preventive measures it causes damage. On the other hand, the situation identified by the TCU reveals that although Brazil has advanced in terms of infraconstitutional legislation – the implementation of the PNSB in 2010 – there is a need to strengthen other institutional arrangements (institutional framework for supervision, for example), failing which environmental prevention will not take place due to the distance between the legislative/normative plan and the practice.

Thus, the execution of the action "Support for the development and implementation of the tool for the analysis of financial risk in investments and financing related to natural capital", foreseen in the NBSAP, can contribute to increase the effectiveness of disaster prevention as evidenced in this study, which has the ability to impress on entrepreneurs the awareness that risk assessment and management have the main stake in the company, given the direct implication in the company's finances, demonstrated in practice with the expenses that Samarco must pay for the reestablishment of previous situation, and also of the duty of social responsibility that the company must have towards society.

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MANAGEMENT PLANS IN BRAZIL
PANORAMA, CHALLENGES AND PERSPECTIVES

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1 KEY FACTS AND ISSUES

The management of a Conservation Unit, when well defined and executed, contributes directly to the achievement of its goals and desired effectiveness. Taking this into account, the National Conservation Units System Law – known as SNUC Law (Law n. 9.985/2000) – prescribed the Management Plan and assigned it the role of a Conservation Unit's main management tool. The present case study aims to expose the **legal panorama** of Management Plans in Brazil, to identify some **challenges faced in its process of creation and implementation** by the federal environmental agency (Chico Mendes Institute for Biodiversity Conservation – ICMBio), as well as to point out the **perspectives that Management Plans can effectively function as key elements for the implementation of the National Conservation Units System (SNUC)**.

1.1 Applicable principles – Convention on Biological Diversity

Although other principles of the Convention on Biological Diversity certainly apply to this case study, the most relevant are:

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Article 8. *In-situ* Conservation: "Each Contracting Party shall, as far as possible and as appropriate: (a) establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity".

Article 6. General Measures for Conservation and Sustainable Use: "Each Contracting Party shall, in accordance with its particular conditions and capabilities: (a) develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned; (b) Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity".

Article 18. Technical and Scientific Cooperation: "1. The Contracting Parties shall promote international technical and scientific cooperation in the field of conservation and sustainable use of biological diversity, where necessary, through the appropriate international and national institutions. 2. Each Contracting Party shall promote technical and scientific cooperation with other Contracting Parties, in particular developing countries, in implementing this Convention, inter alia, through the development and implementation of national policies. In promoting such cooperation, special attention should be given to the development and strengthening of national capabilities, by means of human resources development and institution building".

1.2 Applicable local laws

The first Brazilian Conservation Unit – Itatiaia National Park – was created in 1937 (BRAZIL, 1937). However, Brazilian legislation did not comprise any management tools for its protected areas. Initially, Management Plans were legally established in Brazil restricted to National Parks (BRASIL, 1979). Only in 2000, with the edition of National Conservation Units System Law (BRASIL, 2000), Management Plans became binding for all categories of Conservation Units. The current Management Plans' legal basis are articles 27 and 28 of SNUC Law

(BRASIL, 2000), which set out the main nuances of this tool, such as its obligatoriness and extent, as well as the participative character to be observed during its elaboration, updating and implementation. Any alterations, activities or modalities of use in the Conservation Units in disagreement with its Management Plans are prohibited, a provision that reveals its importance. A Decree regulates SNUC Law (BRASIL, 2002), bringing dispositions regarding competence for its elaboration and forms of approval and disclosure. There are also lower hierarchy norms, edited by the environmental agencies, in order to give applicability to that Law.

1.3 Effectiveness of law and other governance arrangements

There are no significant gaps in the Brazilian legal system, concerning Management Plans. It is still necessary a better infralegal regulation, but it is undeniable that SNUC Law lifted at a high level Management Plans' legal panorama (level 1 - legal instrument: satisfactory). The challenges faced by the federal environmental agency are mostly practical (level 2 - organizational arrangements: insufficient). Within its competence, ICMBio has been working on strategies to overcome those challenges (level 3 - adequate behavior for implementation: satisfactory), but it is early to analyze if the expected results were achieved, so SNUC can succeed in come out of the paper and becomes a reality (level 4 – environmental and social results: insufficient).

1.4 Issues that shape the effectiveness of governance arrangements

1. IMPOSSIBILITY OF FIXING BUFFER ZONES: As SNUC Law establishes that the limits of buffer zones can be defined in the moment of the Conservation Unit's creation or later (BRASIL, 2000), ICMBio used to define them at the approval of the Management Plans, that is, after the unit's creation. That option was considered the best because the studies developed for founding Management Plans are very deep, based in a huge amount of environmental elements, greater than those available when the Conservation Unit is created. This technical study allows a more secure delimitation of the necessary area to protect the unit from the external environment. However, in 2006, **the Federal Attorney**

General's Office (AGU), responsible for ICMBio's legal advice, established that buffer zones of Conservation Units only could be established after its creation by a normative act equal to or higher than the normative act that created the unit (Note AGU/MC n. 07/2006). This position has brought many practical problems and so much juridical insecurity because **it eliminated ICMBio's autonomy for fixing buffer zones,** since it has no competence for editing laws and decrees, acts that usually create Conservation Units in Brazil.

2. IMPLEMENTATION DIFFICULTIES: the elaboration of Management Plans is one of the most challenging tasks for ICMBio, given to the technical depth the themes are usually treated in there. **In general, because of the details, studies and researches required, they have a high financial cost and take a long time for elaboration. Besides, ICMBio does not have sufficient staff to meet the demand within reasonable time frames.** That is the reason why many federal Conservation Units have been waiting for years for their Management Plans' elaboration.

3. STANDARDIZATION CAUSED BY METHODOLOGICAL GUIDELINES: the Decree, which regulates SNUC Law (BRAZIL, 2002), established an **obligation for SNUC agencies of establishing basic methodological guidelines for Management Plans' elaboration,** standardizing concepts and methodologies, providing guidelines for diagnosis, zoning, management programs, evaluation and review periods and implementation phases. In other words, they are documents to guide Management Plans' elaboration. However, as each Conservation Unit has its own peculiarities, which distinguish them from the others, **they never fit perfectly in all the directives and parameters contained in the methodological scripts**.

4. DIFFICULTIES IN OBSERVING THE ELABORATION DEADLINE: Management Plans must be elaborated within five years from the date of its creation and, until that, all activities carried out in full protection Conservation Units should be limited to those designed to guarantee the integrity of the resources that the unit aims to protect, as determined by SNUC Law (BRASIL, 2000). Nonetheless, the Law does not provide any penalty in case of non-observance of this

deadline. The low statistics can be explained by the existence of a **large liability**, as there are old Conservation Units that still do not have Management Plans, many of them created before ICMBio's existence (2007) and SNUC Law's edition (2000), when was established that five-year period. The **costs** - usually some hundred thousand Reais - and the **time** - on average, two years - involving each Management Plan's elaboration shall be also considered. In addition to financial and operational limitations, federal Conservation Units represent **about 9% of the national territory (750,000 km2)**, data that obviously makes the legal duty's compliance more challenging.

5. EFFORTS FOR SOCIAL PARTICIPATION: SNUC Law ensures **broad participation of the resident population in the elaboration, updating and implementation of the Management Plan for Sustainable Use Units.** On the other hand, Decree n. 4.340/2002 (BRAZIL, 2002) does not make any exception, assigning to the Conservation Units' Councils - Advisory or Deliberative - the task of accompanying the elaboration, implementation and revision of Management Plans, guaranteeing their participatory approach. These legal provisions undoubtedly highlight the importance that Brazilian legislature intended to give to social participation in the construction of Management Plans in Conservation Units. In practice, however, it is a fact that **participatory processes are complex, usually expensive and time consuming**, which hinders the applicability desired by the legislator.

1.5 Diagnosis of causes and effects

1. IMPOSSIBILITY OF FIXING BUFFER ZONES: in compliance with AGU's orientation, the definitions of buffer zones' limits have been included in **the Management Plans as mere proposals, without any normative force.** These proposals have to wait indefinitely for a formal institution to become valid, by an act of hierarchy equal to or higher than the one that created the Conservation Unit - (D'AMICO et al., 2015). **ICMBio cannot review even buffer zones established by inferior acts before AGU's positioning, although they require adjustments.**

2. IMPLEMENTATION DIFFICULTIES: to reduce the liabilities of Conservation Units without Management Plans, **it has been very common to outsource Management Plans' elaboration**, by contracting these services or establishing partnerships with research institutions or non-governmental organizations. ICMBio has been noticing that **Management Plans' over detailing compromises their effectiveness**: if the planning is too extensive, a large part of it becomes obsolete even before its implementation. As Conservation Units and their socio-environmental attributes are naturally dynamic, changes in the initial planning soon become necessary if the actions established in the Management Plans take too long to start. **The reduced number of servers and financial resources is also an obstacle to consider**, since it is impossible to take forward immediately all the many actions contained in Management Plans, especially in a context of few resources and reduced team (ECO, 2017).

3. STANDARDIZATION CAUSED BY METHODOLOGICAL GUIDELINES: These methodological guidelines work as a kind of frame, which have to take place with some flexibility, otherwise it may create **practical distortions**. Although their instrumental function, commonly they have been blindly applied, causing an **undesirable over-standardization of Management Plans** and their respective Conservation Units, ignoring the fact that it is essential to safeguard Conservation Units' diversity.

4. DIFFICULTIES IN OBSERVING THE ELABORATION DEADLINE: currently, **only a little more than half of federal Conservation Units have Management Plans (55% - 178 units). Concerning Private Reserves of Natural Heritage, the percentage falls to 12.4% (83 units, in a total of 670).** Table A (in Appendix) shows percentage and number of Conservation Units classified by management category, with Management Plans: (i) published; (ii) under elaboration; (iii) under review and (iv) without forecast of elaboration until the moment (ICMBio, 2017).

5. EFFORTS FOR SOCIAL PARTICIPATION: there is no doubt that **social participation are fundamental to give effectiveness and viability to Management Plans** (VASCONCELOS; CASES, 2009). The contribution that these

actors bring generally enables a **greater knowledge and understanding of all stakeholders** regarding the opinions and positions of others, showing the true interests of the parties involved and, more than that, preventing problems and conflicts (NEIVA, A. et al., 2013). Participation leads to commitment: by participating in this process, people become aware of the benefits, goods and services that protected areas can provide to them and, consequently, start to see their creation and implementation as something positive to their lives and, thus, they commit with to the achievement of the objectives of these areas.

1.6 Recommendations for more effective and fair legal governance

1. IMPOSSIBILITY OF FIXING BUFFER ZONES: as a way of solving the problem and within its domain, after Note AGU/MC n. 07/2006, ICMBio has been succeeding in ensure that presidential decrees creating Conservation Units delegate to the its President the competence to fix the respective buffer zones. There is also the understanding that buffer zones created by inferior acts before AGU's Note remain valid, unless ICMBio repeals them, based on the position that AGU's orientation does not have the power to revoke them automatically. Buffer zones play the very important role of safeguarding the Conservation Units from the impacts of the external environment and ICMBio, aware of this importance, has been seeking a definitive resolution to the problem. In this sense, it has been making efforts on the **elaboration of a decree's proposal, which will regulate buffer zones' institution and definition in federal Conservation Units**. Considering that this is a technical activity, **it must return to ICMBio's governance**, no longer standing at the mercy of Legislative and Executive Powers' political will to be established.

2. IMPLEMENTATION DIFFICULTIES: the scenario shows that Brazilian Management Plans need to be more objective and feasible. Since 2015, ICMBio has been trying **to develop new methodologies for Management Plans' elaboration**, with the support of United States Forest Service (USFS) and National Parks Service (NPS), through technical cooperation held by the United States Agency for International Development - USAID. In this sense, ICMBio has been working on adapting a management tool used in the American National Parks – called Foundation Document –, whose pilot plans were implemented in the second

semester of 2016, in the National Park of São Joaquim and in the Extractive Marine Reserve of Soure (ICMBIO, 2016b). After the pilot plans, ICMBio elaborated a new ruling draft and it has been debating with social movements to improve the rules and close a final version. The new model intends **to reduce the extent of Management Plans in order to increase their applicability in the routine of the Units, avoiding they become symbolic and unworkable documents kept in drawers.**

3. STANDARDIZATION CAUSED BY METHODOLOGICAL GUIDELINES: aware of the need to reshape and make these standards more flexible, ICMBio is in the process of completing a **new normative ruling**, which will repeal the existent methodological guidelines and bring a new paradigm for the elaboration of Management Plans.

4. DIFFICULTIES IN OBSERVING THE ELABORATION DEADLINE: ICMBio expects to substantially **reduce its liabilities and halve the deadlines of Management Plans' elaboration**, due to the new methodology already in appliance. It is a cheaper and more objective model, more appropriate to the Brazilian reality. **Management Plans will draw up only the most latent threats and priorities of the Unit**, so they can be immediately implemented. Posteriorly, it will be possible to elaborate specific plans – like about research, public use, monitoring, environmental education, etc. – and incorporate them into the management plan as they are elaborated. The important thing is that **Management Plans will no longer have to exhaust all aspects and objectives of the Unit at one time**, which causes the delay in its completion and the high costs. On the contrary, they will bring only what is the priority, being increased over time, with the incorporation of specific plans.

5. EFFORTS FOR SOCIAL PARTICIPATION: ICMBio has been **making efforts and working on several fronts, in order to concretize the participatory planning of Conservation Units.** If society does not see the Conservation Unit as a common good, which adds value to its quality of life, the interest on participating in its management ends up being very small, usually restricted to specific issues or to an immediate interest. In addition, Management Plans usually have a very technical language, hard to understand by society, which

reinforces this distance (NEIVA, A. et al., 2013). This is also a fact that ICMBio has been noticing, whose **new methodology for Management Plans' elaboration is aware to the need of using a simpler language in these documents**.

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LAWS AND DRAFT LAWS ON LANDS OF TRADITIONAL COMMUNITIES
AN ANALYSIS AFTER THE 5th CDB REPORT (2015)

Lígia de Souza Cerqueira

1 SUMMARY OF THE CASE UNDER STUDY, IMPORTANT ISSUES AND PROBLEMS

As a typical Latin American territory, Brazil is a multicultural country full of classic. Among these are the indigenous people and the remaining quilombola communities, which have been the object of study on this subject.

When the Portuguese arrived in the country in 1500, there are, around 4 million American Yen, the population that, according to the last census carried out in 2015 by the Brazilian Institute of Geography and Statistics - IBGE, would be around 896.9 thousand, divided into 305 ethnicities and speakers of 274 different languages. With the ongoing colonization process, the Portuguese newcomers had an idea of segregating the natives, over time they have proved to not work as well as the natives have not adapted to a regular and intense work routine, and, since they are already largely weakened by the diseases brought by Europeans, were not so productive in manual labor.

 in Europe, the trafficking of African slaves in territories colonized by Portugal and Spain for a big deal. Download this cases the Africans launch a forced serial to the Brazil of segregates, and when ready to be local in the site for refugees, and refugee the kent off. Because of the name of the place, the little pigs occupied spaces such as the quilombolas, which, like the Indians, are a culturally

differentiated group that occupy territories and use natural resources as a way of transmitting their cultures and traditions to future generations, the which gives it the title of traditional community.

Aiming at the preservation of the law, in particular, a Brazilian constitution of 1988, secured the right of permanent possession of nature for the Indians - which means that they are able to defend the rights of the public demarcated to their customs and traditions, Mas the ownership of the area continues to belong to the Federal Union - and gave the quilombola people a definitive ownership of the land.

Therefore, when an indigenous community can claim the right of ownership and request a demarcation, the National Foundation of the Indian - FUNAI, which is responsible for carrying out the anthropological studies and giving the favorable opinion or not to the demarcation in that area. For example, federal decision-making, which will be taken by the President of the Republic and the Minister of Justice.

For the remaining quilombola communities, it is necessary to initiate a process requesting an issue of a public title that recognizes as owner of the land in question.

The processes of indigenous demarcation - which have been carried out throughout the country and the national year 1993, according to the constitution - and the title of quilombola results in a negative impact on the life of these communities, it is necessary to see the demarcated area or the who use natural wealth are responsible for managing their members and their culture, as well as generate income and develop their activities as a traditional people.

2 THE RELEVANCE OF THE CONVENTION ON BIOLOGICAL DIVERSITY

The signing of the CDB, the Brazil assumption the international commitment to protect and protect its biodiversity, conserving it and using its resources of sustainable way. In order to do so, it took into account a vacation benefit alongside resources, recognizing that it is desirable to distribute equitably the benefits derived from the use of the environment derived from traditional knowledge, and in its article 8, item J, he pointed out:

"(...) Respecting, preserving and maintaining the knowledge, innovations and practices of communities, local and indigenous spaces with a lifestyle, and the sustainable conservation of biological diversity"

As a way of ensuring the effectiveness of the objectives set out in the Convention, CBD Article 26 established the need for convening parties to submit periodic reports on what measures have been adopted to achieve those goals. In this sense, the latest report presented by Brazil in 2015 points to certain advances in the environmental management of indigenous lands, such as:

- The implementation of the National Policy for Territorial and Environmental Management of Indigenous Lands (PNGATI), promulgated in 2012, which established 16 Territorial and Environmental Management Plans in different Brazilian tribes, whose focus is the reduction of deforestation in indigenous lands;
- The implementation of 7 training courses for territory and environment management in partnership with the Ministry of Environment / ICMBio, FUNAI and IIEB (International Institute of Education of Brazil);
- Implementation of the GATI project, which since 2010 has been working to strengthen and structure the development of tools that recognize the contribution of indigenous lands to the conversation of biodiversity. This project was responsible for including the indigenous portfolio (support for projects for indigenous women), for promoting seminars on biodiversity issues, for disseminating information exchange networks and strengthening ethno-management (including participation of representatives indigenous people in Rio +20) and for training indigenous environmental agents.

On the other hand, the report also pointed out the main threats to biodiversity, including the disorderly expansion of agriculture, the presence of invasive alien species, high deforestation rates, forest fires, climate change and pollution.

In this sense, the problem to be studied in this paper correlates the disordered expansion of agriculture, forest fires, deforestation and pollution with the groups of interests acting in the Brazilian national congress, since the majority of these

members are large landowners who, acting in their own interest, often vote favorably in decision-making that reaps the rights of traditional communities and contributes both to the degradation of Brazilian biodiversity and to the deficiency of defense tools for the preservation of traditional communities. This is the case of Constitutional Amendment Project number 215 (PEC 215), which aims to transfer the competence of the demarcation of indigenous territories of the Federal Union to legislative competence, and bill 1003/2015, which intends to grant compensation payments to owners of expropriated lands for the demarcation of indigenous lands and quilombolas.

According to the author of the project, the procedures adopted "in the expropriations of land subject to demarcation for the benefit of the indigenous population and quilombolas can be considered as authoritarian and unjust." However, in a congress composed of ¼ members of the well-known *ruralist* group, the enactment of this law would possibly lead the country to an increase in the massive violation of rights already acquired by traditional communities, defunct their role in protecting biodiversity and expanding social problems already between them.

The *ruralist* group is a group known for advocating self-interest, such as pardoning farmers' debts, easing labor legislation, - which according to the World Labor Organization itself would hamper the rules for the recognition of slave labor - the expansion of arable land in the country, opposition to the expansion of indigenous lands, and non-compliance with the title of Quilombola territories. The composition of this interest group is basically made up of deputies and senators who, besides acting in political life, perform activities such as agriculturalists, businessmen, lawyers, engineers, farmers, doctors, among others. Among them, many are large landowners and have as campaign funders large builders and banks as well as companies in the agricultural and mining sectors, some of them involved in major corruption scandals.

Although it is imperative that interest groups be heard in the Brazilian parliament (which is salutary in guaranteeing political pluralism), it is necessary to discuss tools that prevent the agenda of national interests from being co-opted to

benefit a specific group - which would lead the country to a massive violation of rights - especially with regard to the protection of traditional communities, given their high social vulnerability.

BRIEF PORTRAIT OF THE MANAGEMENT OF THE CONSERVATION UNITS OF THE FEDERAL DISTRICT

Lorene Raquel de Souza[1]

The institution of Specially Protected Territorial Spaces (ETEPs)[2] is an obligation of the Brazilian State provided for in the Federal Constitution[3] and in the international commitments assumed by the country, including the Convention on Biological Diversity[4]

Among the existing options, the Conservation Units - CUs are the category of ETEP most used in Brazil due to its relevant role in nature conservation. In Brazil, the categories of management of Conservation Units are systematized in Federal Law nr. 9,985/00, which established the National System of Nature Conservation Units (SNUC). SNUC is part of the federal, state and municipal CUs[5]

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2 Examples: UCs, jardins botânicos, jardins zoológicos, hortos florestais, áreas de preservação permanente, áreas de reserva legal, zonas de amortecimento de unidades de conservação, corredores ecológicos, reservas da biosfera, além de terras indígenas e territórios quilombolas. LEUZINGER, Márcia Die- guez. Uso público em unidades de conservação. Disponível em:< http://www.nima.pucrio.br/aprodab/artigos/ uso_publico_em_unidades_de_conservacao_marcia_leuzinger.pdf>. Acesso em: 10 jul. 2016.

3 BRASIL. Constituição (1988). Constituição da República Federativa do Brasil. Bra- sília, DF. Disponível em: < http://www.planalto.gov.br/ccivil_03/constituicao/consti- tuicaocompilado.html>. Acesso em: 1 jun. 2017

4 LEUZINGER, Márcia Dieguez; SANTANA, Paulo Campanha; SOUZA, Lorene Raquel de (Org.). Monumentos naturais, refúgios da vida silvestre e áreas de relevante interesse ecológico: pesquisa e preservação. Brasília: UNICEUB, 2017

5 BRASIL. Lei nº 9.985, de 18 de julho de 2000. Dispõe sobre a regulamentação do art. 225, § 1o, incisos I, II, III e VII da Constituição Federal, institui o Sistema Nacional de Unidades de Conservação da Natureza e dá outras providências. Disponível em:< http://www.planalto.gov.br/ccivil_03/leis/L9985.htm>. Acesso em: 1º jan. 2017

The Federal District is one of the political entities that instituted its own System of Conservation Units of the Nature, when editing the District Complementary Law nr. 827/10[6]. This standard brought some innovations, while replicating most of the provisions of Federal Law nr. 9,985/00.

As for the innovations, the most expressive ones concern the category of Ecological Park management, which was created without the seal of the National Council of Environment[7], although the SNUC imposes such obligation, and the non-binding of environmental compensation resources[8] to the Integral Protection Units[9].

As there are technical reasons for maintaining the category of Ecological Park as a Conservation Unit, it is understood that this irregularity can be sanitized, since CONAMA can and should be consulted. It was precisely for this reason that this species was portrayed in the present study as a typical Conservation Unit. The question of the non-binding of environmental compensation resources to the Integral Protection Units, however, is more complex, since it is a vice of constitutionality. Thus, in the face of the offense to the primacy of the division of competences, the aforementioned norm must be adequate to the legal order**[10]**.

[6] DISTRITO FEDERAL. Lei Complementar nº 827, de 22 de julho de 2000. Dispõe sobre a regulamentação do art. 279, I, III, IV, XIV, XVI, XIX, XXI, XXII, e o art. 281 da Lei Orgânica do Distrito Federal, institui o Sistema Distrital de Unidades de Con- servação da Natureza – SDUC e dá outras providências. Disponível em:< http://legis-lacao.cl.df.gov.br/Legislacao/consultaTextoLeiParaNormaJuridicaNJUR-193856!bus-carTextoLeiParaNormaJuridicaNJUR.action>. Acesso em: 10 jan. 2017

[7] MARQUES, Ana Alice Biedzicki de. As unidades de conservação e os parques: desa- fios para a conservação da natureza no Distrito Federal. Brasília: Assessoria Legislativa/ Câmara Legislativa do DF, 2015. Disponível em: <http://biblioteca.cl.df.gov.br/dspa- ce/handle/123456789/1695>. Acesso em: 3 ago. 2017.

[8] For futher illustration see also: BECHARA, Érika. Licenciamento e Compensação Ambiental na Lei do Sistema Na- cional de Unidades de Conservação da Natureza. São Paulo: Atlas, 2009.

[9] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em: https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[10] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

Among the most significant provisions foreseen in the Federal Law, the district regulations reproduced those related to management categories, objectives, guidelines and management of Conservation Units itself[11]

The study, however, focused mainly on the management of Conservation Units, since the creation of Specially Protected Territorial Spaces is not an end in itself because, together with this legal duty, there is an obligation of care and management, which needs to be carried out in accordance with current standards[12]

Currently, there are 60 Conservation Units in the Federal District - 10 (ten) Conservation Units of Integral Protection, and 50 (fifty) Sustainable Use Conservation Units. However, the administration of the 59 (fifty-nine) Conservation Units managed by IBRAM has been marked precisely for non-compliance with the legislation, despite the regulations provided for in District Complementary Law nr. 827/10[13].

The picture of the current management model shows that there are, if not all, problems in most District Conservation Units. They are, as a rule, related to the maintenance of CUs without the definition of polygon, the rarity of Management Plans and Management Councils, the use of environmental and forestry compensation as the main source of financing, the absence of regularization of land and the centralization in a multidisciplinary body[14].

Of the 59 CUs managed by IBRAM, 12 do not have defined polygons. The traverse[15] is responsible for indicating the size and spatial boundaries of the created area[16].

[11] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019

[12] STJ. REsp 1.071.741/SP, Segunda Turma, Rel. Min. Herman Benjamin. Disponí- vel em: < https://ww2.stj.jus.br/docs_internet/revista/eletronica/stjrevistaeletroni-ca2015_239_1_capUnidadedeConservacao.pdf>. Acesso em: 17 de mai. 2017

[13] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[14] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[15] For futher illustration see also: DICIONÁRIO PORTUGÊS. Definição de poligonal. Disponível em:< http://dicio- narioportugues.org/pt/poligonal>. Acesso em: 16 jan. 2017

The Law also provides that the Management Plan, the main management tool, is mandatory for all CUs[17]. In the Federal District, however, of the 59 Conservation Units under management of IBRAM, only 12 have the mentioned tool[18].

With the Managing Councils[19] the situation is worse. Of the 59 Conservation Units under management of the IBRAM, only two were contemplated with this type of collegiate body[20].

Similarly, although the institution of Conservation Units is a state public policy, the budget has been poorly scaled[21]. In addition, the little that is made available has not been fully implemented. However, in Federal District, this institutional difficulty has been mitigated by the environmental[22] and forestry compensation resources[23] obtained as a result of the implementation of an undertaking that causes environmental impact or suppression of vegetation in an urban area[24].

There is, also, the serious problem of the dominion issue of the CUs of the Federal District. At present, there is no public domain unit that can be considered

[16] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[17] Art. 27, da Lei Federal nº 9.985/00 e art. 25 da Lei Complementar Distrital nº 827/10

[18] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[19] For futher illustration see also: SANTOS, A. A. B. Conselhos gestores de Unidades de Conservação. 2008. 199 f. Tese (Doutorado em Engenharia Florestal) – Universidade de Brasília, Brasília. 2008. Disponível em:< http://repositorio.unb.br/bitstream/10482/3650/1/2008_AnthonyAlissonBrandaoSantos.pdf>. Acesso em: 20 jan. 2017

[20] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[21] For futher illustration see also: MEDEIROS, R.; YOUNG, C. E. F.; PAVESE, H. B.; ARAÚJO, F. F. S. Contribuição das Unidades de Conservação brasileiras para a economia nacional. Brasília: MMA, 2011. 44 p. Disponível em: < http://www.icmbio.gov.br/portal/images/stories/comunicacao/estudocontribuicao.pdf>. Acesso em: 18 mai. 2017.

[22] DISTRITO FEDERAL. Lei Complementar nº 827, de 22 de julho de 2000. Dispõe sobre a regulamentação do art. 279, I, III, IV, XIV, XVI, XIX, XXI, XXII, e o art. 281 da Lei Orgânica do Distrito Federal, institui o Sistema Distrital de Unidades de Con- servação da Natureza – SDUC e dá outras providências. Disponível em:< http://legislacao.cl.df.gov.br/Legislacao/consultaTextoLeiParaNormaJuridicaNJUR-193856!buscarTextoLeiParaNormaJuridicaNJUR.action>. Acesso em: 10 jan. 2017

[23] DISTRITO FEDERAL. Decreto nº 14.783, de 17 de junho de 1993. Disponível em:< http://www.sinj.df.gov.br/sinj/BaixarArquivoNorma.aspx?id_norma=24176>. Acesso em: 29 jan. 2017

[24] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

regular in the terms adopted in the present study, that is, it contemplates, at the same time, public dominance and registration in the patrimony of the managing body of CUs. In fact, there are some CUs in areas of public domain, but none of them are incorporated into IBRAM's equity, but TERRACAP's, which manages real estate assets and fosters the economic and social development of the Federal District. In addition, the management entity does not even know the domination of several CUs under its management[25].

The centralization of the management of Conservation Units in an entity with so many attributions has also been negative because it is permeated by choices, ranging from the distribution of the servers, through the channeling of resources to the establishment of strategic objectives[26].

The non-compliance with the legal requirements by the District Public Power, besides representing an affront to the Principle of Legality, brings a series of limitations that restrict the objectives of the SDUC and, at the same time, jeopardize the effectiveness[27] of the right to the environment ecologically balanced and principles of the Convention on Biological Diversity (precaution, prevention, social participation, etc.)[28].

The most visible limitations generated by the management model of the CUs of the Federal District are the existence of CUs with different levels of consolidation, the difficulty of conforming the public use with the conservation of the areas subject to visitation, the limitation of the inspection activity, the

[25] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[26] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[27] BARROSO, Luís Roberto. Curso de Direito Constitucional Contemporâneo. 5ª edição. São Paulo: Saraiva, 2015. p. 255

[28] CONVENTION ON BIOLOGICAL DIVERSITY (CBD). 1992. [online] Available at: <https://www.cbd.int/doc/legal/cbd-en.pdf> [Accessed 3 Oct. 2017].

irregularity in the application of available financial resources and the low involvement of society in the management of these areas[29].

In the Federal District, taking into account the legal consolidation criteria established in the work, which involves the presence of a dominion suitability, Management Plan, Management Council, existence of minimum physical structures necessary for the management of the CU and existence of minimum structures for public use, when it comes to CU open for visitation -, the numbers reveal 18 paper CUs[30], 24 unconsolidated CUs, 12 minimally consolidated CUs, and 5 consolidated CUs. There is, however, no CU that can be considered fully consolidated, from the legal point of view, within the Federal District[31].

As for public use, it has been shown that of the 37 public domain CUs surveyed, 17 have public use permitted, encouraged or tolerated by the managing body. In none of them, however, there is a Management Plan, which certainly harms the conservation of these spaces. In addition, the research showed that of the 17 CUs where the visit happens, the access control is done in only 4 of them. Three of them, inclusively, do not have minimum visit structure. All Conservation Units studied that have Management Plan are closed, at least officially, to the public[32].

On the other hand, the audit activity in the CUs has been limited because there are no tax auditors who are assigned or designated to work especially in the CUs and other ETEPs. There is, moreover, the question of the lack of updating of the rules[33].

[29] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[30] For futher illustration see also: PÁDUA, Maria Tereza Jorge. Estética do Paraíso. In: DOUROJEANNI, Marc J; PÁ- DUA, Maria Tereza Jorge. Arcas à Deriva: unidades de conservação do Brasil. Rio de Janeiro: Technical Books, 2013

[31] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[32] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[33] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

Likewise, the application of financial resources has been irregular because the low value made available is not fully implemented due to the difficulties faced by the Environmental Authority, mainly in the elaboration of basic projects. Less than half of the public budget available has been implemented in these areas in the last 7 years. In addition, resources from Environmental Compensation and Forest Compensation are not being channeled to Conservation Units. Of the 60 CUs in the Federal District, only 16 benefited from these resources[34].

Another important issue is the lack of involvement of society in the protection and management of Conservation Units, which in a way is related to the increase in urban pressure in these areas, mainly caused by the irregular deposition of solid wastes, changes in land use, urban expansion linked to the increase in the demand for housing, besides the land invasions[35].

There are, however, several legal possibilities that can improve the governance model of Conservation Units of the Federal District so that they can be seen as cradles of biodiversity, not as large idle spaces[36] One option is the consolidation of environmental governance. There are, however, other alternatives that can both enhance the way resources are collected and decentralize the management of these spaces through co-management or Public-Private Partnerships[37].

Environmental governance must be understood as the participation of all in the decisions that involve the environment[38]. Usually, the term environmental

[34] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[35] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[36] NURIT, Bensusan. Conservação da Biodiversidade em áreas protegidas. Rio de Janei- ro: Editora FGV, 2006

[37] INSTITUTO SEMEIA. Modelos de gestão aplicáveis às unidades de conservação do Brasil / Instituto Semeia. – São Paulo: Semeia, 2015. 59 p. Disponível em:< http:// investimento.turismo.gov.br/images/SEMEIA_Unidades_de_Conservacao_no_Bra- sil_2015.pdf>. Acesso em: 18 jun. 2017

[38] For futher illustration see also: ALVES; Maria Odete; BURSZTYN, Marcel. Panacéias da boa governança: o caso do programa brasileiro de combate à desertificação. Disponível em:< https://www.academia.edu/7663968/Panace- ias_da_boa_governan%C3%A7a_o_caso_do_Programa_Brasileiro_de_Combate_%C3%A0_Desertifi- ca%C3%A7%C3%A3o>. Acesso em: 6 jun. 2017

governance is used as a synonym for environmental management. In governance, however, society participates in the construction of the decision, while in management it is only heard.

It is also necessary to improve the economic sustainability of these spaces. The Law that governs the SDUC itself provides the forecast of several mechanisms that can be used to finance them. There are two instruments, however, that are potential and adequate to the reality of the Federal District: the possible collection by the services of support to the visitation and the use of water and energy resources provided by the CUs. Both sources are little explored[39].

In order for charging for visitation support services to occur in accordance with the Law, it is urgent to issue a regulatory standard. The regulation edition, besides being a legal requirement, could allow the indirect financing of the CUs by the concessionaire. Likewise, it is possible to increase collection by charging for the use of water and energy resources provided by CUs. However, this is not a very promising source, since it is not all areas that fulfill this role. Regardless, regulation is needed to recognize the environmental and ecosystem services provided by these areas[40].

The legislation allows the adoption of several non-state models in which there is the sharing of responsibilities between the Public Power and the private sector. These include, for example, the Social Organizations, the Civil Society Organizations of Public Interest and the Civil Society Organizations in general[41].

Public-Private Partnerships - PPPs[42] are increasingly being invoked within the scope of Conservation Units. However, the construction of an arrangement that

[39] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[40] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

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involves the provision of services through PPPs in CUs is a rather complex operation, which cannot be done in an unthinking way. The first obstacle to be overcome is the issue of expressed legal authorization. The second aspect is related to the preparation of technical and economic feasibility studies[43].

One of the ways to strengthen this policy within the Public Administration itself is through the creation of a specific public entity. The creation of a new entity will not bring a magical solution if it continues without people and without money. This initiative, however, can be interesting, by channeling the organizational structure and resources to a single end: the creation, implementation and management of district CUs[44].

When it comes to the improvement of the management model that has been adopted within the Federal District, there is no single or better revenue. Indeed, the various paths proposed do not exclude the adoption of others, which can be followed in isolation or concomitantly, provided there is transparency, social participation and, above all, respect for the Law[45].

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[43] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[44] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

[45] SOUZA, Lorene Raquel. A GESTÃO DAS UNIDADES DE CONSERVAÇÃO DO DISTRITO FEDERAL. Lorene Raquel de Souza. Brasília: 2017. 204 f. Disponível em:< https://www.uniceub.br/arquivo/86ng_20190128120820*pdf?AID=2483>. Acesso em: 1º ago.2019.

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DEFORESTATION IN THE AMAZON AND ATLANTIC FOREST x THE CREATION OF CONSERVATION UNITS

Márcia Dieguez Leuzinger[1]
Gabriel Leuzinger Coutinho[2]

1 INTRODUCTION

Brazil is home to 2 tropical forests - Amazon Forest and Atlantic Forest – and 20% of the total number of the world's species. Therefore it plays a very special role in the Convention on Biological Diversity, signed and ratified by the Country, as well as in the Aichi Targets, proposed in COP 10/CBD, that took place in 2010.

Although Brazil is far from meeting the 20 Aichi Targets, protection of biodiversity in the Brazilian tropical forests is not negative when the amount of hectares deforested is compared with the amount of conservation units created in those 2 regions.

Therefore, this paper aims to evaluate the protection of biodiversity by comparing the data of deforestation in the Brazilian Tropical Forests and the creation of new protected areas in the tropical forests, considering the period of time between 1988 and 2017.

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The temporal cut used by the authors for data analyses from 1988 until 2017 is due to 2 different reasons: 1988 is the year when the new Brazilian Constitution was issued, with a whole chapter destined to the protection of the environment and when official bodies started to release data about deforestation in the Amazon Region (data about deforestation in the Atlantic Forest began to be released in 1985, but only after each 5 years).

The tropical forests were chosen for analyses because they are home to most of the species found in the Brazilian Biomes and because official data about deforestation in those biomes are more reliable.

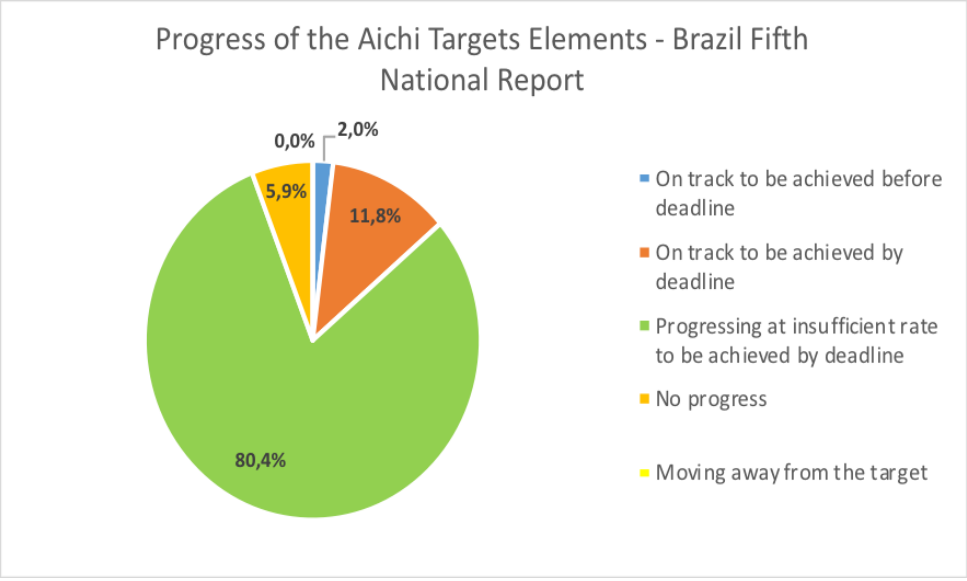
2 DEFORESTATION X CREATION OF CONSERVATION UNITS

Brazil is home to approximately 20% of the total number of the world's species, spread by 6 terrestrial biomes – Amazon Forest, Cerrado, Caatinga, Atlantic Forest, Pantanal and Pampas – and 3 important marine ecosystems – coral reefs, beaches and mangroves. There are more than 103.870 species of animals and 43.020 known species of plants in the country[3]. Therefore, it plays a special role in the CBD which has been signed and ratified by the country and measures to enforce it were issued by the Decree nº 1354/1994 that created the National Program on Biological Diversity (Programa Nacional da Diversidade Biológica – Pronabio). This program was later changed into the National Committee on Biodiversity (Comissão Nacional da Biodiversidade - CONABIO)[4] that is responsible for coordinating and implementing the commitments made by the country in the CBD. Conabio is composed by representatives of governmental bodies and civil society organizations and is in charge of promoting the implementation of the commitments assumed by Brazil in the CDB and identifying and proposing priority areas for research, conservation and sustainable use of biodiversity components[5].

[3] Retrieved from: http://www.mma.gov.br/biodiversidade/comissao-nacional-de-biodiversidade. Access 15 APRIL 2017.
[4] Retrieved from: http://www.mma.gov.br/biodiversidade/comissao-nacional-de-biodiversidade. Access 15 APRIL 2017.
[5] Retrieved from: http://www.mma.gov.br/biodiversidade/comissao-nacional-de-biodiversidade. Access 15 APRIL 2017.

During COP 10 / CBD, 20 Targets for 2011-2020 period were set. Despite not having consolidated indicators for monitoring the progress of the Aichi Targets, the Brazilian Fifth National Report to the CBD brings a preliminary analysis of the targets based on available quantitative and qualitative data. The report indicates 46 elements that compose the 20 Aichi Targets. From those elements, 37 are progressing towards the target but at insufficient rate to meet it by 2020; 3 have not registered any significant progress; 5 are on track to meet the target by its deadline; and only 1 is expected to meet the target before 2020: "reduction in the loss of native habitats by at least 50% in the Amazon Region"[6]. The conclusion is that only 13,8% of the targets are expected to be met on the set deadline (see Graphic 1).

Graphic 1 – Progress of the Aichi Targets in Brazil



Prepared by the authors. Source: Brazil, Ministry of the Environment. Secretariat of Biodiversity and Forests. Fifth National Report to the Convention on Biological Diversity: Brazil. Brasília, 2015. approximately 13% of the Brazilian territory[7]. Due to deforestation, only 12.5% of this biome still have forest cover[8].

[6] Brazil, Ministry of the Environment. Secretariat of Biodiversity and Forests. Fifth National Report to the Convention on Biological Diversity: Brazil. Brasília, 2015.
[7] Retrieved from: http://brasilemsintese.ibge.gov.br/territorio.html. Access 19 APRIL 2017.

The high ranks of deforestation is explained by the Brazilian occupation of the territory, since it was reached in 1500 by European peoples, and its economic cycles that took place until the XX Century almost all on the coast, where the Atlantic Forest is located as well as most of the Brazilian biggest cities and population.

The creation of conservation units, that are a kind of protected areas in Brazil, started in 1937, when the first Brazilian National Park – Itatiaia - was created and can be described as happening in "surges". The "Full protection federal conservation units" creation surges are the following, considering the dates when the units were created and the number created in each period / surge (state and local conservation units are not being considered)[9]:

a. National Parks: 1930 – **3**; 1959 until 1961 – **11**; 1971 until 1974 – **3**; 1979 until 1986 – **11**; 1988 until 1989 – **5**; 1997 until 1999 – **8;** 1992 - **1**; 2000 until 2006 – **19** (1 was transformed later into a natural monument); 2006 - **5**; 2008 – **2**; 2010 – **3**; 2012 a 2014 – **4**; 2016 until 2017 - **2**.

b. Ecological Stations: 1980 - **22**; 1990 – **1**; 2001 until 2006 - **9**; 2014 -**1**.

c. Biological Reserves: 1974 - **1**; 1979 until 1984 - **14**; 1988 until 1990 - 9; 1998 – **1**; 2002 until 2006 - **5**; 2012 – **1**; 2016 - **1**.

d. Wildlife Refuges: 2002 – **1**; 2005 until 2007 – **4**; 2010 – **2**; 2016 – **1**.

Natural Monuments: 2008 until 2010 – **3**.

The biggest surge happened between 2005 and 2006. In 2005, 36 conservation units were created among federal and state units. The total area protected was 9.8 million hectares.

[8] Retrieved from: https://www.sosma.org.br/projeto/atlas-da-mata-atlantica/dados-mais-recentes/. Access 15 APRIL 2017.

[9] DRUMMOND, José Augusto. O sistema brasileiro de parques nacionais: análise dos resultados de uma política ambiental. Niterói: EDUFF, 1997; LEUZINGER, Márcia Dieguez. Natureza e cultura: unidades de conservação de proteção integral e populações tradicionais residentes. Curitiba: Letra da Lei, 2009.

In 2006 alone, 36 conservation units were created, including full protection and sustainable use, among federal and state units, in a total of 30.6 million hectares. State units were 14, but the area protected is 19.4 million hectares.

The reasons for the creation of conservation units surge between 2005 and 2006 are:

1. It was a governmental response to the increasing levels of deforestation in Amazon, with peaks in 1995 and 2003 / 2004;
2. In the federal level, plans and programs developed during the period when Marina Silva was the Minister of Environment started to be implemented, specially those related to the compromises assumed by Brazil in the CBD, such as the Protected Areas National Plan and the ARPA project (Amazon Protected Area Program);
3. In the State of Amazonas there was a political shift in 2002 and the state government started a pro-forest agenda for the creation of conservation units and investments in industrial and community forest management[10];
4. In the State of Para the state government joined the Arpa Project. The States of Amazonas and Para are responsible for 90% of the conservation units created in the Amazon region between 2003 and 2009[11].

Although a great part of the Brazilian territory (851.6 million hectares) is covered by conservation units: 139.4 million hectares that corresponds 16.4% of the territory (499 federal and state conservation units), this does not mean that Brazil does not have problems implementing the CBD. Instead, stopping deforestation has been a great challenge to successive governments as well as bringing effectiveness to the conservation units.

The expansion of the agricultural and livestock frontiers to the North of the country, towards the Amazon Forest, illegal logging, mining, the construction of new roads and dams are some of the reasons for deforestation. Until 1980, deforestation was related to the occupation of the Amazon Region with programs of

[10] TONI, Fabiano. Decentralization and REDD+ in Brazil**. Forests**, 2, 2011, 66-85.
[11] TONI, Fabiano. Decentralization and REDD+ in Brazil**. Forests**, 2, 2011, 66-85.

free land distribution for those interested in moving to that area (Ex. National Integration Program – PIN, in 1970). The donations were conditional on the clearing of the forest and economic production. 30 million hectares were deforested in this first period[12].

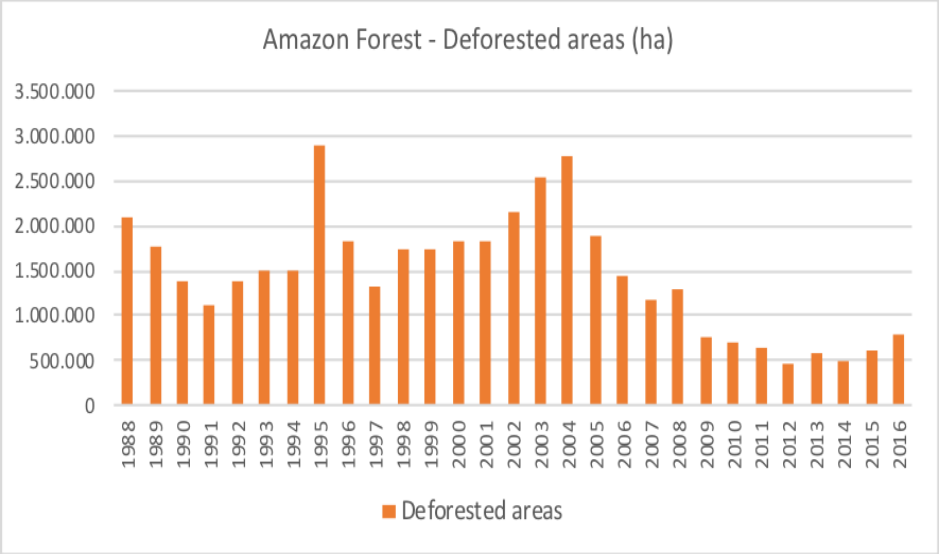
Since 1980, the deforestation process causes changed gradually to agriculture and livestock reasons and the construction of roads, dams, new cities, mining etc. In the 1980s, 13 million hectares were deforested. In the 1990s, 15 million hectares. Only in the first 4 years of the 2000 decade, 12 million hectares were deforested[13].

Between 1988 until 2016, 42.1 million hectares were deforested in the Amazon Region and 1.6 million hectares in the Atlantic Forest. This data does not include deforestation in the Cerrado, Caatinga, Pantanal and Pampa biomes that were also impacted by human activities. The graphics 2 and 3 show the amount of deforested areas per year in the Amazon Forest and Atlantic Forest, respectively.

[12] DINIZ, Marcelo Bentes; OLIVEIRA JUNIOR, José Nilo de; TROMPIERI NETO, Nicolino; DINIZ, Márcia Jucá Teixeira. Causas do desmatamento da Amazônia: uma aplicação do teste de causalidade de Granger acerca das principais fontes de desmatamento nos municípios da Amazônia Legal brasileira. Nova Economia, vol.19, nº1, Belo Horizonte Jan./Apr. 2009.

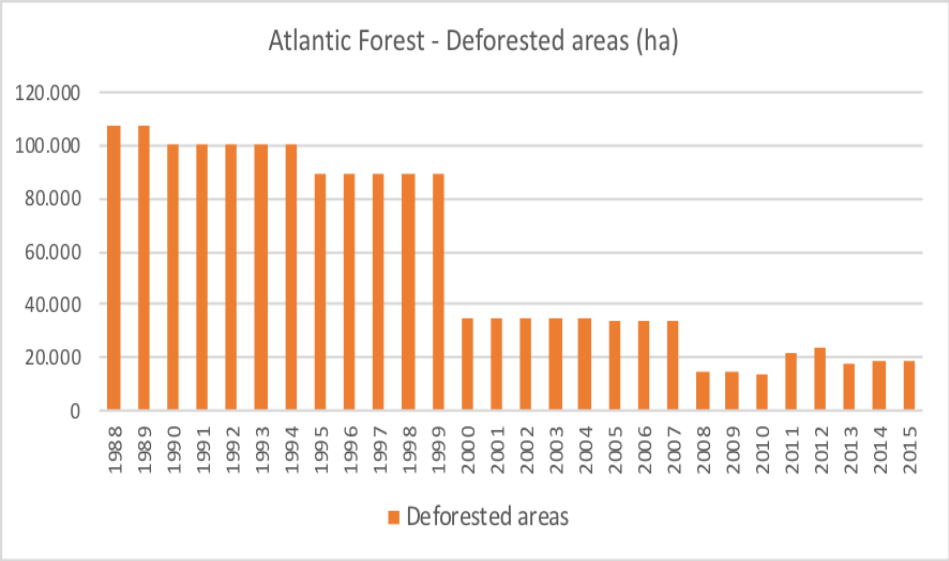
[13]DINIZ, Marcelo Bentes; OLIVEIRA JUNIOR, José Nilo de; TROMPIERI NETO, Nicolino; DINIZ, Márcia Jucá Teixeira. Causas do desmatamento da Amazônia: uma aplicação do teste de causalidade de Granger acerca das principais fontes de desmatamento nos municípios da Amazônia Legal brasileira. Nova Economia, vol.19, nº1, Belo Horizonte Jan./Apr. 2009.

Graphic 2 – Deforestation in the Amazon Forest (1988-2016)



Prepared by the authors. Sources: http://www.obt.inpe.br/prodes/prodes_1988_2011.htm and http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes

Graphic 3 – Deforestation in the Atlantic Forest (1988-2015)



Prepared by the authors. Source: and http://mapas.sosma.org.br/site_media/download/atlas_2015-2016_relatorio_tecnico_2017.pdf

In the Amazon region, there were two peaks of deforestation, in 1995 and 2003 / 2004, when it started to reduce until 2014 (see Graphic 2), due to successful deforestation plans and programs, like the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (Plano de Ação para a Prevenção e Controle do Desmatamento na Amazônia Lega – PPCDAM).

PPCDAM first stage was between 2004 and 2008, when it is possible to notice a significant decrease in deforestation at the Amazon Region. The main activities implemented were: land use planning; land regularization; implementation of agrarian reform policy for the Amazon Region; Indigenous Lands Demarcation; creation of conservation units; integrated operation of environmental, labor, land and tax inspection, foment of extractive and indigenous populations activities; support for the agricultural use of already deforested areas. The second stage was between 2007 and 2011 and involved actions that were similar to the first stage[14].

13 Ministries participated in PPCDAM and in 2009 there was already a reduction of 75% of deforestation if compared to 2004 rates. One of the Plan pillars is a sophisticated satellite monitoring system that is able to identify and quantify processes of deforestation[15].

Programs, projects and plans like ARPA led to an increase of the area protected by the creation of federal and state conservation units between 1988 and 2017. The total area covered with conservation units, considering all the Brazilian Biomes, in 1987 was 16.5 million hectares. If Environmental Protected Areas (Areas de Proteção Ambiental - APA), that is a type of conservation unit that usually serves as buffer zones for other types, are not considered, the total area was: 15 million hectares. In 2017, the total area, considering APAs is 139.4 million hectares. An increase of 122.9 million hectares (745%). If APAs are not considered, the total area in 2017 is 108.1 million hectares, what means an increase of 93.1 million hectares (621%).

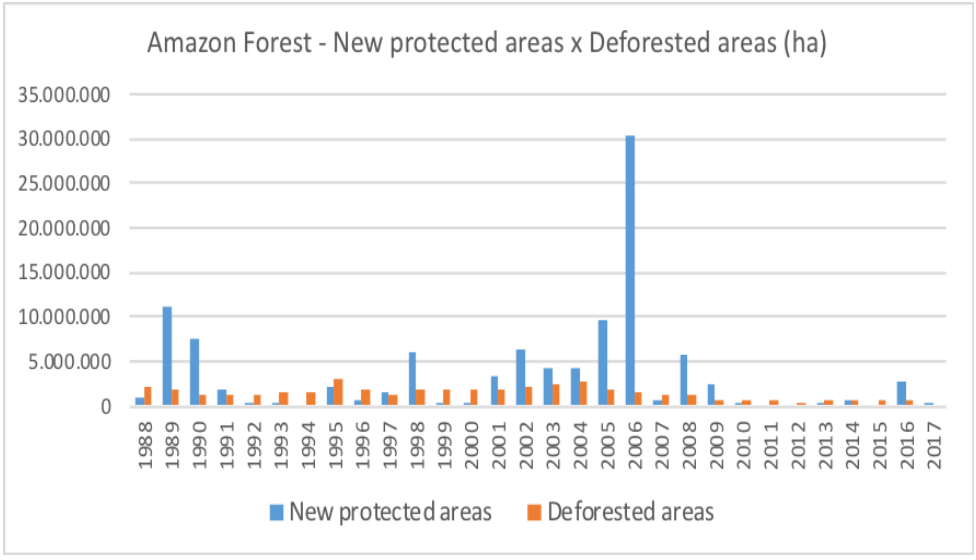
[14] GRUPO PERMANENTE DE TRABALHO INTERMINISTERIAL PARA A REDUÇÃO DOS ÍNDICES DE DESMATAMENTO NA AMAZÔNIA LEGAL. Plano de ação para a prevenção e controle do desmatamento na Amazônia Legal. Brasília, março de 2004. Retrieved from: http://www.mma.gov.br/images/arquivo/80120/PPCDAM_fase1.pdf. Access 24 OCTOBER 2017.

[15] Retrieved from: http://www.brasil.gov.br/meio-ambiente/2010/11/combate-ao-desmatamento. Access 24 OCTOBER 2017.

From those 122.9 million hectares of conservation units created after 1987, 102.9 million were located in the Amazon Region and 2 million hectares in the Atlantic Forest. This means that around 84% of the total area is located in the Amazon Region, around 2% in the Atlantic Forest, and around 14% spread in all the other biomes. If APAs are not considered, the increase of the area protected by conservation units is 87.2 million hectares in the Amazon Region and 0.8 million in the Atlantic Forest.

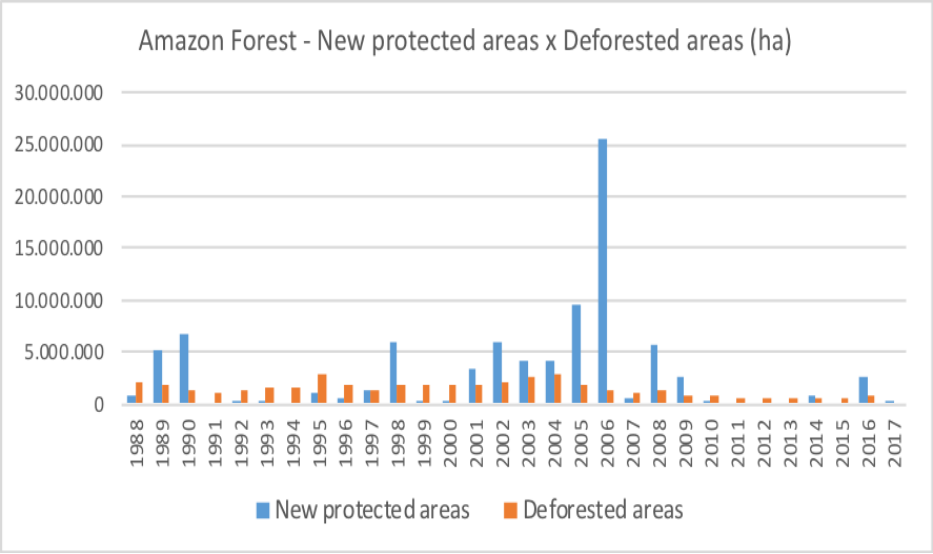
Comparing those data, deforestation in the Amazon Region from 1988 until 2016 (there is no data available for 2017) was 42.1 million hectares against 102.9 million hectares of new conservation units. The difference is 60.8 million hectares pro conservation. If APAs are not considered, the difference is 45.2 million hectares pro conservation.

Graphic 4 – New protected areas x Deforested areas in the Amazon Forest, including APAs (1988-2017)



Prepared by the authors. Sources: https://uc.socioambiental.org/; http://www.icmbio.gov.br/portal/unidadesdeconservacao/biomas-brasileiros; http://www.obt.inpe.br/prodes/prodes_1988_2011.htm and http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes

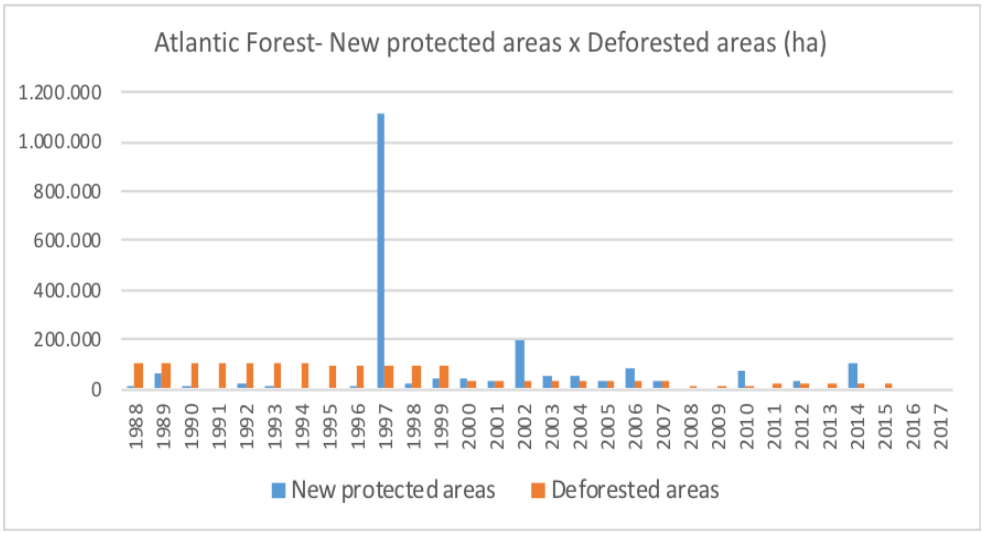
Graphic 5 – New protected areas x Deforested areas in the Amazon Forest, not including APAs (1988-2017)



Prepared by the authors. Sources: https://uc.socioambiental.org/; http://www.icmbio.gov.br/portal/unidadesdeconservacao/biomas-brasileiros; http://www.obt.inpe.br/prodes/prodes_1988_2011.htm and http://www.obt.inpe.br/OBT/assuntos/programas/amazonia/prodes

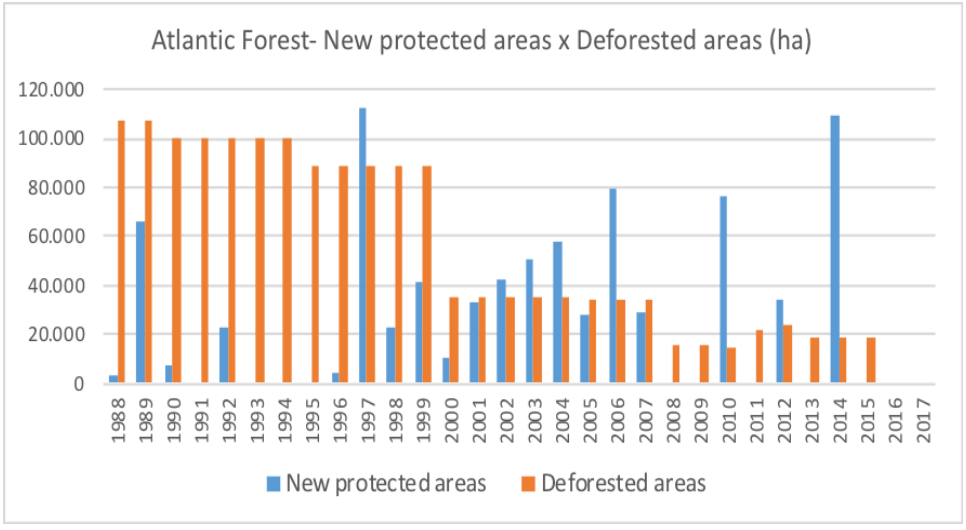
In the Atlantic Forest, deforestation between 1988 and 2016 was 1.6 million hectares but 2 million hectares of new protected areas were created. If APAs are not considered, 0.8 million hectares of new protected areas was created. In this case, the total is negative in - 0.8 hectares.

Graphic 6 – New protected areas x Deforested areas in the Atlantic Forest, including APAs (1988-2017)



Prepared by the authors. Sources: https://uc.socioambiental.org/; http://www.icmbio.gov.br/portal/unidadesdeconservacao/biomas-brasileiros and http://mapas.sosma.org.br/site_media/download/atlas_2015-2016_relatorio_tecnico_2017.pdf

Graphic 7 – New protected areas x Deforested areas in the Atlantic Forest, not including APAs (1988-2017)



Prepared by the authors. Sources: https://uc.socioambiental.org/; http://www.icmbio.gov.br/portal/unidadesdeconservacao/biomas-brasileiros and http://mapas.sosma.org.br/site_media/download/atlas_2015-2016_relatorio_tecnico_2017.pdf

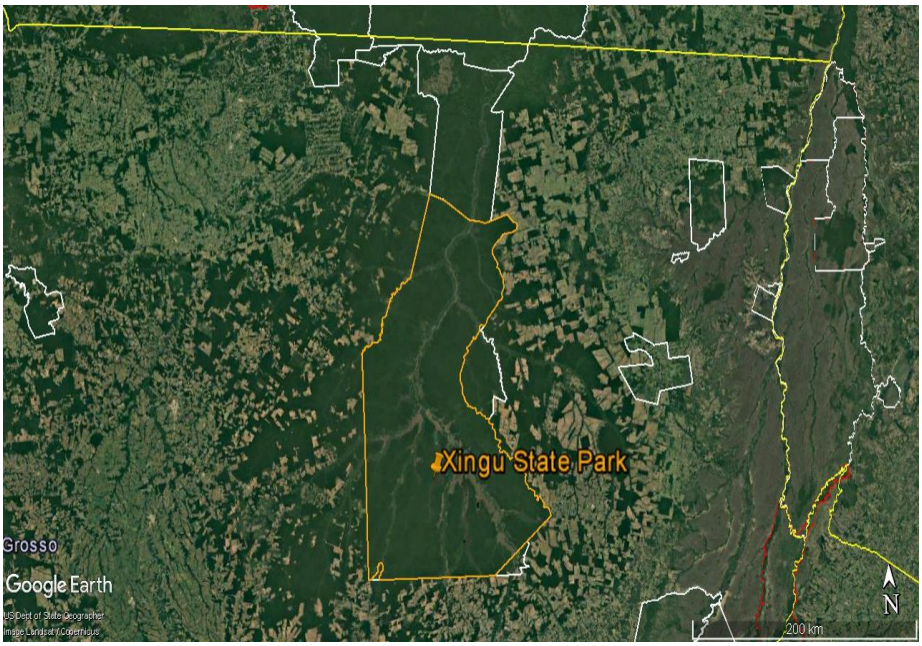
However, another variable that must be considered is the implementation of the conservation units. The research that has been done by the UniCEUB Research Group in Environmental Law and Sustainable Development is focused exactly in effectiveness of federal conservation units and so far we have concluded that not even 50% of the units have been fully implemented. Indicators such as the existence of management plans, management committees, land regularization and infrastructure, among others have been used to define the rate of implementation[16]. Only considering management plans for federal conservation units, 45% of the federal conservation units do not have management plans[17].

Nevertheless, even conservation units that are not fully implemented produce the effect of reducing deforestation. This same effect can be observed in indigenous lands, as can be see in pictures 1, 2 and 3. Picture 3 shows how conservation units in the Amazon Region creates a barrier against the expansion of the deforestation arch.

[16] 3 books have been already edited by the Research Group, covering all 5 Full Protection Conservation Unit Types: LEUZINGER, Márcia Dieguez; KLAYM, Ricardo (org.). Uso público em parques nacionais. Curitiba: CRV, 2012. LEUZINGER, Márcia Dieguez; GODOY, Larissa Ribeiro da Cruz; FERNANDES, Maria Heloísa Cavalcante (org.). Estações ecológicas e reservas biológicas: pesquisa e preservação. Brasília: UniCEUB, 2014. : LEUZINGER, Márcia Dieguez; SANTANA, Paulo Campanha; SOUZA, Lorene Raquel. Monumentos naturais, refúgios da vida silvestre e áreas de relevante interesse ecológico: pesquisa e preservação. Brasília: UniCEUB, 2017.

[17] Retrieved from http://www.icmbio.gov.br/portal/unidadesdeconservacao/biomas-brasileiros. Access 24 OCTOBER 2017.

Picture 1 – Xingu State Park and adjacent indigenous areas

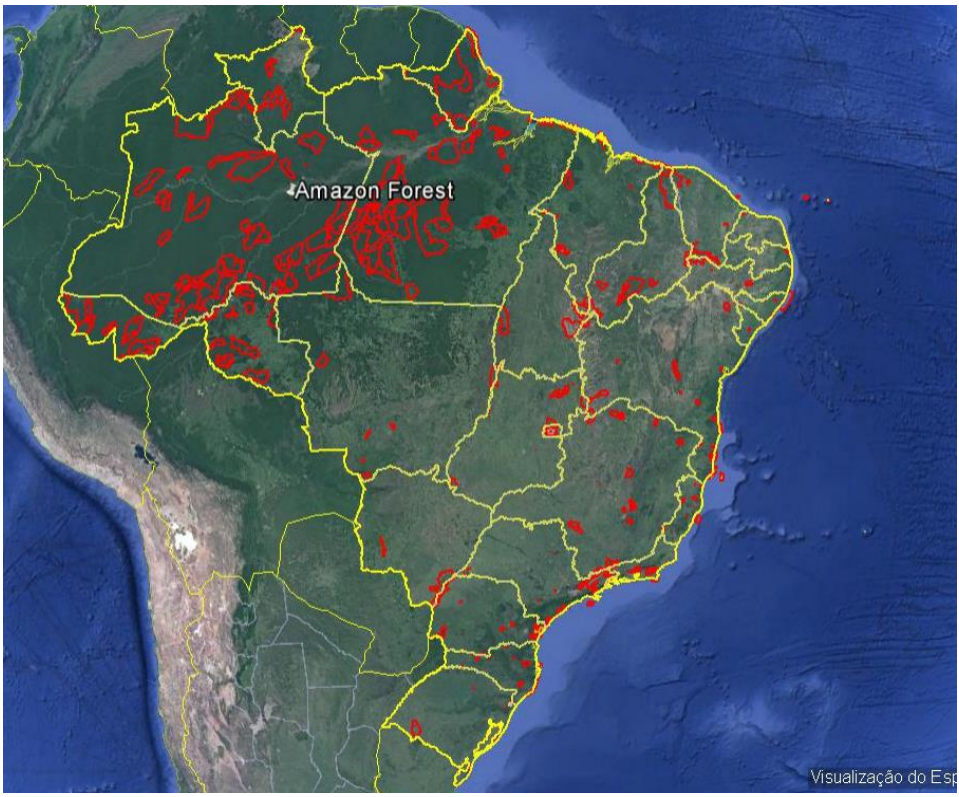


Prepared by the authors. Sources: http://www.funai.gov.br/index.php/2013-11-06-16-22-33 and Google Earth

Picture 2 – Xingu State Park limits

Source: http://portal.metodista.br/poseducacao/noticias/2015/xingu-construcao-do-indigenismo-no-brasil-e-culturas-e-terras-roubadas

Picture 3 – Conservation units of Brazil



Prepared by the authors. Sources: http://www.icmbio.gov.br/portal/geoprocessamentos/51-menu-servicos/4004-downloads-mapa-tematico-e-dados-geoestatisticos-das-uc-s and Google Earth

Area of conservation units in red

Therefore, we can conclude that, in total numbers, the amount of protected areas created between 1988 and 2017 in the tropical forests was greater then the amount of areas deforested. But if effectiveness of conservation units are to be considered, then the result will certainly not be so positive. However, even conservation units not fully implemented and indigenous land have a very positive impact in reducing deforestation in Brazil.

ENVIRONMENTAL CONTROL AND LICENSING IN THE BRAZILIAN COOPERATIVE FEDERALISM

Paulo Campanha Santana[1]

ABSTRACT

A continental country like Brazil needs an effectiveness cooperation in the federation, with all entities involved and a large institutional arrangement to protect the environment and the biodiversity. In its history, Brazil have passed different phases at the public administration. After the intensive exploitation during three centuries, the country became independent (1822) and a unitary country. After this, started a successively centralized and decentralized administration. When the republic was implemented (1891), the federation was in the level of Union and State, and then, years later (1934), came to have the municipalities. In this context, the Law No. 6,938 of 1981 created the national system of the environment, establishing and decentralizing the environmental competence for each one, and various instruments to the correspondent policy, like the environmental impact assessment and the licensing and review of activities that are effective or potentially polluting. In 2011, the Complementary Law n° 140 established rules for the cooperation at the federation system, with examples of instruments. However, unfortunately, this law limited the control of licensed economic activities, mainly the fine, because, the sanction of the entity responsible to give the license will always prevail if other entity sanction the activity, a despite of its eventual ineffectiveness and low values. Consequently, the environment and the biodiversity are more vulnerable than ever.

1 BRAZILIAN COOPERATIVE FEDERALISM

Brazil was discovered in 1500 and it was Colony of Portugal until 1822, when became independent. In this period, it has an intensive exploitation of natural resources. After the independence, the country was an Empire until 1889, when

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became a Republic until nowadays. The first Brazil's Constitution was in 1824, and it was a unitary country. The administrative action of the government was centralized. After this, the country had the following periods of administration:

1°) 1889-1930, the implementation of the federative system of government and the administrative control by the rural oligarchies along the country (decentralized);

2°) 1930-1945, policy to development national project, centralized at the President;

3°) 1945-1964, restauration of the decentralized federal system;

4°) 1964-1985, military government period and the return of the centralized system;

5°) 1985, a new revision process of the state that seeks the decentralized system.

In 1934´s Constitution, the cooperative federalism was present only with the Union and the States. In 1946, the New Constitution stablished the brazilian cooperative Federation in three levels, and, in 1988, the cooperative federalism in this levels is expressly in the text (article 23)[2]. Mukai[3] emphasizes that in this type of federalism, the entities of the federation do not fight for competences. They come together to meet the needs of the people.

In 1988, the last Brazil's Constitution has promulgated and stablished the competences of the Union, the Federal states, the Federal District and the Municipalities. The article 23 stablished administrative competences for all the levels of federation, and protect the environment is one of them. The sole paragraph of this article asserts that a complementary law will stablish rules for cooperation with them.

[2] BERCOVICI, Gilberto. **Dilemas do estado federal brasileiro**. Porto Alegre: Livraria do Advogado, 2004, p. 39, 42 e 56.

[3] MUKAI, Toshio. **Direito Ambiental Sistematizado**. 4 ed. rev. e atual. Rio de Janeiro: Forense Universitária, 2004, p. 18.

Thus, in order to comply with article 23 of the Constitution of 1988, the Complementary Law n° 140, 2011 (LC 140/2011) stablished rules for the cooperation of the federation entities in the administrative actions arising from the exercise of common competence. The aim is the protection of the notable natural landscapes, the combat against pollution in all its forms and the preservation of forests, fauna and flora.

The common competence is accord with the article 225 of the Constitution that asserts the right to an ecologically balanced environment as a fundamental right and provides that the duty to defend and preserve it for present and future generations is shared by public authorities and the community.

2 ENVIRONMENTAL LICENSING AND THE PROTECTION OF THE ENVIRONMENT

In this context, Brazil sanctioned the Law No. 6,938 of 1981, which establishes the National Environmental Policy and creates the National Environment System, instituting various environmental management instruments. Two of them is relevant for this research: the environmental impact assessment (Article 9, III) and the licensing and review of activities that are effective or potentially polluting (Article 9, IV). The Article 10 of this law provides that the construction, installation, expansion and operation of establishments and activities in human resources, effectively or potentially polluting or capable in any way of causing environmental degradation, will depend on prior environmental licensing.

This law has initially regulated by Decree No. 88,351 of 1983, and, subsequently, repealed by Decree No. 99,274 of 1990, who established that it will be the responsibility of the National Environmental Council to establish basic criteria for the requirement of environmental impact studies for the purpose of licensing.

The environmental impact assessment is also in 1988´s Constitution, in article 225, paragraph 1, IV, which establishes that is incumbent upon the government, the installation of works and activities which may potentially cause significant

degradation of the environment, a prior environmental impact study, which shall be made public[4].

The exercise of economic activity do not depend on the previous intervention of the Government. However, a law may establishes that certain activities are subject to authorization, leave, permission and prior approval[5].

This licensing is an administrative procedure, to license activities or undertakings that uses human resources, potential or potentially polluting or capable, in any way, of causing environmental degradation (article 2, I, Complementary Law n° 140, 2011).

3 THE INSTITUTIONAL DISARRANGEMENT TO PROTECT THE BIODIVERSITY

In 2007, the government has created a program of infrastructure and, in the context of administrative decentralization, the LC 140/2011 stablished cooperation instruments in the federation system and the competence of the three levels of the federation in the environmental licensing.

One of the problems of this Complementary Law is because the entities are limited in supervising the licensed economic activities. If the enterprise that has an environmental licensing cause any damage to the environment, and two levels of the federation punish it, the administrative sanction that will prevail is of the entity responsible for the environmental licensing (article 17, paragraph 3).

This is aggravated, because there is an institutional disarrangement. First of all, because some states and innumerous municipalities do not have an infrastructure to environmental licensing and to supervise the licensed activities. The other problem is because the value of the fines is different in all levels, because each entity has its decree stablishing the value of the environmental damage, and only few states apply the federal decree as reference, and the others usually have lower values.

[4] MILARÉ, Edis. **Direito do Ambiente**. 8 ed. rev., atual. e ampl. São Paulo: Editora Revista dos Tribunais, 2013, p. 741.
[5] MACHADO, Paulo Affonso Leme. **Direito Ambiental Brasileiro**. 19 ed. rev., atual. e ampl. São Paulo: Malheiros editores, 2011, p. 296.

A PhD research analyzed the effectiveness of the environmental control in amazon region, and it had a terrible conclusion, because in the period of 2008 and 2013, the 11.823 fines had only 0,2% of the values paid[6].

In 2019, other PhD study prove that between the Union and the States there are few cooperation instruments celebrated and few agents responsible for the control of the licensed economics activities[7].

In 2001, a study with 5.560 municipalities proved that only 43% (2363) had at least one environmental rule. In the aspect of the cooperation, only 2.477 implemented any instrument in its territories with aims to development the environmental area.

4 FINAL COMMENTS

Therefore, a country with a continental dimension with thousands municipalities, which the majority do not have adequate infrastructure, the effectiveness of their actions in the environmental protection, and consequently the biodiversity protection, will only become possible through a cooperative federalism and of broad form, without limit in all entities of the federation.

The analysis can shows that in this scenario, the environment and the biodiversity are vulnerable and following recommendations are pertinent:

1. Increase personnel in control activities.
2. Increase budgets for environmental agencies involved in the environmental licensing.
3. Stablish the same value to the fine when occurs environmental damage.
4. Improve implementation of existing environmental public policies, to guide the actions of government authorities.
5. Improve the cooperation instruments in the federation system.

[6] SCHIMTT, Jair. **Crime sem castigo**: a efetividade da fiscalização ambiental para o controle do desmatamento ilegal na Amazônia. Tese de Doutorado. Brasília: UnB, 2015.

[7] SANTANA, Paulo Campanha. **A (des)articulação institucional para proteção do meio ambiente no suposto federalismo cooperativo brasileiro**: Lei Complementar 140/2011 e sua efetividade. Tese de Doutorado. Brasília: UniCEUB, 2019.

6. Promote greater involvement by other social players for the effective protection of environmental assets.

7. Improve the administrative or judicial procedure to guarantee the payment of the fines.

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BRAZIL. 2011. **Lei Complementar nº 140, de 8 de dezembro de 2011**. Fixa normas, nos termos dos incisos III, VI e VII do **caput** e do parágrafo único do art. 23 da Constituição Federal, para a cooperação entre a União, os Estados, o Distrito Federal e os Municípios nas ações administrativas decorrentes do exercício da competência comum relativas à proteção das paisagens naturais notáveis, à proteção do meio ambiente, ao combate à poluição em qualquer de suas formas e à preservação das florestas, da fauna e da flora; e altera a Lei nº 6.938, de 31 de agosto de 1981. [online] Available at: <http://www.planalto.gov.br/ccivil_03/leis/L6938.htm> [Accessed 30 Out. 2017].

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ENVIRONMENTAL DISASTER IN A MINERAL AREA
LEGAL AND ECONOMIC INTERFACES IN AN ECOLOGICAL RESTORATION PROGRAM: LESSONS FROM THE VALE-BHP BILLITON CASE IN MARIANA, BRAZIL

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Jorge Madeira Nogueira[2]

ABSTRACT

Environmental restoration has become part of a group of responses societies have chosen to address and reverse the loss of biological diversity for which humans are responsible. Brazil is undergoing one of the largest programs of ecological restoration in Latin America at this moment. Because of the Mariana environmental disaster of November 2015, the Samarco/Vale-BHP Billiton will finance the restoration of 40,000 hectares of conservation areas in private land of agricultural holdings in the Rio Doce watershed. This environmental restoration program also will be responsible for payment for environmental service (PES) schemes as a main component for its consolidation in the long run. This paper analyses key legal and economic issues in this arrangement that, in our opinion, will either accelerate or delay its implementation. Based upon the review of official documents, relevant technical and academic material, and informal interviews with government officials, we show that the program is too ambitious in relation to financial and economic resource available and to the difficulty of creation of markets for PES. Furthermore, legal obstacles seem to be overwhelming, particularly those related to ill definition of property rights, to procedures for monitoring performance of arrangements for PES schemes and to potential conflicts in executing agreements between state/federal authorities and private sector managers.

Keywords: environmental restoration; conservation of biodiversity in private land; legal issues; economic features.

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1 INTRODUCTION

Environmental restoration (ER) has been a central international issue since the publication of the Millennium Ecosystem Assessment in 2005. As a matter of fact, ER was explicitly mentioned as a relevant component of the Convention of Biological Diversity (CBD) signed in the Rio92 Conference. "... (E)cological restoration and rehabilitation are required as part of the suite of responses society must make to address and reverse widespread ecosystem degradation, desertification, anthropogenic climate change, and the unprecedented loss of biodiversity for which humans are responsible" (BLIGNAUT; ARONSON and DE WIT, 2014, p. 35).

Brazil will undergo an enormous ecological restoration and rehabilitation challenge during the next fifteen years. It is well known that the country experienced one of the world's worst environmental disasters on 5 November, 2015, when Samarco mining company's Fundão tailings dam burst. This disaster killed people, swept away a district of the town of Mariana, polluted the Doce River valley, destroyed thousands in hectares of native and planted vegetation and degraded the water supply of 35 towns. Two Brazilian states - Minas Gerais and Espírito Santo - have experienced negative effects since then.

As a consequence of the Mariana disaster, federal and state environmental authorities and managers of the Samarco Company signed an agreement to restore more than forty thousand hectares of protected areas in private holdings in the Doce River watershed. There are, however, doubts about the effectiveness of this Agreement to properly restore and rehabilitate all of the areas destroyed by the mud tsunami created by the Fundão dam breakdown. Some of these doubts are related to legal aspects of the agreement; others to economic issues. It is our perception that following the public debate that occurred immediately after the disaster, it is time to stimulate a more substantive analysis than the more usual superficial coverage by establishment media.

It is our main goal in this paper to highlight central legal and economic discrepancies in the Agreement for Operation and Conduct Adjustment (TTAC in its Portuguese abbreviation). We do believe that these discrepancies will make the

whole TTAC vulnerable and limit its effectiveness to restore and rehabilitate the local ecosystem and to compensate those communities affected by the disaster. We do believe that our analysis sheds lights on issues that are common to other current and future initiatives of biodiversity restoration.

In order to achieve our objective we divide this paper into four main sections in addition to this introduction and the conclusion. In section 2, we briefly describe the main characteristics of the TTAC. In section 3, we favor a legal examination of TTAC. Section 4 is dedicated to an economic view of the Agreement. The final section (bridging natural, legal and economic sciences towards ecological restoration) highlights essential interfaces among three areas of knowledge that must be taken into consideration in any ecological restoration strategy.

2 AN ENORMOUS ENVIRONMENTAL RESTORATION: WHAT WAS AGREED UPON.

The environmental consequences of the Fundão dam disaster are not yet fully known. However, it is common knowledge that containment, repair, compensation and recovery measures after disasters like this are urgent and need to be closely controlled. As a matter of fact, actions to restore and rehabilitate the area started a few months after the disaster. By March 2016 negotiators arrived at a TTAC, the Brazilian abbreviation for an "agreement for operation and conduct adjustment". The TTAC was celebrated[3] by representatives of the Brazilian federal government, of the governors of the states of Minas Gerais and Espírito Santo, of the company Samarco Mineração S.A. and of its shareholders Vale S.A. and BHP Billiton Brazil Ltda.

The TTAC is a legal binder[4] deal that aims to end a dispute by voluntary act of the parties, given the urgency. The TTAC considers the damaged extension of 680 km of water bodies: rivers (Gualaxo, Carmo and Doce), lakes, ponds, streams,

[3] As a matter of fact, the TTAC was signed between two parts: in one side, the compromitents representatives of many public sector departments and institutions, from the federal and state levels. On the other side, the stockholders from the company.

[4] The TTAC was framed by the Process No-69758-61.2015.4.01.3400 at the 12th Federal Court of the Judicial Section of the State of Minas Gerais. Its judicial approval is expected in order to give effectiveness as an executive title according to arts. 1st, paragraph 4, and 4th-A of law No. 9,469/1997, combined with the art. 5th, paragraph 6th, of the Federal law – Law 7,347/1985, which regulates the public civil action.

estuaries, and mangroves. Monitoring of all activities planned in the Agreement is the responsibility of an Inter-federation Committee (CIF). In order to implement all planned measures provided for by means of environmental and socioeconomic programs, a private foundation was created in September, 2016. This non-profit foundation icalled renova foundation has specific governance, supervision and control structure in order to guarantee efficiency.

The Agreement was structured with different approaches depending upon the scope of the impacts, the characteristics of those impacted and the measures to be adopted. Actions were organized taking these features into consideration, as summarized in Table 1. Each approach has specific programs with individual conditions and deadlines. The Agreement brings together actions categorized as restoration/rehabilitation and compensatory measures, recognized as necessary for the reclamation/recovery of Doce River watershed conditions and the affected population well being, (depend upon the damage reversibility).

Restoration/rehabilitation measures are intended to recover, mitigate, remediate and/or repair impacts arising out of the "event" (term used in TTAC, 2016)[5]. In the elaboration and implementation of these measures, participation rights are assured for those affected, in the elaboration and implementation of proposed programs, projects and actions, access to information and restitution regarding public and community properties, including financial compensation for damages.

Compensatory measures, on the other hand, are directed to those impacts that cannot be mitigated, remediated or repaired. These compensatory measures will be materialized through improvements of social, environmental and economic conditions of affected areas (TTAC, 2016). The Agreement lays down that the compensatory measures should be proportional to the impacts not repairable/impossible to mitigate, aiming to speed up the recovery process of the watershed, in particular the quality and quantity of water in affected rivers (TTAC, 2016).

[5] Stands out that the parties address the greatest environmental disaster that has ever occurred in Brazil as an EVENT throughout the TTAC text. This choice of words in is line with the attitude of Samarco in not accepting any responsibility for the disaster/"event".

Once established, the CIF created 10 Technical Chambers (CTs, Deliberation No. 04 of 07/06/17; see Figure 1) with an advisory nature, formed to assist CIF to perform its functions defined in the TTAC. Each one of these CTs is coordinated by an institution member of CIF and composed by representatives of public institutions, according to their competence in the specific topic of the CT. Each CT has the responsibility of monitoring its related programs.

Table 1 - Restoration, rehabilitation and compensation actions in the Rio Doce watershed, organized according to peculiarity of the measures to be adopted

Approaches	Classification
Characteristics of the Affected Population	Directly Impacted: individuals or companies directly affected. Indirectly Impacted: individuals and legal entities (...) that resides or will reside in the area and with limitation on the exercise of their fundamental rights as a result of environmental or economic consequences, direct or indirect, present or future.
Territorial Area	Environmental Area 1: areas covered by deposition of tailings in the gutters and margins of the affected rivers and their tributaries. Environmental Area 2: municipalities bordering the Rio Doce and stretches of the impacted North Gualaxo and Carmo rivers. Socioeconomic Area: communities adjacent to affected rivers and estuarine areas, as well as coastal and marine areas.
Scope of the Measures (in programs)	Socio-economic: repair, mitigation and compensation for economic damage. Socio-environmental: repair and compensation for environmental damage.
Reversibility of Impacts and Characteristics of Programs	Repairable: measures and actions that aim to mitigate, remediate and/or repair environmental and socioeconomic impacts. Not Repairable (not feasible or impractical): compensatory actions and measures aimed to compensate for not repairable impacts (it is not possible or feasible), by improving the environmental and socioeconomic conditions of the impacted areas.

Source: Lacerda (2017)

In this context, the Agreement defines 41 (forty one) programs that organize restoration/rehabilitation and compensatory measures. Among them, 18 (eighteen) are socio- economic programs and 23 (twenty three) are environmental programs (see Figure 2). Each one of them has its minimum guidelines, based on impact assessment reports carried out by the involved institutions. Specific programs may

set specific limits to the area, types of measures or impacted groups. The general time frame defined in the TTAC is fifteen years, being shorter for some programs. Budget restrictions are also not predetermined and in some case there are minimum and maximum estimated amounts expected to be spent.

Finally, it is essential to highlight that among these programs there those directed to make feasible "specific measures and actions aimed at locations outside the directed affected area, given that these locations are relevant for the impacted population or contribute to effective environmental recovery of water bodies affected directly by the Event" (TTAC, 2016 p. 30). One of these is the “Restoration of Permanent Preservation Areas (APP) and of Reload Areas of Doce River Watershed and to control erosion processes"[6]. APP is a central element of biological diversity conservation policies in Brazil. We return to this Program later on in this paper.

3 ER IN MARIANA/BRAZIL: LEGAL CHALLENGES

The TTAC reflects somehow the requirements of Art. 8 of the 1992 Convention on Biological Diversity:

(...)

Article 8. In-situ Conservation

Each contracting Party shall, as far as possible and as appropriate: (f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies

Under Brazilian law, on the other hand, it is a self-composition instrument aiming to solve a conflict in an extrajudicial venue. According to Grinover et al. (2012), its self-composition nature does not affront the State monopoly of procedural or extra-procedural jurisdiction. It is, cuetually an alternative means to resolve

[6] Also known as Clause 161. This program focuses on Payment for Environmental Service (PES) as the basic compensatory measure for environmental recovery.

conflicts via reconciliation[7]. Reconciliation tends to draw up an agreement and aims at social pacification, because it deals with the sociological conflict (GRINOVER et all, 2012). It has an emergency character, especially if there is environmental damage. However, it is no guarantee of celerity or effectiveness (MILANEZ et al., 2016). It is essential to call attention to the fact that an out-of-court agreement does not prevent the possibility of litigation by judicial process. There is evidences in the TTAC that all parts involved expect (and actually require) an end[8] to the dispute by voluntary act of the parties. This expectation is explicitly mentioned in different parts of the Agreement[9].

Figure 1 - Inter-federation Committee (CIF) and its Technical Chambers

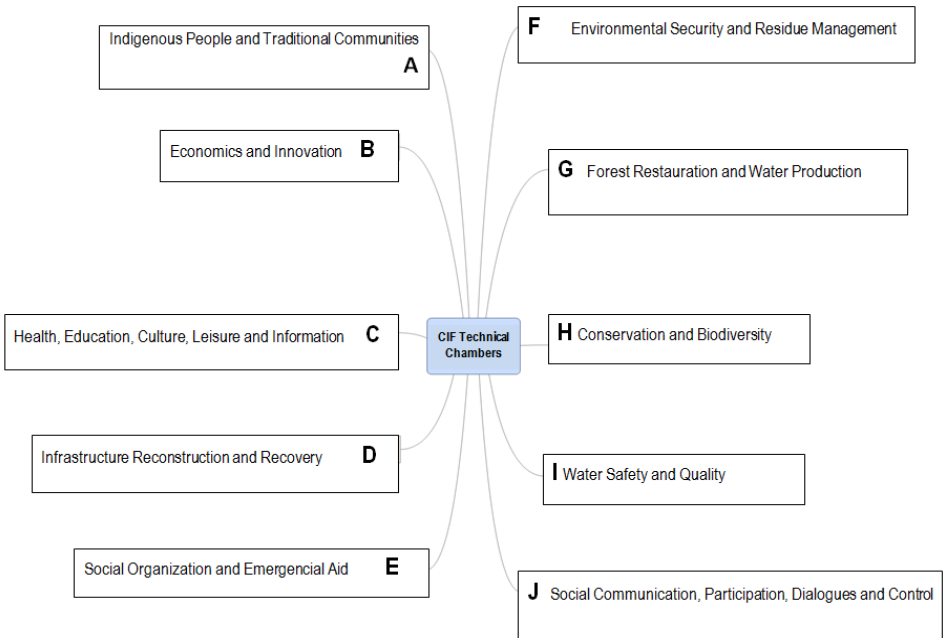
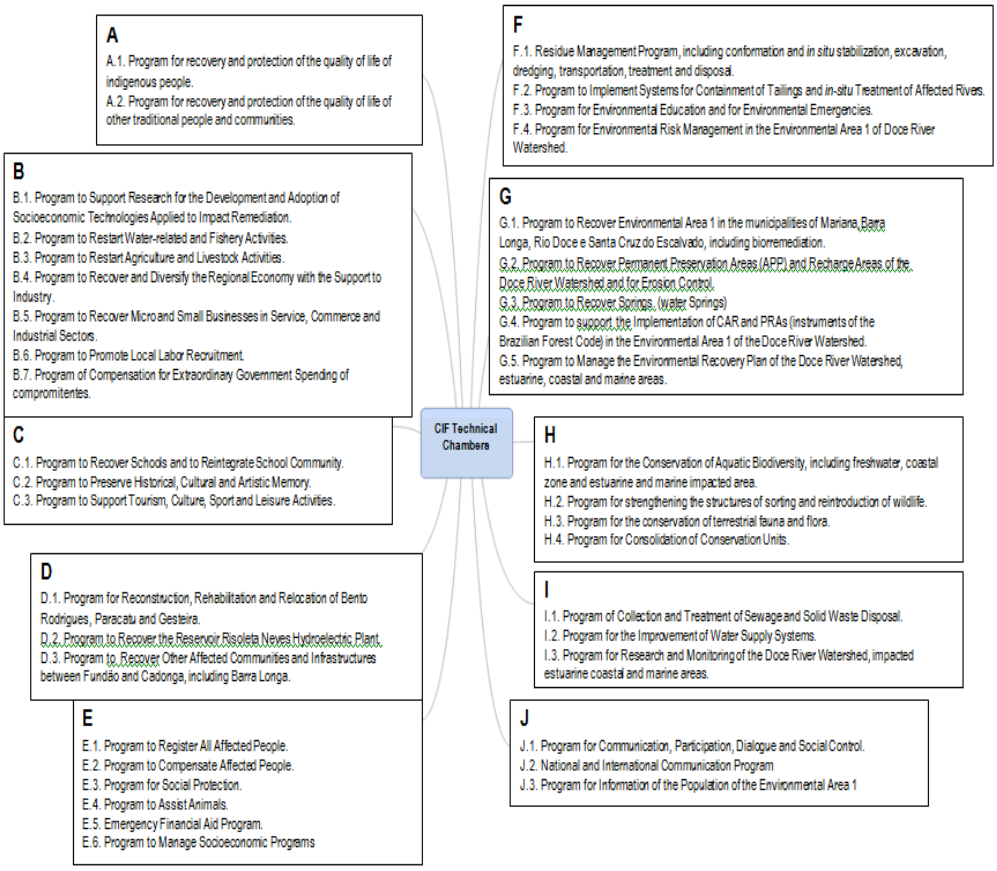


Figure 2 - TTAC PROGRAMS

[7] "The civil procedure law expressly admits three forms of self-composition to be obtained in due process (Code of Civil Procedure, Art. 269, II, III and V) to give them effectiveness to conclude the process: an agreement among the parts does not require that a judge recognizes it by sentence " (GRINOVER et al., 2012, p. 38).

[8] Reading 20: "whereas the parties, through the transaction that will be exhaustive in relation to the Event and its effects, intend to put an end to this ACP (0069758-61.2015.4.01.3400, in process at the 12th Federal Court of the Judicial Section of the State of Minas Gerais) and other actions, with object contained in or related to this ACP or as another that may be proposed by any authorized agents".

[9] Reading 22: "whereas the parts manifest themselves in the records of the judicial actions listed in the Annexes and other collective actions that may be proposed relating to the EVENT, provided that they have been covered by this agreement, object to enforce the clauses and obligations in this Agreement ". (TTAC, p. 6).



This is an extraordinarily unique interpretation of the Brazilian law. As a matter of fact, it is hard not to interpret it as an attempt to find a way around the rules of the Law. This possible interpretation is emphasized by the analysis by Rodrigues (2004), who argues that the TTAC was proposed by public agencies with an (potential) assault on trans-individual right, since it lists various requirements to be carried out by the committed parties, but not all of them will be met, either due to difficulty or impossibility of recovery or restoration or even for not being feasible to compensate or repair all damages. Interesting enough the Agreement already anticipates such a situation, by limiting the mandatory actions to situations/conditions "when they are possible".

A second discrepancy of the Samarco TTAC is related to the involvement of the affected population in the Agreement. In Brazil, interests and rights of

consumers and victims are exercised in individual or collective legal procedures as provided for in the Code of Consumer Protection and Defense (CDC). The collective defense will take place occur diffuse or collective interests or rights occur, as well as homogeneous individual rights or interests as laid down in Art. 81, item I, II and III of the CDC, (Law 8,078/1990). It is relevant to point out that diffuse rights include the trans-individual rights and they are characterized as being: i) shared by groups or categories of persons; ii) exceed the individual scope; and iii) the holders of the right are rounded up by the same fact situation. So, we are dealing with rights of an indivisible nature (damage individually indivisible) the property of which is undetermined and people are connected by circumstances of fact (art. 81, item I, CDC), as it is exactly the case in question, the Mariana tragedy.

Nevertheless, Medeiros (2016) highlights the absence of representatives of the affected population in the discussion of the Agreement, as well as in the definition of the terms under which the Agreement would be implemented. Milanez et al. (2016) point out that some clauses of the Agreement mention "transparency of actions and the involvement of communities in the discussions". This is the case, for example, of item XIV, Clause 6. However, parameters of this participation are not defined. Therefore, the question remains of whether the social involvement – riparian and estuarine population, indigenous and traditional peoples, rural workers, residents, fishermen, farmers, tourism industry and businessmen, etc. – described in the agreement in fact exists exist in fact only objective was (and is) sociably legitimize the deal socially.

Arguing that the TTAC has flaws in its preparation and design, Milanez et al. (2016) suggest the resumption of the whole negotiation process aimed at not only involving the local concerned population but also the Federal Public Attorney Office (MPF in its Portuguese abbreviation)[10]. As a matter of fact, the MPF has already questioned the Agreement and has sought to challenge it in the courts. According to the MPF view, the TTAC prioritizes the protection of involved company´s interests

[10] The Public Prosecutor Office (MP) functions are defined in the Chapter IV of the Brazilian Federal Constitution of 1988 (CF/88). The MP comprises federal prosecutors (MPU) and public prosecutors' offices of the Member States. The MPU comprises four branches - Federal MP (MPF), Labor MP, Military and Federal District and Territories MP, according to Art. 128 of CF/88.

(wealth to the detriment of the protection of affected populations and the environment.

The Inter-federation Committee (CIF) and the Renova Foundation also have legal shortcomings. The CIF is responsible for monitoring all activities planned in the Agreement. However, it is formed exclusively by representatives of branches from the executive in its three levels of government – federal, state and municipal. PoEMAS (2015) points out that the exclusivity of the executive agencies represents a high risk for the monitoring of activities. Among other reasons, companies of the Vale Group were important financiers of the election campaign of both the ex-President of the Republic, andthe Governors of Minas Gerais and Espírito Santo. The author believes that this involves a clear conflict of interest.

One could argue that these conflicts will be minimized by the existence of the Renova Foundation, which was created, as mentioned, to implement all planned measures provided for by means of environmental and socioeconomic programs. It is a private foundation, therefore less affected by political maneuvers and obliged to contract independent evaluation of its activities. These evaluations shall be done through external auditing, as established in Clause no 198. Nonetheless, it is the same Renova Foundation who picks the auditors and, hires and pays for their services[11]!

This is not the only questionable issue related to the Renova Foundation. Clause 10 of the Agreement is an example of a potential problem, as it keeps public authorities far from any negotiations and claims between the Foundation and the victim. This is also observed by Milanez et al. (2016). In spite of the fact that this Clause proposes a fair, fast, simple and transparent negotiation, the same text indicates that the negotiation will be individual in scope without any mediation of public agents. It is an unfair situation, to say the least. It is necessary to consider the

[11] The Agreement already indicates the four biggest audit firms (Ernest & Young (EY); KPMG; Deloitte; or PricewaterhouseCoopers (PwC). That is, the Big Four, as they are known internationally. Milanez et al. (2016) reported that the specialized literature questions the independence of these audit companies, criticize the language quite incomprehensible to the impacted. They suggest considerable naivety of the Brazilian public agencies to accept in the Agreement. This allows keep the same operational structure of these mining companies with the Brazilian State, i.e. it repeats the policy model that allowed the breaking of the dam in Mariana – and let problems persist as low institutional capacity, interference politics and conflicts of interest.

situation of economic dependence and vulnerability of those affected, in contrast to the power of the Company and the Foundation. These two are the ones who define who are impacted, and, simultaneously, draw up the parameters of compensation (Reading 34/TTAC). Clearly, the Agreement provides an imbalance between the parties. Actually, this imbalance was already announced in Reading No. 17 of the Agreement which allows the resumption of Samarco's operations before the fulfillment of legal proceedings.

It seems evident that the TTAC in its current format has many issues that may become obstacles to its effectiveness from a legal point of view. In fact, in its present design, the TTAC falls short of addressing the problems arising from the disaster in Mariana. An evidence of the problems involved in Agreement are the numerous lawsuits and administrative actions against it at this moment (September 2017) against it. Besides the actions filed by the MPF, it is necessary to point out that in the state of Minas Gerais, only in the region of Mariana, there are 16 collective actions; in the region of Governador Valadares there are 55 thousand actions! Among them is a precautionary action involving R$300 million (US$ 91 million)[12] in assets of the mining company, to ensure future compensation and reconstruction of the site.

Many of these actions have feen filed/claimed by those who signed the TTAC, in particular against the Samarco managers[13]. In relation to fines, 38 were imposed by the Brazilian environmental agency (Ibama), totaling R$345.5 million (US$ 104 million), and none has been paid so far because Samarco appealed against all of them and awaits judicial and administrative decisions. A similar reality is found at the state level, where the State of Minas Gerais Secretariat of Environment (Semad) is still waiting for the payment of more than R$200 million (US$ 60 million). Samarco has paid an amount of only R$6.3 million (US$ 2 million).

In relation to Samarco behavior, there is a growing feeling in Brazil that the mining company has taken only palliative measures in favor of to the victims. There

[12] R$ means reais, the Brazilian currency. US$ 1,00 equals R$ 3,3076 (as June 30, 2017).

[13] Criminal action moved by the MPF against officials and directors of Samarco and its controllers (Vale and BHP Billiton) and against the company VogBR. Process suspended from Federal Court in Ponte Nova for analysis of the claim present by the licensed mining company President, Ricardo Vescovi, regarding alleged use of illegal proof in the process. Available in: https://www.em.com.br/app/noticia/gerais/2017/08/09/interna_gerais,890448/milhares-de-acoes-sobre-a-tragedia-de-mariana-se-arrastam-na-justica.shtm. Access in 03/09/2017.

has been no payment of any compensation and there was no local recovery. On the other hand, Samarco argues to have applied R$2 billion (US$ 605 million) in repairment and compensation actions, in addition to the resources allocated to the Renova Foundation in order to make feasible the recovery from the larger environmental disaster recovery in Brazil. Let us now see if all these initiatives make sense from an economic perspective.

4 ER IN MARIANA/BRAZIL: ECONOMIC CHALLENGES

Economics can be helpful to assess and advise whether to allocate scarce human, material and financial resources to such a huge enterprise as the restoration of Mariana´s disaster. For this purpose, two main economic aspects must be discussed: a) costs involved in this restoration process and b) The expected financial and economic benefits. These aspects were highlighted by Blignaut, Aronson and De Wit (2014) who argued that, although conceptual progress has been made in the economics of restoration, too few practical applications have been achieved during the last two decades, in particular in these two crucial areas (valuation and financing). In their own words, "(...), there has been far too little work on how to actually measure and monitor the economic effects of restoration"[14].

As shown in Figures 1 and 2, the TTAC establishes the CIF with its 10 Technical Chambers as advisory body to assist CIF to perform its functions of monitoring 41 (forty-one) programs that organize restoration/rehabilitation and compensation measures. Given the giant social, economic and environmental consequences of the Fundão dam breakdown, one would expect that costs of these programs would be substantial, generating outstanding potential financial and economic benefits.

According to Clause 226 of the TTAC, Samarco, or its controlling shareholders, will make annual contributions aimed at execution of those 41

[14] We also agree with Blignaut, Aronson and De Wit (2014) that "(i)t seems clear that if restoration scientists and practitioners were to work closely with economists to systematically plan for the evaluation and monitoring of economic values and impacts derived from restoration, this unsatisfactory situation could quickly change. In other words, it would become “increasingly easier to detect the economic effects of future restoration projects, choose economically efficient ones to implement, and demonstrate their economic outcomes" (p.36).

programs. These contributions will total an amount of R$ 4.40 billion (US$ 1.34 billion) for the period 2016 to 2018. On top of that, more R$ 500 million (US$ 151 million) for sanitation actions in the affected municipalities. Therefore, there is an expected expenditure of R$11.1 billion (US$3.36 billion) by Samarco by 2030. According to the Renova Foundation, the amount paid in indemnity has result in R$430 million (US$ 130 million) so far (middle 2017), including emergency card payments since December 2015, as well as the claims for water damage from January 2017 on.

An obvious question arises: are these values too little, quite enough or too much? It is difficult to assess whether US$ 84 thousand per hectare in average is enough to restore an extremely degraded biological diversity area in a tropical country, not to mention social, financial and economic losses. Moreover, in relation to those 41 programs, the Agreement requires shareholders to restore the Doce River watershed to the situation prior to the breaking of the dam (Reading 23/TTAC). However, how to define precisely the status quo in that region?

In addition, according to Milanez et al. (2016), the Agreement presents several inconsistencies regarding the definition of goals and deadlines. There are imbalances in details between socioeconomic programs - generic and vague - and environmental programs, more specific and detailed. There are programs, we add the meaning of which it is that is impossible to understand, for example, "E.6, Program to Manage Socioeconomic Programs" or "J.2. National and International Communication Program" (see Figure 2). Moreover, the Agreement provides for the creation of programs, but it does not establish either conditions for concrete results or parameters of evaluation, especially in regard socio-economic programs. It also reports a variety of different deadlines for commitments. All these aspects make difficult an effective and concrete monitoring by society becomes de for difficult.

The Mariana´s experiment has, however, another challenging ingredient: how to guarantee that implementation and expected success in the short run will be followed by maintenance and success in the long run? After the initial investments necessary for the early recovery process, how to assure that the areas and especially the affected people will have the capabilities to transform this recovery in to a

permanent process of environmental conservation and social and economic improved wellbeing? Our analysis of the programs, although not complete, indicates that the TTAC is extremely short-sighted from an economic perspective. They seem to try to solve the main short-run constrain without much concern for the long run sustainability.

In order to highlight our argument, we select just one program, close by related to the recovery/restoration of biological diversity: G.2. Program to Recover Permanente Preservation Areas (APP) and Recharge Areas of the Doce River Watershed and for Erosion Control (see Figure 2; we will refer to it as G2 Program). We chose only one program due to limitations of dealing with many aspects in a single paper. And our choice of the G2 Program was influenced by some of its characteristics: dimension of the focal area, size of its estimated costs, its relationship with objectives of the Brazilian Forest Code (in special, in relation to biodiversity conservation in private lands), and the fact that long term success will depend upon what can be achieved by a Payment for Environmental Service (PES) scheme[15]. All of these are illustrative issues ofthe economics of biodiversity restoration.

The G2 Program is designed to be implemented in an area of 40 thousand hectares. This area represents only 0.5% of the total area of the Doce River watershed[16]. Nevertheless, it is a much larger area than the average recorded for PES schemes in Brazil so far (PAGIOLA; CARRASCOSA VON GLEHN; TAFFARELLO, 2013). This dimension is, thus, unique in the country and will demand significant amount of human, material and financial resources. All these aspects have evident consequences on cost estimates for the G2 Program.

There is no denying that TTAC proponents should have estimated costs carefully. Several costs associated with biodiversity restoration programs, recovery

[15] It is true that strong theoretical advances have been made with respect to PES. In practical terms, however, one requires an assessment of the value of the locally or regionally available environmental goods and services. Once again, although it is true that there is a strong link between ecosystem goods and services (EGS) and human welfare, it is also true that investments in recovering these services through the restoration of natural capital have to be planned and carried out appropriately. Economics may contribute to assess and evaluate the contribution of PES to a permanent positive impact upon the wellbeing of those who had experimented huge material losses.

[16] The watershed hasan area of approximately 86,715 km 2, of which 86% belongs to the State of Minas Gerais and the remainder to the State of Espírito Santo, covering 230 municipalities (PIRH, 2008).

of degraded areas or environmental conservation occur in all phases of any PES, from program planning to operation. Typically, the main focus is upon restoration and opportunity cost. These cost have a direct impact upon the design of PES projects. However, the economic literature draws attention to other associated costs, called by) costs of provision Engel (2008, such as transaction, management, compliance or monitoring costs. They are of great importance to the efficient range of schemes with the use of PES.

There is no evidence that any efforts have been to made estimate all these costs for the G2 Project. The Agreement, however, establishes a cost limit R$ 1.1 billion (US$ 334 million) for this G2 Program! It seems clearly insufficient, reflecting more of a political agreement rather than the result an of economic celebration, though one cannot underestimate the difficulties of estimating costs of a restoration project. A survey compiling both benefits and costs of restoration (DE GROOT et al. 2013) noted that the way in which these costs are calculated varies greatly. In some instances total cost is determined, while in others it is average cost. Sometimes it only includes private financial cost, and no in-kind contribution is indicated. Often, total cost is mentioned, but not in comparison to a unit such as an area or distance, for example, kilometers of river front restored.

These differences not only make comparisons very difficult, but also prevent/hinder the development of the economics of restoration, as it is tricky to build a track record of reference cases that could be used as benchmarks. Nonetheless, Bernardo (2017), after analyzing several PES schemes in Brazil, concludes that payments made to agricultural producers for environment services derived from their holdings are, in general, very low. These payments have been smaller than the opportunity cost of land use. Agricultural producers have little incentive to involve themselves voluntarily in PES schemes and they offer environmental services only in those tracts of land they are required to conserve by the Brazilian Forest Code.

Attractiveness to agricultural producers has to be an essential component of G2 Program, in order to voluntarily involve rural producers willing to promote changes in their land use, in exchange for direct incentives. Which scenarios "with"

and "without" the PES could illustrate the possible benefits that would promote adherence to the program? De Groot et al. (2013) point out that the benefits of restoration are often reported in association with restoration studies. However, these reports seldom identify/indicate whether the benefits perceived were marketable and, if so, to whom and by whom, or whether they represented economy-wide benefits to society. In their opinion, not considering the distributional impacts and/or the difference between marketable and economy-wide benefits to society can, and often does, lead to confusion. This is due to the fact that benefits arising from restoration are often public benefits, while the costs incurred are often private.

Making rural producers stay in the G2 Program is as important as their adherence to it due to the voluntary nature of producers´ participation. How can one make participants stay in a program that involves rural recovery of 40,000 ha in 10 years, over 80,000 km^2 of quite heterogeneous, environmentally and socially, region in two states of the federation, without funding by the recipiant/user of environmental services, what is necessary to maintain the perpetuity of individual and collective benefits? Are 10 years a period long enough to provide the reliability needed to ensure the achievement of its objectives and the efficiency desirable for its implementation?

5 BRIDGING NATURAL, LEGAL AND ECONOMIC SCIENCES TOWARDS ER

There are several legal and economic discrepancies in the Agreement for Operation and Conduct Adjustment (TTAC). In its present form, the TTAC is in the way for complete lack of effectiveness. Its failure will imply a waste of human, material, financial and economic resources without restoring the biological diversity destroyed by the Samarco disaster. Furthermore, the TTAC ineffectiveness will correspond to a huge social cost, condemned thousands of people to a permanent state of poverty.

There are already lessons from the Samarco disaster that we must learn to illuminate conceptual frameworks and practical actions related to other environmental restoration experiences. We point out a few of them in this section.

Many others still require deeper research efforts and may compose an agenda of future research that we mention in our concluding remarks.

Initially, it is essential to emphasize the complementary characteristics of the Polluter Pays Principle (PPP) and the Protector Recipient Principle (PRP). In analyzing the TTAC, one feels that they seem to be treated as substitute. This is particularly evident in the treatment given to the PES in G2 Program: the short run PPP is being replaced little by little by a long run potential PRP. The PPP principle imposes costs upon those who pollute/degrade in order to avoid the deterioration of environmental assets or goods. The European Union in its directives related to the PPP set out that natural or legal persons, whether governed by public or by private law, must pay the costs of the measures that are necessary to eliminate the contamination or to reduce it to a limit set by the standards, or equivalent measures, to ensure quality of life, including those laid down by the competent public authority.

From an economic point of view, the PPP seeks/pursues the internalization of externalities. In a first moment, PPP imposes economic costs of prevention on the accountable to provide for the internalization of agent externalities, in order to avoid the foreseen damage. In this case, the PPP has a clear preventive nature and can be understood as an application of the precautionary principle. Being the damage unforeseen, the PPP[17] is an repressive element, without the connotation of criminality, but pursuing the intergenerational social responsibility of repairing the damage.

In this last case, and under the Brazilian law, there is the civil liability/responsibility which is independent of guilt. Indeed, accurse the agent help responsible for the damage respond objectively for repairing, eliminating or reducing it to a level set by environmental standards or equivalent measures. It must be emphasized that, in the case of incidence of civil liability, the main goal is the return

[17] It is worth mentioning that the fact of paying for a negative externality (pollution/degradation) does not authorize the economic agent to pollute/to degrade. Quite the contrary, the principle aims to inhibit pollution/deterioration of environmental goods/services/assets. The efficiency of the instrument is directly linked to its ability to reduce pollution. The application of the polluter pays principle serves as a foundation for inhibiting conduct that cause pollution, degradation or deterioration of vegetation cover, burning, deforestation and other forms of destruction of the environment.

of the environment asset to the status quo ante, and, only if this is not possible, make the compensation for the damage. This is very different from the objectives of the PRP.

Notwithstanding the importance of the use of the PPP, it is true that, in the present socioeconomic reality it is no longer sufficient to deal with environmental risks and damage. Therefore, the idea as gained prominence in the environmental field to implement principles that will work as a form of bringing economic gain to the "protectors of the environment" - those economic agents who develop activities environmentally friendly. This gain may be materialized with the adoption of positive incentives – income, tax or credit incentives - in order to regulate human conduct and shape it in favor of environment.

This is the context in which the PRP is intended to act. In short, the PRP preaches that a public or private agent who protects a natural good/service/asset for benefit of society should receive financial compensation as an incentive for the environmental service provided. Its application is intended to provide for economic justice, valuing the environmental services rendered voluntarily and generously by a agent or group of agents, who shall be reward for providing the services (DEON SETTE and NOGUEIRA, 2012, p. 162). In its implementation, the beneficiary is the one who provides the environmental service (a proactive behavior), and the burden falls upon society, who benefits from the service. It is a principle of easy diffusion and significant effectiveness.

It seems inefficient and unfair to transfer the responsibility to pay for a damage (that is, to apply the PPP) in the present towards a potential PRP to a PES experiment that has uncertainties in terms of its effective success in ten years time. The G2 Program (as a other Programs under the TTAC) tries to do exactly this. It seems to be a financial strategy of charging Samarco cash flow in relation to the disaster: to reduce present private (financial) costs and transform them in potential economic (social) benefits in the future! It is a financial strategy with clear legal consequences.

A second lesson - closely related to the above - is a concrete example of an issue emphasized in the academic literature: a) costs involved in any restoration

process and b) financial and economic benefits that are expected to be derived from it. These are issues that have received almost no attention whatsoever from those involved in the elaboration of the TTAC.

As far as costs of restoration, for example, are concerned, the TTAC is close to a fraud. So far, there has been no success in obtaining a straight answer to a simple question: how the amountof US$ 3.4 billion, for a 15-year period, was estimated? If this value is compared to restoration costs of other environmental disasters worldwide, the US$ 3.4 billion are incredibly low. However, this type of comparison is always tricky. Yet, an observer tends to imagine that US$ 3.4 billion would be a convenient ceiling for Samarco. Actually, the adequate procedure should have been to estimate all damage costs and all restoration costs. Only after this coleld "political negotiations around a convenient value" appen in a scenario of transparence.

In its current format, the TTAC has an evident recipient of financial benefits: the Samarco Company. It gets a convenient cash-flow for its restoration expenditures, with smaller expenditures in the short run, thirty years of annual payments that will be financed by the exploitation of its mines. A at the end of the period, "affected people shall go on with their lives by themselves". In other words, economic benefits are a gigantic unanswered question. As a matter of fact, the question about economic (social) benefits of the TTAC has not even been formulated. Its seems that its proponents believe that "everything will be better for these people" or "biological diversity reality did not have good quality even before the event" or "estimating economic benefits is very difficult" or any other similar excuse.

6 FINAL COMMENTS

Brazil faces one of the largest programs of ecological restoration in Latin America. Due to the Mariana environmental disaster of November 2015, Samarco/Vale-BHP Billiton will finance the restoration of 40,000 hectares of conservation areas in private agricultural holdings in the Rio Doce watershed. In order to do so, Samarco Company has signed an Agreement for Operation and Conduct Adjustment (TTAC). This essay highlights (some) central legal and economic discrepancies of this strategy for restoration of biological diversity and restoration of life conditions for thousands of people.

In the present stage of our investigation it seems clear that the present format of the TTAC carries a high latent potential of becoming an extraordinary failure from both biological diversity restoration and socioeconomic recovery perspectives. The TTAC is an "agglomerate of coose/untied programs" (as can be observed in Figures 1 and 2) instead of a "coherent amalgamation of complementary actions". There are gaps in its ecological, legal and economic components and among them.

Ecologists must closely follow biodiversity restoration alternatives allowed in the TTAC. As Lacerda (2017) points out, there are four possible restoration options: natural regeneration, natural regeneration cum planting, planting of native species and agro forestry systems. Which one is more suitable for different ecosystems in the Doce River watershed? Is there enough scientific information about all four systems to illuminate any choice? Are human, material and infrastructure resources available to all affected farmers?

The Federal Public Attorney Office (MPF) has not directly participated in the TTAC negotiation and implementation. Actually, the MPF disagrees with several aspects of the Agreement. Moreover, as pointed out before, there are thousands of legal actions against the TTAC and Samarco. All this represents a cleavage between social groups and coordinators of the TTAC. Monitoring all the legal actions and their dismemberment can become a productive research agenda for many specialists in environmental law.

Another challenge is to achieve an adequate balance between social, economic and biological diversity restoration goals. It has been usual in Brazil, for the last ten years, to transform any and all public programs into the so called "social programs", many of them of a deep populist nature. In observing Figure 2, one gets the impression that some programs (for example, A, B, F, G, H) show significant possibilities of being influenced by political populist priorities. Once again, monitoring these programs may be a prolific research agenda for biologist, economists and other social scientists.

The Samarco´s disaster and its TTAC will remain object of interest to Brazilian lay people and specialists for many years. They shall also become a stimulating research agenda for biologists, lawyers and economists. Many questions are still unanswered. Other questions have not even been formulated. Several questions will only be answered after a decade.

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THE LEGAL PROTECTION OF NATURAL AND CULTURAL HERITAGE

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1 SUMMARY OF THE MOST IMPORTANT FACTS AND ISSUES

This report addresses the main issues related to the implementation of the Convention on Biological Diversity and other regulations adopted by Brazil for the regulation of protected areas and protection of traditional knowledge associated with. The study considers preliminarily the need to protect cultural diversity and its importance for *in situ*conservation[3]. The central international norms for this research report will be The Convention on Biological Diversity, the Convention 169 of the International Labour Organization and the Convention for the Safeguarding of the intangible Cultural Heritage of Unesco. Among The national laws, it was extracted the need for protection from constitutional devices and legislation on protected areas aimed at guaranteeing socio-environmental rights in traditional marine-coastal territories in Units of Conservation of Integral Protection. As Search Proxies We elect the right to traditional territory and the right to participate in the shared management of the Parks. The Analysis sample consists of a specific case in which

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[3] CDB, art. 2. Conditions *in situ* means the conditions under which genetic resources exist in ecosystems and natural habitats and, in the case of domesticated or cultivated species, in the means where they have developed their characteristic properties.

the researchers will be[45] accompanied. It is also Intended to analyze as variables the implementation of the mechanisms foreseen by the Programs of Land Regularization and Socio-Environmental Interaction, under the Management Plans of each of the Parks (PESM and PEIb).

2 SUMMARY OF THE RELEVANCE OF THE CONVENTION ON BIOLOGICAL DIVERSITY (OR OTHER APPLICABLE CONVENTION (S) AND THE PRINCIPLES APPLIED TO THE PROBLEM UNDER STUDY

The Convention on Biological Diversity was inserted into the Brazilian legislation by means of Legislative Decree No 2, of 1994. Subsequently regulated by a provisional measure replaced by law 13,123 of 2015. It Is from this that it is recognized as one of the strategies for conservation of biodiversity in situ, the creation of protected areas, in terms of its art. 8, points (a) and (j) also Determines the respect, preservation and maintenance of the knowledge, innovations and practices of local communities and indigenous populations that present traditional lifestyles relevant to conservation and sustainable use of biological diversity.[6]

As previously mentioned, in addition to the CBD, are relevant for the analysis of the problem the Convention 169 of the International Labour organization and THE convention for the safeguarding of the Intangible Cultural Heritage of Unesco. The C169 ILO in its Art. 2 assignstothe go Vernon the responsibility of developing

[4] The legal basis of traditional marine-coastal territories that houses communities that do not fall within the indigenous or Quilombola category is based on the systemic interpretation between articles 215 and 216 of the Constitution of the Republic Federative of Brazil of 1988, which recognize the protection of cultural Expressions and article 14 of the Convention 169 of the International Labour Organization, which recognizes the right of possession and ownership of the territory traditionally occupied by the peoples and Populations and also those used for subsistence and cultural activity practices. Given these assumptions, it is possible to recognise the right to land and marine territory of Caiçaras communities.

[5] According to the definition adopted by the National System of Conservation Units (SNUC) – art. 2, VI- integral protection: maintenance of ecosystems free of alterations caused by human interference, admitted only the indirect use of its natural attributes. For This category of management, the SNUC also predicts on Art. 42. The traditional populations residing in conservation units in which their permanence is not permitted shall be indemreed or compensated for by existing benefactors and duly reallocation by the Public Authorities, in place and conditions agreed between The parties

[6] For The present study, traditional peoples and communities will be understood as the art 3, item I, of Decree 6040 of 7 February 2007, which instituted the National Policy for the Sustainable Development of Traditional Peoples and Communities according to which: I-Peoples and Traditional Communities: Culturally differentiated groups that are recognized as such, which have their own forms of social organization, which occupy and use territories and natural resources as a condition for their cultural, social reproduction, Religious, ancestral and economical, using knowledge, innovations and practices generated and transmitted by tradition;

mechanisms to protect the rights of traditional peoples and communities, in addition to respecting their integrity through A coordinated actionthat guarantees, mainly, the right to participate in the decision-making processes that directly affect them and the right to self-determination. Art. 4th complements stating that "Governments should adopt measures in cooperation with the people concerned to protect and preserve the environment of the territories they inhabit." Unesco finally understands "intangible cultural heritage" practices, representations, expressions, knowledge and techniques-together with the instruments, objects, artifacts and cultural places associated with them-that communities, groups and, in Some cases, individuals recognize as an integral part of their cultural heritage. This Intangible Cultural Heritage, which is transmitted from generation to generation, is constantly recreated by communities and groups according to their environment, their interaction with nature and their history, generating a sense of identity and continuity and Thus contributing to promote respect for cultural diversity and human creativity. "From this we believe that the relationship between traditional forms of community life and the protection of biodiversity as inseparable values is evident.

3 A SUMMARY OF THE LOCAL LEGAL CONTEXT AND HOW THE NORMS COULD BE APPLIED TO THE PROBLEM UNDER STUDY

The Coastal marine territories constitute territorial spaces especially protected by Brazilian environmental legislation, mainly because They present natural riches, such as the coastal zone of the State of São Paulo, region Sheltered by Atlantic Forest vegetation, considered a national heritage by article 225, § 4, of the Constitution of the Federative Republic of Brazil of 1988 and as a Biosphere Reserve by the "Man and the Biosphere" Program (MAB-1971) of the United Nations of Educational, Scientific and Cultural Organozation (UNESCO). However, this region is inhabited by traditional communities (indigenous, Caiçaras and Quilombolas) for many generations, so it also represents a vast intangible patrimony, which establishes the interdependence between biodiversity and diversity Cultural.

In addition to the legal framework that recognizes the Alliance between protection of natural resources and the rights of communities on the territories they traditionally occupy, one of thes pEY instruments provided by the legislation To

Ensure this Alliance is the managementplan, especially zoning. The recognition of the territory occupied by traditional populations is the first step towards seeking instruments that guarantee the right of ownership and shared management.

In thecase of THE PESM the implementation of The Historical Cultural Anthropological Zone-ZHCA was fundamental to guarantee the right to traditional territory occupied by Caiçaras communities. According to the Management Plan, the recognition of ZHCA is the first step to perform the recategorization of management, in order to change the category of integral protection for sustainable development, under the terms of the SNUC. The change in the management category allows the permanence of the communities resident in the park and excluded the possibility of resettlement (art. 42, SNUC). However, according To the Constitution of The Federative Republic of Brazil 1988 the recategorization depends on state or federal law, which makes this option vulnerable to the political composition of the houses Legislative.

However, the recognition of ZHCA occurred only in the PESM because in this region the traditional communities had already developed a Plan of Traditional Use before the elaboration of the Management Plan, so that there was the incorporation of the first in the second, which facilitated the Guarantee of possession of the traditional territory and the establishment of the technical Chamber of traditional communities in the Advisory Council, as an attempt to ensure the effective participation of communities and the shared management of the territory, without relying on Recategorization of the conservation Unit. In This case, ZHCA was excluded from the Land Regularization Program, which demonstrates the guarantee of the right of possession over the traditional territory and excludes the possibility of resettlement. (SIMÕES, 2014)

In the case of PEIb, it is interesting to note that zoning allowed subsistence fishing in the marine area allocated in the damping zone, following the parameters of the Ecological Economic Zoning of the North Coast. This recognition is fundamental, because the traditional marine-coastal territory covers both the land area and the marine area, considering that traditional territory is not limited to the region occupied by the communities, but also those used For traditional and

subsistence practices, in accordance with the provisions of art. 14 of Convention 169 of the International Labour Organisation (C 169 ILO). In addition, the Caiçaras communities Of Ilha Bela signed a term Of authorization For Sustainable use (TAUS-(Ordinance N 89, of april 15, 2010)) with the Secretariat of PATRIMONY OF the Union (SPU), this toolguarantees the right to possession of the traditional territory of Caiçaras communities that were not contemed with the rights of possession of property secured by The Federal Constitution of 1988 (CF/88) to the indigenous and quilombolas populations.

4 DISCUSSION ON HOW GOOD OR BAD REGULATION AND GOVERNANCE PROCESS ARE WORKING

One of the main inconsistencies of the National System of Conservation Units (SNUC) is the overlap of conservation units of integral protection and traditional territories occupied by Caiçaras communities, in view of these situations it is necessary Questions about the legal possibilities and limits to resolve this conflict. To this end, we took as an example the State of São Paulo, where the creation of conservation units for the preservation of the Atlantic Forest did not take into account the territory occupied by traditional communities residing in the areas in which Parks were created State (category of Conservation unit of integral protection that does not admit the direct use of natural resources), such as the State Park of Serra do Mar, the Park This[78]dual of Beautiful Island etc.[9]

[7] The Coast of the State of São Paulo was chosen as the object of research because it represents the largest biological corridor of the Atlantic Forest in Brazil. Therefore, the State's marine-coastal zone is a strategic region for the creation of Integral Protection Conservation Units.

[8] For the purposes of this study, territory associated with traditional peoples and communities will be understood in accordance with art. 3, paragraph II, of Decree 6040 of 7 February 2007, which instituted the National Policy for the Sustainable Development of Traditional Peoples and Communities according to which: II-Traditional Territories: The necessary spaces for cultural, social and economic reproduction of traditional peoples and communities, whether they are used permanently or temporarily, observed, with regard to indigenous peoples and Quilombolas, respectively, which have the arts. 231 of the Constitution And 68 of the Transitional Constitutional Provisions Act and other regulations.

[9] The socio-environmental diagnosis of these parks indicates the existence of traditional communities residing there. In Addition, it was also created the Marine State Park of Laje de Santos, the only conservation unit of integral Protection of state Marine Paulista, which directly impacts the traditional communities caiçaras residing on the coast of the State of São Paulo and Use the fishing resources for their livelihood. However, we will not undertake an analysis of this marine UC because its management plan has not yet been approved, but we will also exclude from a detailed analysis the Anchieta Island State Park, which also has no Manjo plan. For the purposes of analyzing this work, only the parks that have a management plan completed and approved will be considered only those

According to art. 42 of the Law 9.985/00 that instituted the National System of Conservation Units (SNUC) the category of management of the parks does not allow the existence of traditional communities residing and the alternative presented for overlapping situations is the resettlement By indemnity, or, while it is not possible to carry out the displacement, the law brings the possibility of concluding the terms of commitment aimed at reconciling the presence of traditional populations residing with the objectives of the Unit, in a way Temporary, without prejudice to the ways of life, sources of subsistence and places of residence of these populations, ensuring their participation in the elaboration of these standards and actions. However, what is verified in the actual plan of application of the laws is the creation of public domain conservation units without the necessary private ownership disappropriations located in their limits have been made. (LEUZINGER, 2009, p. 161).

This scenario contributes to the lack of effectiveness of the legal forecast. It is necessary to seek solutions that allow the legal regime to be adapted to reality, not only with respect to law enforcement, but also its effectiveness in the sense to improve its efficiency in achieving its objectives. In the case of SNUC, according to art. 4, among the objectives that substantiated the institution of the Law are: 1) contribute to the maintenance of biological diversity and 2) protect the natural resources necessary for the subsistence of traditional populations, respecting and valuing their knowledge and Culture and promoting them socially and economically.

In View of this logic, it is increasingly necessary to seek legal instruments that enable the continuous and not only temporary permanence of traditional communities in the conservation units, even if they are created in the category of protection Integral, as is the case of the Serra Mar State Park and the Ilha Bela State Park, which found in the alternative Management Plan that allow to reconcile the

who recognized the objective of the Historical Anthropological Cultural Zone (ZHCA). To guarantee the socio-environmental rights of traditional resident communities, such as the Serra do Mar State Park and Ilha Bela (PESM/PEIb). Cf. State Parks in São Paulo. Available in http://fflorestal.sp.gov.br/unidades-de-conservacao/parques-estaduais/ Accessed September 13, 2017.

maintenance of biodiversity to cultural protection and respect for traditional peoples and communities Residents.[10]

According to the Management Plan (PM) of the PESM, the state Park has 11 (eleven) cores, but only the Pincinguaba nucleus was recognized as an Anthropological Cultural Historical Zone by the strong concentration of traditional resident communities. In Addition, according to a research developed by the Observatory of the Sustainable Coastline, the largest indicators of the presence of traditional communities are in the State Park of Ilha Bela (PEIb) and in the region of Ubatuba (Picinguaba) of the PESM.[11]

The Management Plan of The PEIb recognized asCultural Historical Zone the region Of Bahia Dos Castelhanos (comprising The beaches Of Figueira, Red, Ribeirão, Saco do gloomy, Mansa and Canto da Lagoa, and Islands of Vitória, Búzios and Fishermen). In addition, there are two initiatives that contemplate the caiçaras communities of this park, one is the Tribuzana Project that has been developed by the Center for the Law of Peoples and Traditional Communities of the Federal Public Prosecutor's office of Caraguatatuba, which is Aim to ensure the self-determination of caiçaras communities and their empowerment by creating a council and drafting the first Community protocol to Caiçara. Another fact that contributed to the choice of PEIb was the elaboration of the first Term of Authorization for Sustainable Use (TAUS), granted by the Secretariat of Patrimony of the Union (organ of the Ministry of Planning, Budget and Management) to guarantee the right to housing and To the management of the natural resources of the waterfront to Caiçaras communities. [12]

[10] As for this problem it is worth remembering that there are authors such as Marcia Leuzinger, which advocate the change in the management category, in cases where there are traditional resident communities. This solution is also very interesting, as some parks (integral protection category) were created prior to SNUC and the ratification of CBD, therefore, the revision and alteration of some conservation units remain as a solution Possible for this deadlock. However, in the present study, we sought to present the legal instruments made available by the legislation itself to reconcile the conflicts generated from overlaps. About this discussion see LEUZINGER, Marcia Dieguez. Nature and Culture: Integral Protection Conservation Units and Traditional Resident Populations. Curitiba: Letter of the Law, 2009. 280 p.

[11] Traditional Communities and conservation units. Data available at: http://litoralsustentavel.org.br . Accessed September 18, 2017.

[12] Traditional Communities and conservation units. Available in: http://litoralsustentavel.org.br/boas-praticas/comunidades-caicaras-tem-reconhecimento-de-seu-territorio/ . Accessed September 18, 2017.

We contacted the Citizen Support Service (E-sic) of the Brazilian federal government to make a quantitative and qualitative survey on the use of this tool. [13]theMinistry Of Planning, Development And Management reported that up to the present moment were celebrated 16 (sixteen) TAUS, based on the legal framework promoted by Ordinance n 89 of 2010, may be granted individually, collectively by a group OF CPF's or collective by representation of legal entity still we have not obtained access to the content of consolidated. Similarly it was requested, via Access to Information Law to the Forest Foundation the minutes of the meetings of the Board of Directors of the Pinciguaba CORE of Pesm (only THAT WAS recognized as ZHCA within the park which is divided into 11 cores) and the The PEIb. As for the first, they had only the material in the physical environment, which made it difficult to access the information and the second was only 6 minutes that said nothing about the technical chambers of the traditional communities. Given These results, we feel the need to program interviews with the managers of the parks and the representatives of the traditional communities for a better understanding of these instruments.

5 DISCUSSION – DIAGNOSIS OF CAUSES AND EFFECTS AND SYSTEMATIC RELATIONS RELEVANT TO TOPICO 5

The International Protection of biodiversity and cultural diversity, reflected in the Brazilian legal order to improve the implementation of the National System of Conservation Units (the main Brazilian strategy for the implementation of In situ conservation, art. 8, J, CDB). Recognizing the importance of traditional communities ' livelihoods for the preservation of natural resources and increased biodiversity Has contributed to seeking alternatives to the forced displacement of traditional communities residing in Integral protection conservation units.

One of the alternatives is the establishment of the ZHCA that allows for a walk towards the recategorization of traditional marine-coastal territories for the category of sustainable use of natural resources, besides allowing the permanence of the communities Residents as an alternative to resettlement.

[13] Electronic System of information service to the citizen. Available in: https://esic.cgu.gov.br. Accessed on October 18, 2017. Request Protocol Number 03950.003011/2017-57.

However, it is not enough only to recognise the traditional territory, for an effective protection of biodiversity and cultural diversity, it is necessary to break with the current management model of the Integral Protection conservation units, consisting only of Advisory Board, but rather to move towards a governance model that includes traditional communities in decision-making processes in an equal manner with respect to other stakeholders. Both The management plans of the PESM and the PEIb present the elaboration of the Technical Chambers to work with the advisory councils that compose the administration of the parks. However, no information is available from the Forestry Foundation regarding the performance, operation and representation of these chambers.

6 DISCUSSION – RECOMMENDATIONS FOR GREATER EFFECTIVENESS, EFFICIENCY AND FAIR LEGAL GOVERNANCE FOR

A. The question specifies

The main issue is the gulf between the National System of Conservation Units, with regard to the management of the category of integral protection and the reality of fact in which the specially protected territorial spaces are inserted. This context is doubly harmful, because it does not guarantee the effectiveness of the environmental protection law that has created the units and at the same time contributes to disrespect to socio-environmental rights, as it becomes an obstacle to the inclusion of Traditional communities residing in the management of UC's of integral Protection and a threat to the territorial rights of these populations.

In View of this scenario, it is necessary to seek alternatives and viable solutions to be implemented in order to ensure socio-environmental rights, with the aim of enabling the approximation of legislation to reality in fact and ensuring greater effectiveness of its Application.

B. More effective in protecting biodiversity in the respective jurisdiction

The establishment of the Historical Anthropological Cultural Zones with objectives that take into account the recognition of the territorial right of the

traditional communities residing in the UC's of Integral Protection, including in relation to the Territory Marine, contribute to the granting of the Term of Authorization for Sustainable Use, an instrument that will guarantee the right of possession of traditional communities that are not indigenous or quilombolas.

In areas where traditional territorial rights are ensured and, therefore, the possibility of disappropriation of the communities is excluded, opening space for the recategorisation of management, the Advisory Board shall have a Technical Chamber To ensure the right of participation of traditional communities and to ensure the shared management of the Territory, considering mainly the decision-making process. In Summary, it is necessary to strengthen participatory management programs through the effectiveness of managerial councils.

The IUCN (International Union for the Conservation of Nature) defines protected areas as land and/or marine areas specially intended for the protection and maintenance of biological diversity and traditional knowledge associated with natural resources Through legal means or other effective forms. Social, economic and cultural Interests. This definition reflects an evolving vision of conservation that can accommodate the social, economic and cultural interests, and values, rights and responsibilities of people living in protected areas and around it. The revised UICN Guidelines for the application of categories of management of protected areas also recognize that protected areas can be governed not only by state agencies, but also by a number of other actors, including Traditional communities. (NATURAL JUSTICE, 2009, p. 53).[14]

The governance guideline of protected areas brought by the IUCN represents a rupture with the management model defined by the SNUC, as it proposes a co-management structure that part of the recognition of the importance of traditional knowledge associated with Natural resources plays in the management of protected areas. Within This scenario, community protocols can play an important role in community processes to achieve this recognition. By clarifying the biocultural values of communities that retain specially protected territorial spaces (ETEP) and

[14] Dudley, Nigel, editor. 2008. Guidelines for Applying Protected Area Management Categories. Gland, Switzerland, IUCN.

protected Areas (AP), such as the traditional marine-coastal parks and territories, their governance systems and practices and the conditions for access to traditional resources and knowledge. Community protocols can be a significant part of the interactions between traditional communities, governmental institutions and other stakeholders. (NATURAL JUSTICE, 2009p. 54).

Community protocols provide traditional communities with a means to articulate the biocultural foundations of their lifestyles and negotiate with other stakeholders based on their customary laws and practices. By promoting dialogue between public and private institutions interested in managing the PA and ETEP and traditional communities, the protocols overcome the gulf between local people and conservation policies, promoting the integrity of laws and policies Improving the likelihood of CDB objectives being integrated and achieved at the local level. (NATURAL JUSTICE, 2009, page 56)

C. More effective in protecting and restoring biodiversity in general.

Given This scenario, the main action for better effectiveness of the protection of biodiversity and cultural diversity is the rupture with the traditional model of creation and management of protected areas and specially protected territorial spaces, Mainly the UCs and the traditional territories, because of this overcoming comes the other necessary actions.

The recognition of socio-biodiversity strengthens the relationship of dependence existing between the environment and human beings, recognizing in the vast biological diversity the source of cultural diversity, as well as the importance of culture To maintain and expand biodiversity sustainably, from a perspective of integral vision of rights. In Addition, there is a theoretical current that believes in the interdependence between conservation, in the sense of the perpetuity of natural resources and the cultural and subsistence practices of traditional communities, which depart from a sustainable model of Development. Antonio Carlos Diegues

[15]This figure demonstrated the holistic relationship between biodiversity and cultural expressions of traditional communities, based on the sustainable management of natural resources.[16]

Therefore, although the Brazilian legal order establishes incompatible criteria between environmental preservation and the right use of natural resources by traditional communities residing in Integral Protection Conservation Units, it is Demonstrating new possibilities, in order to reconcile the conservation of natural resources to the protection of cultural diversity, not only as a means of guaranteeing the rights of traditional peoples and communities, but also in order to improve the management of and biodiversity.

[15] By articulating the characteristics of traditional populations and the production of their knowledge, they becomeThe relationship of dependence between them and their dependence on natural resources is perceptible. From 1990 onwards, the contemporary environmental issues influenced the development of the analysis of this relationship through a broader perspective, generating the possibility of the association between the conservation of some natural resources with the Knowledge and practices of these populations. (DIEGUES, 2010, p. 43)

[16] NATURAL JUSTICE WITH FINANCIAL SUPPORT FROM UNEP. United Nations Environment Program (unep). **BIO-CULTURAL COMMUNITY PROTOCOLS:** A Community Approach to Ensuring the Integrity of Environmental Law and Policy. 2009. Available at: <https://wedocs.unep.org/bitstream/handle/20.500.11822/9819/-Bio-Cultural_Community_Protocols_A_Community_Approach_to_Ensuring_the_Integrity_of_Environmental_Law_and_Policy-2009bio-cultral-community-protocols.p.pdf?sequence=3&isAllowed=y>. Access on: 11 out. 2017, p. 14