



## Synthesis report of the work package 3 – CARIPES

### Analysis of users' capacity and willingness to pay for conservation efforts made by fishermen

Corals and their associated ecosystems are of great ecological and economic importance to Caribbean island nations and must be protected. Marine protected areas (MPAs), both within the Caribbean or elsewhere, are all affected by the lack of funds to carry out the activities of conservation and enhancement of the existing ecological heritage. MPA funding takes on essentially four forms: (1) funding of state public funds or from local authorities, (2) self-financing, based on revenues generated by the sale of fees for entrance, activities and various services, (3) public-private partnership, achieved particularly with environmental foundations of large industrial groups and (4) projects of research and development, which provide support to MPAs in a timely manner, and even more frequently when activities of research or ecological monitoring incur. The Regional Nature Reserve (RNR) of le Prêcheur must as of today include the financing of daily operations and investments on the agenda of priority actions. In addition to the financial support granted from the region, additional income modes should be considered.

The feasibility valuation of options of taxes, royalties and entry fees that can be used to partially finance the future RNR of le Prêcheur shows some a definite relevance to weigh the burden of taxation on local leisure activities, through the establishment of a new royalty, notably the royalty on recreational and sailing activities and the royalty on diving activities. Besides the financial contribution to the management of RNR of le Prêcheur, these options also have the virtue of offering a tool to regulate the use of marine ecosystems. Must be noted, however, possible difficulties of introducing a new royalty in the currently depressed economic environment. The expansion of the airport tax seems to also be an interesting option. Its implementation can be difficult because it is a broadening of the tax that does not directly benefit to the management of the airport. But the revenue generated can be very large in view of visitation of the airport Aimé Césaire. Finally, the allocation of part of the tourist tax levied on all hosts of Martinique also proves relevant. This option provides a better distribution of the tax burden than a strictly local royalty, which could penalize the attractiveness of the municipality of le Prêcheur. The estimation of the financial benefits of the four selected taxes is approximately €1.6 to 1.7 million.

The concept of "payment for ecosystem services" (PES) could be used, in the context of the RNR of le Prêcheur, to compensate fishermen for their efforts towards the improvement of environmental services of the MPA of le Prêcheur. PES are not used directly to finance the operation of the reserve, but to compensate fishermen for their efforts towards the improvement of ecosystem services of marine protected areas, which compensates for the



reduction in fishing activity while involving fishermen in the process of habitat conservation and sustainable use of fisheries resources. Although the MPA of le Prêcheur was formally created by deliberation of the Regional Council of Martinique on October 14, 2014, no management structure exists at this time to make it run. The PES therefore cannot be implemented. However, when an effective management will be established, their implementation should allow fishermen to contribute to the preservation of a common asset. Thus, PES can act as catalysts and promote the MPA as means to add value to the fishing profession.

The management of fishing activity in the marine reserve should firstly aim to limit activities that are the most destructive of the marine environment and secondly to ensure that exploitation levels of ecologically neutral activities are compatible with the renewal capacity of the exploited stocks. The management plan should not stop at the boundaries of the reserve, but extend to its surroundings to maximize the reserve effect created. To establish the legitimacy of such a management and monitoring of implementation plan, a work of scientific nature must be conducted in concert with the fishermen (who must play a leading role in developing the working protocol with the help of scientists). In this way, each action will be based and supported by arguments based on data produced by a researcher-fishermen collaboration. To this end, institutions such as the Martinique Marine Environment Observatory (OMMM) and IFREMER will be heavily involved in the development of monitoring indicators (such as the percentage of mature fish caught, the proportion of fish captured at an optimal size and the percentage of pregnant females captured). More generally and in continuity of the spirit of scientific monitoring, decisions relating to the management of aquatic environments must be underpinned by a collaborative process where all stakeholders have a voice: fishermen and other users of ecosystems (diving centres, boat rides tourist operators, managers of beach tourism, etc.). They will be more respected and their impact will be maximum.

The total economic value (TEV) of marine ecosystems of le Prêcheur is estimated annually at about 58 million euros. This value represents the monetary equivalent of the well-being that residents and tourists withdraw from uses linked to these ecosystems (fishing, diving, leisure activities, etc.) and their passive use or non-use (associated with the existence of the marine ecosystems of le Prêcheur (MEP) for themselves and as heritage, their transmission to future generations, culture, etc.). The consumer surplus was used to estimate the monetary value that an individual would be willing to pay to continue practicing an activity linked with the MEP in their current state and the choice experiments method was used to estimate the willingness to pay of individuals for improving the state of marine and coastal ecosystems (non-use values), today (existence value) and for future generations (bequest value).

Of all values that form the TEV, non-use values are the most important: they represent nearly 95% of the TEV (about 55 million euro). Residents contribute to over half of the creation of



these non-use values (€ 28 million). The values they assign to the MEP are, per person, one and half times higher than those of visitors, which demonstrates a strong social and cultural attachment. Bequest, existence and option values consist almost equally to non-use values. Bequest value reflects the interest of future generations; the existence value expresses the desire to preserve the MEP simply because they exist; the objective of reserving the possibility to enjoy the MEP in the future is finally called option value. The relative importance of these three values is the same for residents and visitors. Furthermore, direct use values, which reflect the monetary value of all MEP-related activities, amount to almost 3 million euros. Among them, the direct non-extractive uses represent the largest share. Consumer surplus, related to recreation (swimming in the coves, surfing and freediving), accounts for nearly half of direct use values, i.e. €1.3 million.

Estimates made in the context of this study are to be considered as orders of magnitude intended to feed the strategic dialogue for the development of the future marine reserve of le Prêcheur on one hand, and budgetary decisions of public policy guidelines on the other. Regarding the first point, the maintenance of the biodiversity of these ecosystems must be within an evolutionary perspective which attempts to both maintain the existing as a memory of the past and preserve the development potential of future living entities and ecosystem functions. This consists on maintaining the ability of vital processes to transform. It is therefore essential to adopt a collaborative approach between all actors involved on the coast. Regarding the second point, public policies must take into account the protection of marine ecosystems and even more of their enhancement in a perspective that combines economic utilitarianism and selflessness. The MEP have indeed emerged as elements of the identity of the coastal population of the region of le Prêcheur but also of Martinique as a whole and, as such, must be highlighted. They are also a great source of employment and sustainable economic development and therefore deserve more than a distracted attention.