Legal aspects of marine bioprospection in Melanesia: example of Fiji, Solomon and Vanuatu Islands

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ABSTRACT
In this paper, we describe main legal aspects regarding marine bioprospection in the melanesian partner States of the component 2C on bioprospection and marine active substances of the Coral Reef Initiative for the South Pacific (CRISP). This study highlights the need for legislation managing bioprospection and research pratices in these Small Islands Developing States.

Keywords
Bioprospection, Marine Scientific Research (MSR), fishing, Marine biodiversity, UNCLOS, CBD, Melanesia, Coral Reef Initiative for the South Pacific (CRISP)

1. INTRODUCTION
Coral ecosystems are sought after by biologists for their immeasurable biological diversity. Similar to tropical forests on land, coral ecosystems contain a concentration of unknown, rare and endemic species that are potentially useful in terms of scientific knowledge and applications. They are also precious indicators of the wealth of the marine and global environment, insofar as they are very sensitive to climatic fluctuations and anthropogenic activities such as fishing or mineral extraction. Finally, they represent an incommensurable economic, cultural and ecological wealth for coastal States and populations.

Component 2C “Bioprospection and marine active substances” of the Coral Reef Initiative for the South Pacific (CRISP) is an illustration of the active interest for coral reefs. This component was established in 2005 with the aim of both better knowing unexplored biogeographical zones of coral ecosystems, and bioprospecting for potentially active substances within the marine spaces of three partner States: Fiji, Vanuatu and Solomon islands. In this context, fundamental and applied research are closely linked together. Component 2C of the CRISP comprises a legal focus (Marine biodiversity Law) which aims to propose measures to improve partner states’ laws concerning marine biodiversity and more specifically marine bioprospection.

Fiji, Vanuatu and Solomon islands are simultaneously Small Island Developing States and Archipelagic States of Melanesia which, according to article 2 of the Convention on Biological Diversity (CBD), belong to the category of countries providing genetic resources. In addition to the fact that these States do not have a long history of scientific research, Marine Scientific Research (MSR) and marine bioprospection are not only...
difficult to define outright, they are not considered a priority, even if foreign scientific expeditions in melanesian waters are relatively frequent\textsuperscript{12}. Marine bioprospection remains arduous to define because it is a new activity, which, on one hand, is based on techniques, know how and perpetually evolving knowledge\textsuperscript{13} and, on the other hand, is focused on the qualitative dimension of biological resources, i.e. their biological, genetic or molecular aspects\textsuperscript{14}. Besides the difficulty of understanding the meaning and scope of bioprospection, the enforcement of legal rules concerning MSR in partner states is thwarted by a lack of technical, scientific, financial and surveillance capacities. A final complication in the practical exercising of bioprospection can arise when faced with local customs, which play a fundamental role in the social life of these countries.

2. THE CONDITIONS OF ACCESS TO BIO-GENETIC RESOURCES USED FOR MARINE BIOPROSPECTION

2.1 Conditions subject to the legal status of the “place of origin”

The place of origin of bio-genetic resources refers, in this context, to the particular marine space where bio-genetic resources are collected in in-situ conditions within the territory of the “country of origin”\textsuperscript{15} of these resources.

2.1.1 The Status of the place of origin according to international public law

UNCLOS, with its goal of overseeing the “legitimate uses of the sea”\textsuperscript{16}, divides the seas and oceans into three-dimensional spaces where States have specific and various rights, jurisdiction and duties. In national spaces\textsuperscript{17}, access to biological resources is subordinated to the prior authorization or consent of the coastal State, insofar as the coastal State is sovereign or has jurisdiction over these spaces\textsuperscript{18}. The same rationale applies in the CBD\textsuperscript{19}. In accordance with article 15§5, access to genetic resources shall be subject to the prior informed consent of the contracting Party providing such resources, unless otherwise determined by that Party\textsuperscript{20}. According to article 26 of the Bonn Guidelines (BGL) on access to genetic resources and fair and equitable sharing of the benefits arising out of their utilization\textsuperscript{21}, (a) prior informed consent system should include principles such as legal certainty and clarity, minimum cost and transparency. Even if the right of stakeholders, such as indigenous and local communities, to give their prior informed consent depends on domestic law, paragraph d) of article 26 BGL also recognizes this possibility\textsuperscript{22}. In Melanesia, the communities’ right to consent is a key aspect of the management of bioprospection regarding the customary status of some spaces and biological resources.

\textsuperscript{11} For time and matter reasons (UNCLOS) and the difficulty to get an international compromise on that point (CBD), there is no international legal definition of scientific research and bioprospection. Marine bioprospection can however be considered a facet of MSR, which also remains undefined under Part XIII UNCLOS. It is a vast domain of activity which embraces fundamental and applied research as well as experimental development work leading to new devices, products or processes. Marine bioprospection involves a relatively long and complex process which begins with the collection of biological substances or specimens and is based on unpredictable events: See, infra 2.2.

\textsuperscript{12} For example, CRISP and SANTO 2006, a scientific project operated by the french Institut de Recherche pour le Développement (IRD) and Museum National d’Histoire Naturelle (MNHN) and Pro Natura International, to document the fauna and flora, both marine and non marine, of the island of Esperitu Santo in Vanuatu. For more information, see: http://www.ird.fr/recherche/santo2006/english/index.htm.

\textsuperscript{13} For examples, techniques, know how and knowledge in the fields of genetic engineering or marine exploration.

\textsuperscript{14} Considering article 2 of the CBD, these objects are generally biological (“biological resources” include genetic resources, organisms or part thereof, populations or any other biotic component of ecosystems with actual or potential value for humainty”) or more specifically genetic resources (genetic resources are defined as the genetic material, i.e. any material of plant, animal, microbial or other origin containing functional units of heredity, of actual or potential value). In spite of a visible terminological distinction, biological resources and genetic resources are in fact synonyms, to the extent that we can speak of “bio-genetic resources” as objects of bioprospection.

\textsuperscript{15} See art. 2 CBD.

\textsuperscript{16} Navigation, fishing, MSR, laying of submarine cables and pipelines, etc.

\textsuperscript{17} which include Internal (art. 8) and Archipelagic Waters (Part IV), Territorial Sea (Part II), Economic Exclusive Zone (EEZ) (Part V), Continental Shelf (Part VI), in contrast to International Waters ie. High Seas (Part VII) and the Area (Part XI and Agreement relating to the implementation of Part XI of the convention, signed on 28th July 1994, which came into force on 28th July 1996). The provisions of the CBD moreover only apply in areas within the limit of national juridictions (art. 4).

\textsuperscript{18} In the case of MSR, there exists various types of consent, which are functions of the legal status of the spaces where this activity is conducted (express consent in Territorial and Archipelagic Waters; ‘normal’ or implied consent in EEZ and Continental Shelf): See Part XIII, art. 245-246.

\textsuperscript{19} The rule of consent results from the notion of State sovereignty which could be simply defined as the power to govern a territory.

\textsuperscript{20} This means that the competent national authority of the providing country must be informed of the planned research as part of the application process (Swiss Academy of Sciences, 2006, p. 12).

\textsuperscript{21} Decision VI/24 of the conference of the parties to the CBD, The Hague (Netherlands), April 7-19, 2002.

\textsuperscript{22} On this point, see also: art. 8 j) CBD and the works of Ad Hoc Open-ended Working Group on Article 8(j) and Related Provisions (WGJ 6) and the Group of Technical and Legal Experts on Traditional Knowledge associated with Genetic Resources: http://www.cbd.int/traditional/.
2.1.2 The status of the place of origin according to partner States Law

For cultural and historical reasons, the legal systems of the partner States can be qualified as being hybrid because they combine Common and Customary Law and in the case of Vanuatu, Continental Law. They are amongst the only States in the world that recognize de jure (customary fishing ground or qoliqoli in Fiji) or de facto (customary marine tenure) property rights over the sea, which generally extend to the outer limit of the coral reef.

If national or foreign researchers want to gain access to marine customary spaces, they need therefore to obtain the consent of the custom owners of the place where the bio-genetic resources they are looking for are situated. Except for Vanuatu[^23], this condition is not formally recognized by the Law of the partner States. This however remains a obligation of behavior in practice. For other marine spaces and principally the Exclusive Economic Zone (EEZ), partner States roughly transcribe the rules of UNCLOS[^24] into domestic law.

Table 1. Existing Law related to marine scientific research in partners countries of CRISP (component 2C1)[^25]

<table>
<thead>
<tr>
<th>Partners countries</th>
<th>Acts</th>
<th>Administrative procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solomon</td>
<td>&gt; Research Act (1982)</td>
<td>&gt; Application form for research for research except for research undertaken in Fijian schools: &gt;&gt;/inappropriate for marine scientific research</td>
</tr>
<tr>
<td>Fiji</td>
<td>&gt; Fisheries Act (1942)</td>
<td>&gt; Application form to undertake research on fauna and flora &gt; Code of Ethics Agreement for Foreign Researchers undertaking researches within the Flora and Fauna of Vanuatu &gt; Research agreement (Appendix 1 of the vanuatu cultural</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>&gt; Maritime zones Act (1981, revised in 1988)</td>
<td></td>
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</tbody>
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[^24]: See table 1 infra, 2.1.2.

2.2 Conditions linked to the nature of the activity

None of the State partners of CRISP, excepting Vanuatu, has a precise legal framework regulating bioprospection, least of all marine bioprospection[^26]. Part IV Division 1 of the Vanuatu Environmental Management and Conservation Act (EMCA, 2002) gives a broad definition of bioprospecting[^27] and explains the permit procedure. The director of the Biodiversity Advisory Council, under the jurisdiction of the ministry responsible for environment, is clearly designated as the invested authority[^28]. According to art. 34 (6) (a), “before making its decision, the Council must satisfy itself that a legally binding and enforceable contract is concluded with custom landowners [...]” concerning, inter alia, rights of access and acquisition of any biological resource. These rules are compatible with article 15 CBD and favorable to the recognition of customary rights over spaces and resources. In parallel with the EMCA, Maritime Zones Act (MZA, 1981, revised in 1988) manages MSR in the EEZ and on the Continental Shelf in a way that it remains unsure if bioprospection conducted in these spaces will fall under the scope of MZA or EMCA. In other partner States, bioprospection is simply not taken into account. In Fiji, this activity could be considered a form of fishing industry[^29] while in Solomon, it falls under the scope of

[^26]: Fiji’s draft Sustainable Development Bill (integrated and consolidated environmental and resources management legislation) also comprised a Title (254. Biodiversity prospecting) dealing with bioprospection. This innovative Bill has never been adopted by the Parliament and was abandoned in 1996.
[^27]: “Bioprospecting means any activity undertaken to harvest or exploit all or any of the following: (a) samples of genetic resources; (b) samples of any derivatives of genetic resources; (c) the knowledge, innovations, and customary practices of local communities associated with those genetic resources; for purposes of research, product development, conservation or industrial or commercial application, and includes investigative research and sampling, but does not include customary uses of genetic resources and derivatives”.
[^28]: See art. 29-34.
[^29]: See Marine Spaces Act (1978) and Continental Shelf Act (1970): table 1 supra, 2.1.2. A distinction between fisheries research and MSR is made by the 1978 Act, without however defining these two activities. Fisheries division seems to be in practive the competent authority to deliver MSR or bioprospecting permits.
general rules dealing with research and MSR. Due to a certain inappropriateness of legal and procedural rules for scientific practice, marine bioprospection in partner States risks being reduced to either a branch of the fishing industry, an economic activity of biological prospecting (e.g. looking for fish stocks), or else left bereft of its full specificity or theoretical dimension. However, marine bioprospection is distinguishable from the preparatory phase of fishing (fisheries research) and from the fishing activity itself. Bioprospection can be characterized as a composite activity, both economical and theoretical.

30 See table 1 supra, 2.1.2.
31 Inappropriateness exacerbated by the lack of human, financial or technical capacities.
32 The commercial activity of fishing revolves around the catching of fish destined for human consumption or industrial processes. Biological resources are not always transformed, and if any transformation is involved, it is in the form of processing or storage. The aim of fishing is purely commercial. Bioprospection is both a form of MSR and the first step in a line of studies potentially leading to the development of a product or marketable biotechnological process. Catch signifies the harvesting of substances or biological components (alive or dead) destined for treatment (extraction, modification, etc.). The utilization of the resource leads to a veritable modification in substance. Bioprospection is characterized by possible commercial opportunities in the form of biotechnological applications (pharmaceutical products for example.) Contrary to fishing, the quantities taken are negligible, a few kilograms for example.
33 The aleatory component (1 specimen out of 10,000 is viable), accessibility (equipment, specialized staff), time frame (between 5 and 19 years for the development of a marketable product) and finally the cost (from 100 to 300 million US dollars) of the studies which follow the bioprospecting add a greatly increased value to the prospected biological resources. These estimations are valid primarily for research performed in medical sector. See: Mac Laughlin, R., p. 297-348.

implications are more consequential; the financial risk is higher; the environmental impact is lower; the scientific gains are much higher.

In consequence, bioprospection management can not be subject to the same rules as access management for fisheries resources, even if the act of capturing specimens is technically similar and the final objective is almost or even completely identical. The same management rules could lead to legal uncertainty and become a restraint to the valorization of results of marine bioprospection profiting partner States. At present, those States can take example from Vanuatu EMCA to manage marine bioprospection.

3. LEGAL ASPECTS LINKED TO THE VALORIZATION OF MARINE BIOPROSPECTION RESULTS

3.1 The fair and equitable sharing of the benefits arising out of the utilization of marine genetic resources

The fair and equitable sharing of the benefits arising out of the utilization of genetic resources is the third, but most controversial objective of the CBD. According to article 15. 7 CBD, each contracting Party to the Convention shall take legislative, administrative or policy measures with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilizations of genetic resources with the Contracting Party providing such resources. The ‘Access and Benefits Sharing’ (ABS) mechanism is a key issue of the CDB and is based on a “give and take” philosophy. With access to bio-genetic resources given in exchange for monetary (fees, royalties, etc.) or non monetary benefits (knowledge of natural heritage, formation, etc.). In most cases, this comes about through contracts between users (researchers, industrials, etc.) and providers (States, administrative divisions, research institutes, local and autochthonous communities).

Fiji has chosen a ‘contractual approach’ to improve ABS as is illustrated by the number of contracts signed in 1997 between the USP, the Tikina of Verata and the Strathclyde Institute of drug research, concerning the research of marine natural products with potential pharmaceutical activity. Vanuatu, on the other hand chose a legal approach with the EMCA. This Act lays down the

34 With a few exceptions, the material and techniques are similar. It must be noted, however, that certain actions are tolerated in the context of the MSR (for example the use of scuba diving for the means of collecting) whereas they are forbidden in the domain of fishing. The size of the equipment also differs from one activity to another (nets, trollers, etc.).
35 The two other objectives are the conservation of biological diversity and the sustainable use of its components (art. 1).
36 It was one of the first transparent marine bioprospecting projects having the aim of the conservation of marine biodiversity based on the participation of local communities. For more details see: Aalbersberg, W. G., Korovulavula, I., Parks, J. E., 1997.
conditions for obtaining a bioprospecting permit, which include a contract guaranteeing the ABS between researchers and custom landowners. Finally, the Solomon Islands give priority to an ‘administrative approach’ by placing the application process for research permits under the control of the competent authority (minister of education) who charges a prescribed fee.

### 3.2 The promotion of scientific cooperation and the transfer of (bio)technologies

Regarding articles 16 and 19 CBD, the adoption of legislation protecting intellectual property rights is an essential element for attaining the objectives of the Convention. It is also a guarantee for the promotion of scientific cooperation and the transfer of (bio)technology, especially in the developing countries providing bio-genetic resources for biotechnological research activities. The protection of biotechnologies through intellectual property rights could seem contrary to the promotion of scientific cooperation and transfer of biotechnology insofar as the patent gives a monopoly of exploitation to the inventor. Nevertheless, it is the solution adopted by western countries, that those countries asking for bio-genetic resources stimulate scientific innovation and investment. In the field of Patent Law, partner countries are behind in the implementation of international rules. Even though Fiji is a member State of the World Trade Organization (WTO) and the World Intellectual Property Organization, its law is rather obsolete. The Solomon islands are also a member State of both organizations but have not yet adopted the 2002 Bill on industrial property which is fully compatible with the Agreement on Trade-Related Aspects on Intellectual Property Rights (TRIPS) provisions. Finally, Vanuatu, even though it suspended its adhesion to WTO in 2001 for political and cultural reasons, has implemented laws compatible with TRIPS.

The use of patents to protect (biotechnological) inventions seems incoherent with the idea of intellectual property rights in Melanesian traditional culture. Regardless, the establishment of protection rights for (biotechnological) inventions, adapted to the cultural, scientific and social specificities of partner States, could become a means for them to guarantee the fair and equitable sharing of profits and establish a climate of confidence between users and providers of bio-genetic resources. Presently, these countries suffer from a lack of financial and technical capacities in the domain of intellectual property. To compensate this lack, a Melanesian or Oceanian office for intellectual property could be an option.

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### 5. REFERENCES


37 Before according the bioprospecting permit, the Council of biodiversity (established by the Act) must satisfy that a legally binding and enforceable contract has been concluded with custom landowners concerning, inter alia, appropriate fees, concessions or royalties that will be charged for any research, or the acquisition of biological resources (art. 34 (6) (iii)).

38 See : art. 3 Research Act, 1982. The amount of the fee is about 300 US dollars.

39 For the handling of biotechnology and distribution of its benefits.

40 According to art. 19. 1: “Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, to provide for the effective participation in biotechnological research activities by those Contracting Party, especially developing countries, which provide the genetic resources for such research, and when feasible in such Contracting Parties” (a).


42 Annex 1C of the Agreement establishing the World Trade Organization which was signed at the end of the Uruguay Round, in Marrakech on April 15, 1994 and came into force on January 1, 1995.


44 Physical nature has no importance insofar as this culture establishes no clear distinction between corporeal and incorporeal ownership, between the created item and the rights of its owner. Moreover, ownership is principally collective. Within the group, transmission of knowledge is hereditary and immemorial. If a third party wants to access the knowledge, they must attain a social position in the community. In most cases, knowledge is protected through secret.
