

Life Below Water; challenges for tourism partnerships in achieving ocean literacy

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Abstract

Healthy oceans are of great importance in achieving global sustainability, and are thus identified as one of the core Sustainable Development Goals in 'Life below Water' (SDG 14). However, at present, we still face a significant challenge in achieving lay understanding of the influence of the oceans on our lives and the impacts of our behaviour on it. As a key interface, marine ecotourism can support the development of place-based ocean literacy, but this can only be achieved through 'effective partnerships' (SDG 17). This paper examines how stakeholder collaboration can contribute to increased ocean literacy through empirical work on scuba diving in Mallorca, Spain. Ethnographic fieldwork was conducted with divers and other key stakeholders (operators, scientists, government, NGOs, and professional associations). Adopting stakeholder models based on pentahelix opportunities for collaboration we analyse the current challenges.

The study identified a sector which currently lacks effective partnerships: there is limited systematic transfer of knowledge; staff are poorly trained in interpretation and communication skills; there is weak industry collaboration; and the sector is neglected in government tourism strategy. Consequently, the current structure fails to connect divers to marine issues in the Mediterranean Sea. Nevertheless, suitable conditions for developing effective partnerships are present: motivated staff and suitable facilities; interested authorities; an active network of knowledge production; and a vigilant society. This paper proposes a multi-stakeholder structure to put place-based ocean literacy into practice in order to contribute to the aspirations of improved global ocean awareness.

Keywords: Ocean literacy; ecotourism; scuba diving; sense-of-place; stakeholders; partnerships.

Introduction

Water covers over two thirds of the Earth's surface (NOAA, 2018); oceans are responsible for climate, weather and biodiversity and are thus central to life itself (Fauville et al., 2019). Indeed, according to science, *'half of the primary productivity on Earth takes place in the sunlit layers of the ocean'* (Ocean Literacy Campaign, 2013:8). The Ocean is the biggest provider of oxygen on Earth; an integral part of the planet's water cycle; and its characteristics allow the absorption of carbon dioxide from the atmosphere, being the largest reservoir of carbon on the planet. Due to its size, chemistry and strength, the ocean shapes continents through creating coastlines (through wave action) and deposits of land materials (the origin of many tourist beaches for example). For these reasons the oceans have a specific core Sustainable Development Goal (SDG), focused on outcomes for *Life Under Water* (SDG14).

However, public understanding of the fundamental importance of our oceans is lacking (Fauville et al., 2019). Yet understanding such issues in the period where humans are the main change agent over the Earth (the Anthropocene) is highly relevant to sustainability debates (Stel, 2016) and thoughtful ocean awareness can be part of the contributions of the tourism industry towards sustainable development (Van der Watt, 2019). This paper suggests that recreational scuba-diving activity has an important role to play in raising knowledge of the Ocean (ocean literacy) regarding its current environmental situation. However, such knowledge transfer requires effective partnerships between the multiple stakeholders involved in this increasingly popular tourism product.

As a pioneer of the sand, sun and sea tourism product, the marine component is one of the key drivers for the Spanish island of Mallorca, which (prior to 2020) received over ten million visitors every year (Balearic Islands Tourism Board, 2017). Mass tourism destinations such as these have developed their marine activity offer in recent years, with scuba diving being a good example (Hillmer-Pegram, 2014; Albayrak et al., 2019). In parallel with other Mediterranean tourism sites, Mallorca has an

established scuba diving tourism product, with over 30 dive operators on the island. Scuba diving is estimated to make up half of the valuable €1bn nautical tourism sector in Spain (Alcover et al., 2011). As well as the domestic market, scuba diving is very popular with British and German tourists. Indeed it is estimated that each year, 800,000 Europeans make one diving trip (with 10 night-stay on average), spending over €1.4 billion annually (RSTC-Europe, 2020). In Mallorca, the major European markets in 2016, when the study was conducted, were German (38%), British (21%), Spanish (11%) and French (4%) (IBESTAT: 2017).

Beyond this significance to the so called 'blue economy', scuba diving tourism activity is also an important interface to increase the public's ocean knowledge. However, as the sector is dominated by small businesses (SMEs) (Shaw, 2004; Mustika et al., 2012), collaboration is a challenge. These small to medium-sized wildlife-tourism enterprises (SMWTEs) described by Higginbottom (2004), often have limited resources to develop their products or to work actively with others to do so. This study examines these challenges in the specific context of scuba diving tourism in Mallorca. We also aim to present options for future collaboration between stakeholders with the goal of using this activity to enhance marine awareness.

In order to address the lack of marine knowledge an educational program based on Ocean Literacy has been developed by educators and scientists (UNESCO, 2018). An Ocean-literate person is considered one who understands the importance of the ocean to humankind; can communicate about the ocean in a meaningful way; and is able to make informed and responsible decisions regarding the ocean and its resources (Aqua TT, 2015). The Ocean Literacy framework summarises basic marine knowledge into seven key ocean principles:

- The Earth has one big ocean with many features (Essential Principles 1).
- The ocean and life in the ocean shape the features of Earth (Essential Principles 2).
- The ocean is a major influence on weather and climate (Essential Principles 3).
- The ocean made Earth habitable (Essential Principles 4).
- The ocean supports a great diversity of life and ecosystems (Essential Principles 5).
- The ocean and humans are inextricably interconnected (Essential Principles 6).

- The ocean is largely unexplored (Essential Principles 7).

At present, this framework has outreach support from high profile organizations on both sides of Atlantic Ocean (e.g.: Smithsonian Sant Ocean Hall and the European Marine Science Educators Association (EMSEA)); and has been adopted by UNESCO in the program '*Ocean Literacy for all*' (UNESCO, 2018). However considering the current environmental crisis (and climate emergency), knowledge transfer cannot be empty of purpose (Ham, 2013). Thus ocean citizenship is the broader goal of this literacy effort, in promoting actions that contribute towards a more sustainable relationship with our seas (Fletcher & Potts, 2007). This approach presents an opportunity to involve societies in the achievement of collective social, political, and environmental goals. Global challenges cannot be addressed solely through a governmental approach (Dobson & Valencia Saiz, 2005), especially where a fundamental public good, the Ocean, is concerned. The interconnectivity of the Ocean requires that the responsibility for its (and our) wellbeing should be shared and international. This requires active partnerships, which are recognised in SDG 17, seeking to '*encourage and promote effective public, public- private, and civil society partnerships, building on the experience and resourcing strategies of partnerships*' (17.17 (UN, 2020)). However, as this paper demonstrates, these partnerships are particularly challenging in the fluid environment in which marine tourism takes place, particularly as the sector is dominated by a wide range of partners and SMEs.

Marine Tourism and Scuba Diving

Marine tourism is defined as 'those recreational activities that involve travel away from one's place of residence and which have as their host or focus the marine environment' (Orams, 1999 cited in Hall, 2001:602). This definition puts the value on the 'marine realm' which means this ecosystem is both the 'setting' and 'value' used for tourism. However, disturbance to seascapes and wildlife influences tourist satisfaction, affecting tourism business (Branchini et al., 2015). Consequently, tourism and recreation use of marine environments is one of the most significant interfaces

between people and the ocean, and has generated a certain expectation as a contributor to environmental awareness-raising.

One of the most popular underwater activities is Scuba Diving, in which the satisfaction of recreational divers increases with 'special' wildlife encounters (Cater, 2008). Motivations for diving include 'experiencing underwater flora and fauna', 'exploring new things', 'experiencing the adventure of diving', 'having stimulating and exciting experience', and 'learning about the underwater environment' (Ong & Musa, 2012). The Professional Association of Diving Instructors (PADI), which operates in over 180 countries and territories, have certified 27 million divers globally since their foundation in 1967 (PADI, 2019). At present, the active diver population (recreational and sport) is approximately 15 million, of whom 3 - 4 million are European (RSTC-Europe, 2020). The European Underwater Federation (EUF) & Recreational Scuba Training Council (RSTC) estimates that 70% of European divers dive in the Mediterranean region (particularly areas of Spain, Malta, Cyprus, Turkey and Croatia) (ECORYS, 2013).

Dive tourism is led primarily by certification and safety, and environmental literacy more often takes a secondary position (Hyde, 2015). Yet taking into account the threats to the marine realm, divers become witnesses to ocean trends, for example degradation of the Mediterranean Sea. Its biodiversity is in clear decline with a loss of 41% of its marine mammals and 34% of the total fish population over the past 50 years. The largest reductions happen in the Western Mediterranean Sea and the Adriatic Sea (EU, 2017). A good example of this are the Mediterranean *Posidonia* meadows, an important endemic plant, which shows similar functions to terrestrial forests. They produce more organic matter than the tropical forests and more than 10 litres of oxygen per m² per day (RAC/SPA, 2017). However, it is one of the most threatened ecosystems globally, with a reduction rate 5% annually (Montes et al., 2012). Despite this, the Mediterranean diving experience is primarily focused on feeling safe and comfortable in the water instead of discovering and understanding these *Posidonia* meadows for example.

The dive industry itself has changed in parallel with the experiential turn in tourism more broadly. In its early development scuba divers were often certified in their home country and did much of the activity there. Since 2000, many exotic destinations such as Egypt and Thailand have developed their diving infrastructure, altering the global strategy of the industry to promote diving trips to the most stunning marine ecosystems on Earth (Dimmock & Cummins, 2013). Today, diving is inevitably bonded to tourism: visiting places underwater. Therefore, diving activity is no longer just a sport (Lemke & Olech, 2011), and over the last decade many Mediterranean destinations have developed a distinct scuba tourism product (Bideci & Cater, 2019). However, the proliferation of such experiences has largely eroded connection to place, with many scuba diving products being globally substitutable.

Nevertheless, as a tourism product within a contemporary experience economy or '*exponomy*' context (Pine & Gilmore, 2011), the dive could be an active experience incorporating memorable emotions through greater connection to the destination. The process to connect with the environment requires attention towards '*what is seen and heard*' (sensory impressions); '*what is felt*' (emotional affinity); the reflective response from the provoked thought; and the actions generated as behavioural responses (Ballantyne et al., 2011). In this way, the industry could foster a greater sense of place connection through developing the storyline of the local seas. The diving destination could be enhanced as a result of a combination of place meaning, place attachment and social norms (Wynveen et al., 2012; Kyle et al., 2003). However in order to achieve this, a strong network of 'blue' stakeholders is needed with effective partnerships between the government, science, private sector, NGOs and society.

Marine tourism governance and partnerships

In a review on ocean and coastal tourism Hall (2001) notes that the multifactorial nature of coastal tourism challenges its understanding by the authorities, and thus the development of effective partnerships. Overlap of competences by governmental bodies has been the norm and the reason for confusion among

stakeholders. At present, this situation has not changed significantly, as the study of McKinley & Fletcher (2010) highlights. Consequently, marine planning is handled in a reactive way, instead of implementing active measures and policies (Hall, 2001). Among the latter, improved integration between different knowledge and interests, particularly socioeconomic development (Hammerton, 2014) and environmental protection, is the challenge for policymakers. The scarcity of data pertaining to the marine ecosystem and related economic activities demonstrate that the maritime sector suffers from a lack of updated skills and innovation (Green Bubbles, 2014). This weakness means a loss of competitiveness, affecting Small Medium Enterprises (SMEs) in particular. Consequently, the European Blue Growth Strategy has been developed (Green Bubbles, 2014) to *'help make the sector more competitive globally'*. To achieve this, 'blue growth' initiatives, of which coastal and maritime tourism is part, are focused on communication and promotional strategies; innovative management; improvement of data availability; and the promotion of ecotourism.

In the context of weak understanding by authorities, scuba diving activity is not an exception. This activity is in transition due to higher accessibility; competitiveness with other water activities; confusing legislation; and governance issues (Lucrezi et al., 2017). A study carried out in the USA (Hillmer-Pegram, 2014) revealed that the resilience of the diving industry depends on understanding that the activity has now been accepted by mass tourism. Indeed the priority has shifted from a niche activity in a pristine ecosystem to an affordable mass tourism experience (Albayrak et al., 2019). Moreover, resilience of this sector relies on the ability for self-organization. This includes increased recognition of the concept of a blue-green economy, which will demand a mixture of physical, behavioural and institutional change (UNESCO, 2012). The scuba diving tourism system (SDTS) suggested by Hillmer-Pegram (2014) and further developed by Dimmock & Musa (2015), describes the key actors of the activity: the marine environment where the dive takes place; the stakeholders; the divers; the scuba diving industry, and the host community. SDTS requires that this structure works through communication, collaboration and adjustments among all actors (Lucrezi et al., 2017). The self-advocacy structure and active relationship with stakeholders shows the degree of dynamism required by the industry to face current challenges (Hillmer-

Pegram, 2014). The network of stakeholders could develop local management capacity and share lessons learned through outreach and education in order to establish successful ecotourism.

At the same time, the present paper takes into consideration models that encourage cross-sectorial collaboration. Using a structure of the triple helix, academic knowledge has been identified as the driver for profitable relationships with the economic sector through governmental support (Marasco et al., 2018). However, collaboration demands a more active role in the co-management of places as recently revealed in different case studies of tourism such as in smart tourism in Spain (Calzada, 2019) or rural tourism in Indonesia (Putra, 2019). Thus society is a vital part of this collaboration framework towards social entrepreneurship based on place. However, there is a particular challenge regarding our oceans, as the place (ocean) is largely an unknown site for the society; opportunities to access it are limited, therefore, the social construction of place in society is challenging (as described by Moscovici (1961), Herzlich (1979) and Banchs (1982); cited in Mora, 2002). Therefore, the role of citizens in tourism destination management can be enhanced through the support of proactive organized groups who can assist in developing this knowledge from a bottom-up perspective (Björk, 2014). Adding these NGOs to the structure gives the pentahelix model (figure 1) suggested by some authors (Calzada, 2019; Putra, 2019).

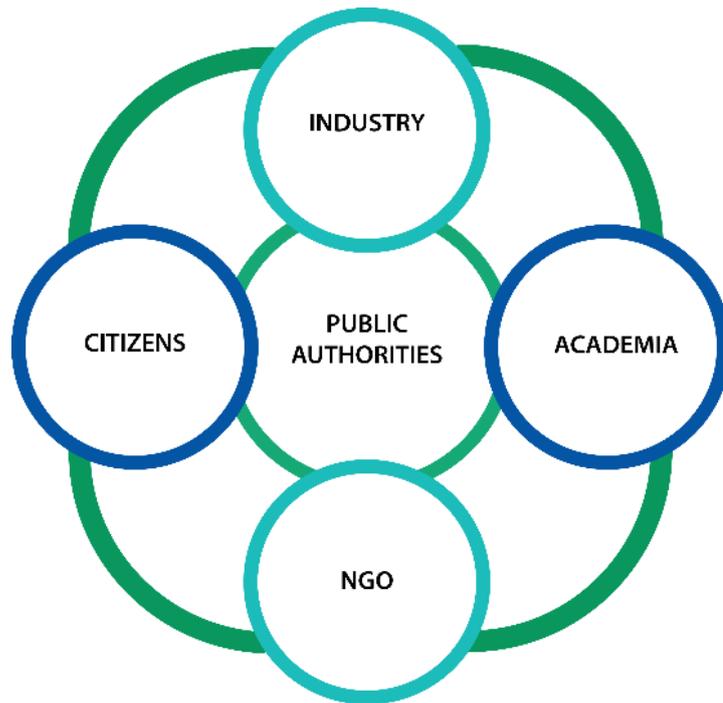


Figure 1 Pentahelix multigovernance model (Source: Pentahelix.eu, 2019)

As a result, this paper pursues a stakeholder approach, examining partnerships of government, tourism firms, science (*academia* on the model), citizens (in the form of divers), and NGOs, but with some particularities related to the marine environment under examination. To achieve the goal of ocean literacy, this paper examines the performance of each stakeholder in tourism related to their current support for diving activity in Mallorca. The ultimate aim is to extrapolate these partnerships in order to encourage the resilience of underwater tourism, and to move forward to all stakeholders being in the 'same boat', understood as the map of relationships in the pentahelix model. In this way, the foundation for the knowledge based co-management of such public goods could be reinforced, increasing the public profile of the seas.

Methods

The following reflections are part of a wider study carried out in Mallorca, Spain in 2016. This was a detailed investigation of the extent and development of ocean literacy in recreational scuba diving on the island. The partnership interface between the social actors, the study object, and the action context was 'dissected' in detail which required a qualitative approach. To obtain the required level of coherence, the

time invested with the social actors is a crucial factor to create an atmosphere of mutual trust, so ethnography was deemed a suitable methodological strategy (Blumer, 1962 in Jennings 2001). The ethnographic approach seeks to uncover the way in which people interpret social structures in order to develop common activities (De Schutter, 1983), so the institutional and regional context of the object of study was deemed critical.

The multidisciplinary characteristics of the project were crucial in directing the literature review and methodological decisions. The history of diving training, business organisation around the diving activity, and current research related to this leisure activity supported the framework of principal actors (diving centres, certifiers and a professional association). Further work on ocean literacy, the local marine ecosystem, governance and planning were also identified as being important to the study. It became apparent that, according to Jodelet (1984 cited in cited in Mora, 2002), the structuring of social representations is based on elements such as context, the communication established and the forms of learning, further justifying a qualitative approach.

Hence, multiple voices are the basis of this paper presenting an insider emic perspective, frequently suggested as being appropriate for qualitative studies (Jennings, 2015; Curtin & Wilkes, 2005; Jennings, 2001). Therefore, the literature review was followed by participative knowledge gathering involving six months of ethnographic fieldwork, with (semi-structured and unstructured) interviews (Saunders et al., 2009; Marshall & Rossman, 2006); and (participant and structured) observation (Bryman, 2012; Gill & Johnson, 2002) as the main research techniques. The result was more than one hundred and fifty interviews and extensive research journal notes resulting from intensive social interaction and joint reflexive analysis (Angrosino, 2005). The following table n.1 outlines the fieldwork completed.

Table n. 1: Summary of the research fieldwork

20 diving trips (structured and participant observations)
85 diver interviews (semi-structured interviews)
48 staff interviews (pre and post season)
17 key stakeholder interviews (unstructured interviews)
6 months of research journals (notes from interviews and observations)

The key stakeholders identified in this paper were covered by seventeen in-depth interviews, typically lasting around two hours. In this sense, the key stakeholders together with the staff interviews facilitated a greater knowledge of the spatial context of the activity. The government sector was approached through two bodies; the tourism industry was explored through seven representatives; science was included via five institutions; and three organizations from the conservation and outreach field were represented in this knowledge gathering exercise. The research developed the exploratory and descripto-explanatory phases (Saunders et al., 2009) in the fieldwork and their subsequent analysis in the framework proposed (emotional, cognitive, and normative ocean literacy based experience). The exploratory phase sought evidence about the combination of diving and marine knowledge towards commitment to ocean literacy. The descripto-explanatory phase was focused on the enabling conditions to bring the ocean literacy approach to diving. The spirit of the project was deliberately participative as these social actors were frequently consulted, as Fals Borda (2000) advocates breaking down the subject/object binary in fieldwork.

The social actors of the study were analysed from an interpretative perspective (following thematic coding of Braun & Clarke, 2006): exploring the roles, responsibilities, information content and abilities. The network of social actors was described and analysed according to a number of factors, including: their connection with the marine realm; their knowledge about the ocean; and their commitment to ocean citizenship. The resulting codes were gathered according to the three main

areas: tourism; education; and environment. As a result, the coding process gave a system based on six themes subject to one supra theme grouped into 55 codes. The last step was to link and organise the groups of codes in mind maps, as divergent views and perspectives can be represented in order to reach common understandings (Meier, 2007). This situation is common in work with multiple stakeholders, so these mind maps guided the narrative analysis. All this scrutiny was the baseline for the collaborative knowledge related to emotional, cognitive and normative domains inside the diving structure. In addition, a goal of the study was to develop the partnership structure that is reported in this paper, so the participation of stakeholders mentioned above was deemed a significant cornerstone in identifying structures that would facilitate ocean literacy (Fletcher & Potts, 2007). This paper uncovers the map of relationships and the partnership challenges that exist in order to implement the framework of place-based ocean literacy in underwater marine ecotourism.

Results

The recreational diving landscape in Mallorca is particularly defined by the following features: the type of tourists (walk-in rather than prior booking); marine biodiversity (encounters with big groups of fish) and seascape (active such as karst); sea conditions (good visibility and warm temperature of waters); and the quality of services (staff). As was explained previously, the diving activity in these regions is presently going through a transitional period, leaving behind its foundations as a niche sport and becoming a major tourism activity. However, the current design of the touristic offer in Mallorca is still largely based on a recreation/sports approach, with a strong reliance on international certifiers. We examine the partnership challenges in relation to the different stakeholder groups but do so in a mixed narrative from all the stakeholder perspectives that reflect the issues around collaboration.

Governmental Partnership Challenges

As scuba diving activity is conducted in public space, the government must be the central stakeholder for the entire industry (as illustrated in the pentahelix model in figure 1). However, a public good like the ocean is beyond the sole governance capacity of governments (Dobson & Valencia Saiz, 2005). Consequently, cooperative management needs to be considered, although the ultimate responsibility for marine issues should still lie in governmental hands (McKinley & Fletcher, 2010). However, there was a shared opinion across the diving operators in Mallorca that the activity is misunderstood by the government. The current governmental structure has not kept pace with the tourism dynamic in which diving activity is currently involved (as identified by Hillmer-Pegram, 2014). During the interviews with managers, elements such as being in an inappropriate category in the labour framework; and the constant change of the regional department in charge, were identified as the main challenges (as other studies confirmed such as Lucrezi et.al, 2017). As a result, a local manager concluded, *'no department wants to host the diving activity'*.

During 2016, diving came under the jurisdiction of the General Director of Port and Airport. This oversight can be explained due to the fact that, for a long time, the ocean has been mostly considered as a means of transport. In this regulatory context, the interviewed managers stated that tourism had limited relevance and this added more barriers to recreational diving. Furthermore the Department of Tourism was a regional responsibility (of the Balearic Islands) until 2018, when that competence was transferred to each island. Mallorca did not have its own tourism department and strategy when this study took place, so coherent planning and marketing of scuba diving tourism was absent.

At the local level, the fieldwork noted that the structure was disjointed, particularly when talking to council officers about marine ecotourism. The council has responsibilities divided between the environment department for land issues; and the harbour department for marine issues. As a result, everything related to diving logistics, such as paperwork for the mooring of the boat and other technical requirements, is managed by officers focused on the shore. Meanwhile, the health of

the marine ecosystem was not covered, as marine reserves are managed in the regional or national government. Operators also felt that government was largely indifferent; *'We feel orphans in regard of government. When we go to the international events we are alone'*, claimed a manager of a network of diving centres. Diving operators explained that the international tourism trade fairs are one of the main sources of clients; however, Mallorca is primarily marketed at these as a sun and sea destination. Authorities argued that this official position came from the understanding that diving had reached a mature stage; therefore, the diving was not a priority in the marketing agenda.

The economic argument was also suggested as another reason for the low government support for the diving industry. *'Diving is not a profitable activity. We survive but not earning a lot of money'* confessed a local manager and president of one of diving associations. *'In Mallorca, the season is short, only three months, so only two or three centres can keep open the entire year'*, according to the managers. However, in contrast, several other Mediterranean destinations have successfully developed scuba diving as an off-season activity, for example Malta, with strong official promotion and infrastructure investment (Bideci & Cater, 2019). This was based on an awareness that the multipliers from dive tourism can be considerable across other parts of the tourism industry.

In addition, the study identified another reason that could explain the lack of official support, the nearly unique categorisation of the activity. The government officers stated that diving activity was considered as active and adventure tourism within the government tourism strategy. This means that the 'active' characteristic of water sport was the only approach taken to its management. According to the classification based on Recreation Experience References scale (Manfredo et. al, 1996), this group expects to obtain excitement, develop new skills or abilities (Factor 1 - novelty-self-development). However, taking into account the type of walk-in tourist divers common within the *'sun and sand'* destination of Mallorca, the spectrum of motivations to dive was much wider, yet this categorisation ignores this potential (see also Albayrak et al., 2019). In summary, the communication channel between government and the diving centres was a challenge often reiterated by staff (noted by

the analysis of Lucrezi et.al, 2017). All managers highlighted that they only heard from government for regulations and standards (with the exception of some personal contacts with the marine reserves employees).

Certifier Partnership Challenges

In contrast dive centres have a much closer relationship to international certification agencies such as PADI and SSI (Scuba Schools International), who design the teaching and training services for scuba diving. Increasing specialisation allows for the basic courses to progress to training in particular techniques. This framework is common globally and was no different in Mallorca. Certified divers could enjoy the experience in single or double dive trips, receiving a briefing about the site, itinerary, equipment and the guiding of a crew member (instructor or master guide). The diving product was mainly based on wildlife encounters and their distinguishing seascape (karst). However, taking into account the oligotrophic (low nutrient) characteristic of the Mediterranean and the growing loss of marine biodiversity globally, the design of the product is not sustainable (Stewart, 2015).

To understand the diver's comprehension the basic training manuals provided by the certifiers were analysed through the seven principles of ocean literacy in order to evaluate the marine literacy in the diving product. The results were that all of these were covered to a limited degree, with priority on those which can impact on the diving performance, such as principle 2 and 3 related to the physical characteristics of the ocean. However, the impact of this marine literacy on the diving product itself was limited, with an inconsistent message and is more likely to be focused on the spectacular ecosystems like corals or key species like sharks (Dobson, 2011; SSI, 2017, 2020), neither of which are easy to see in the Western Mediterranean.

This situation can be explained by the dominant international marketing strategy of trips to tropical diving destinations (PADI, 2020). However, it is important to highlight that the main ecosystem in Mallorca, the Posidonia meadows, is not included in that material. The diving experience illustrated poor knowledge about this key ecosystem: *'the seabed is covered by that green grass; it's so annoying because we*

don't see anything', was a common comment among new divers. Frustration amongst divers and practitioners was evident due to the lack of connection to the place. The study confirmed that the staff often received limited training in communication/interpretation techniques to facilitate the comprehension of the local elements. Hence, the experience could be classified as nature tourism but not as ecotourism because of the absence of the environmental awareness and place commitment in its structure (Weaver, 2005; Luo & Deng, 2007).

The structure was safe and comfortable for the diver but realising a fun, active and informed dive depended dramatically on the instructor. Local knowledge relied on a veteran or local member of staff, turning the *in situ* experience into the main source of knowledge. Yet the knowledge provided by dive guides tended to be basic, unstructured, and was often neither scientifically validated nor up to date. This unstructured knowledge transfer impacted on the training of staff and the knowledge gained by dive tourists. For that reason, it was not a surprise that the divers (including the staff) confessed that their knowledge about the local sea usually came from other sources, such as relatives, the internet, or documentaries.

The training material of certifiers did encourage diving centres to share the local marine knowledge which is available in universities or NGO's (PADI, 2010). However, there is not currently an offer related to local wildlife embedded in the certifiers' education frameworks. To that end, marine literacy should have greater influence in the certifiers' evaluation, as noted by a member of staff:

'If you want all of us to know about the Ocean Literacy & Citizenship approach, this knowledge has to be part of certifier's tests' (local instructor).

However, the certifier's officers disagreed about the responsibilities for local knowledge transfer. A manager recognised that this would be possible and even benefit the sustainability of the activity, making the design of the experience more associated with the dive spots. But the international certifiers highlighted the logistical barriers, particularly *'As the tests are standardised, I don't see its feasibility in short term'*. To incorporate this would mean a change in the evaluation system, which cannot be developed under conditions of standardization. However, the certifier interviewed

suggested that they could use their multiple campaigns (e.g, Blue Mission and Project Aware) to 'personalize' the messages of local issues related to global challenges such as plastic pollution in the Sea (for example the *Dive Against Debris* speciality of PADI). However, some divers noted that they were seldom used because of lack of local connection. Another solution explored was to give this responsibility to the local Balearic Federation of Subaquatic Activities (FBDAS), but their lack of focus on tourism discouraged this option. The diver tourists, who are not already certified, usually prefer an education scheme with international recognition.

In conclusion, the industry worked together but did not explore innovative partnership approaches in order to improve the standardized position in the market. As a certifier's officer reflected, '*there are not many enthusiastic people and dreamers in this industry*'. The experience is delivered through unchanging narratives without carefully considering the emotional, cognitive and normative domains (Ballantyne et al., 2011), turning it into what was humorously described as '*tea-bag diving*', with a short immersion in the water and no long term connection. As such, the activity shows a poor implementation of ocean literacy with a near absence of '*sense of the place*' during the experience (Kyle et al., 2003). The particularities of the Ocean (Principle 1 of Ocean Literacy: *The Earth has one big ocean with many features*) are not being revealed. British research respondents taking an open water course reflected this very well;

- What did you learn about marine literacy? - *Many things about corals*
- And about the Mediterranean Sea? - *Umm not really anything*

As a consequence, the memory of place (Mora, 2002) is not promoted towards the design of ocean literacy for divers in the current tourism product. The industry conditions of Mallorca and partnerships with certifiers were not favourable to design their own training and marketing strategy reflecting the island particularities.

Industry Partnership Challenges

The dive industry was not united in Mallorca. The general perception of the sector was that its professional association was nearly inactive, defined by individual

issues and private interests. Overall, it was noted that the association did not contribute to the integration of the sector, to the development of the shared marketing strategies to overseas markets (their main target markets), nor to a joint voice. Although it was recognized for its importance amongst managers, membership was considered mainly for access to hyperbaric facilities. Consequently, respondents agreed that the passive role of the main professional association needed to be developed to a more active one (Hillmer-Pegram, 2014).

A key issue was that official figures about diving in the island were lacking. The president of the main professional association confirmed that no institution collects these figures, and they are only available for entry to marine reserves. As a consequence, the significance of the activity and its economic contribution cannot be demonstrated to key stakeholders (as shown above). This condemns diving to a weak role in any conflict with other sectors (Green Bubbles, 2014), for example:

'There are a lot of problems with rental boats because they usually don't know the diving signs and don't respect the security space. But we know that if we try to claim with the authorities, we'll lose', protested a local manager.

Another critical example of the weak position of the sector was inside the marine reserves where fishing and scientific research were seen as more important than diving. In these special zones; the benefits of the dive industry were seen as just a 'side effect', rather than an important economic contribution itself. Therefore the diving sector in Mallorca was lacking recognition of their place in the blue economy because of the absence of a united sector.

NGO Partnership Challenges

Like many coastal tourism destinations, Mallorca is struggling with increased plastic pollution. As the divers are direct users of the sea, they can be considered as informal eyewitnesses of the environmental crisis. However, despite this, environmental NGOs had not developed a solid relationship with diving activity. The insular organisations mostly focus their marine activism on environmental issues related to the over-exploited coast; the cleaning of beaches (figure 2); and overfishing campaigns. A significant exception were the actions observed related to the situation

of Posidonia, a key ecosystem for diving activity on the island described above, with social activities (figure 3) and educational campaigns developed by some NGO groups.



Figure 2: El Toro cleaning organized by Ondine (environmental organization). Mallorca, 2016.



Figure 3: Posidonia Festival, Mallorca, 2016

In addition organisations such as the Mallorca Aquarium are also important for informal marine education and development of Ocean Literacy. Although under private ownership, outreach is a major part of their activities, and aquariums worldwide use education as a justification for capture and display of wildlife (Cater,

2010). We therefore include them under the NGO umbrella as they are an important influencer as a bridge between experts and the public, but are not allied to existing government or industry objectives. As well as hosting large numbers of tourists, the Mallorca Aquarium targeted programs at local schools to facilitate marine education in the formal system. However, the diving sector was not considered a strategic sector for their programs. This is again in contrast to other destinations which have developed aquarium and dive training facilities in tandem, for example in Qawra, Malta (Bideci & Cater, 2019). In Mallorca, the Aquarium felt that, *'the knowledge from the diving sector is not rigorous enough to be considered a reliable source'*. In addition, the lack of an active professional association described above made it more difficult to develop a beneficial relationship. *'It is difficult to work with the sector when there is not a unique voice'*, the aquarium confessed. The mixed profile of staff in the dive centres, being multicultural and with high mobility as result of the seasonality, were other barriers pointed out by organisations. However, their relationship had potential to evolve in more sustainable way (as the scuba diving tourism system suggests), as they confirmed that they had the institutional structure and staff to train the diving sector in knowledge about the Mediterranean Sea (Lucrezi et al., 2017).

Scientific Organisations Partnership Challenges

Mallorca hosts a diverse multiplatform of scientific and technical infrastructure (Spanish National Research Council -CSIC). It is home to the Balearic Oceanography Centre (COB-IEO); the Balearic Islands Coastal Observing and Forecasting System (SOCIB); the Mediterranean Institute for Advanced Studies (IMEDEA); and the local governmental department (Conselleria), so significant regional marine science research is undertaken. IMEDEA is focused on biological and ecological studies; the long established COB-IEO, conducts foundational studies of the ocean; and SOCIB is the operational branch of this research triangle. Their main role is to explain the physical, chemical and biological parameters of the ocean.

However, this study found that these efforts did not reach the diving sector. The diving script showed a lack of scientific rigour and currency. This was reflected in an interview with a trainee instructor in a diving centre of the study,

- 'How do you know that?
Because other instructor -who are here longer than me- told me. We usually ask the veterans.
- And don't you prefer to check it in scientific websites?
no, what for? I trust them, they dive here, they know it'.

The scientific institutions consulted in Mallorca were aware of the importance of dissemination of scientific knowledge. Yet publishing in scientific journals and communication in social media were still the main means employed to do so. All of them had staff designated to outreach with special attention to educational programs for the general public (particularly with a family education focus on teachers, children, and parents). However, the only collaboration observed with the diving sector were citizen science experiences (figure 4). The 'Observadores del Mar' (SeaWatchers) is a program in the region; managed by the Institute of Marine Science (ICM) in Barcelona and The Spanish National Research Council (CSIC) (Observadores del Mar, 2020).

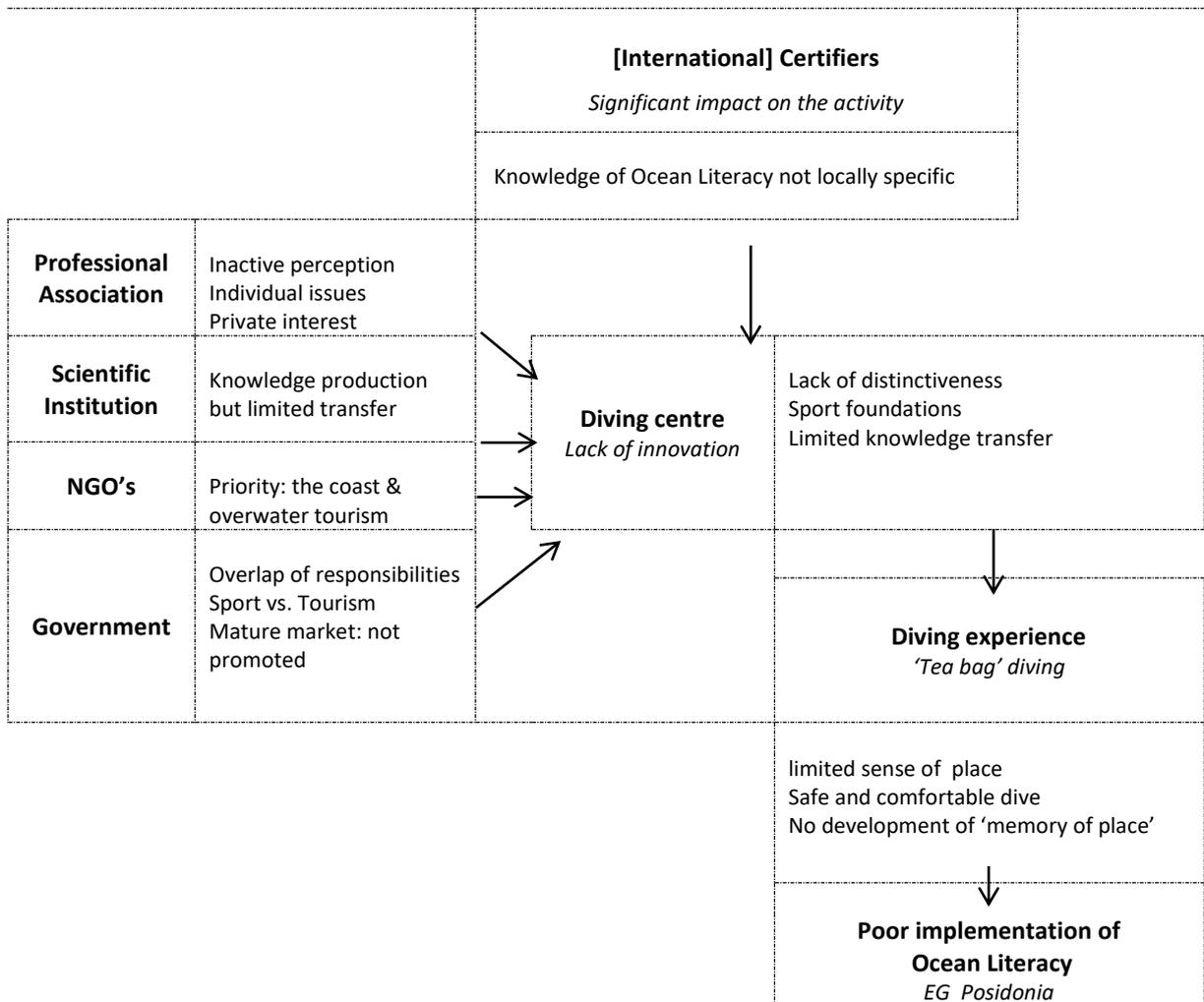


Figure 4: SeaWatchers Posters in a diving centre, Mallorca, 2016

Some diving centres tried to be involved through the design of citizen science diving trips for customers who want to be part of the monitoring network, for example to collect information about the quality of Posidonia meadows. However, there were some criticisms of this type of scientific network because of its complex logistics. In the past, a lack of consistency and regular communications with the scientists were the main reasons to abandon the initiative according to some managers. Whilst communication issues have been highlighted as a partnership issue previously (Spenceley et al., 2016), the diving centres still saw these programs as added value for their performance as noted by some previous studies (Branchini et al., 2015; Hyde, 2015).

Overall it is clear from this discussion that the partnerships to achieve sustainable marine knowledge transfer and action required by SDG 14 are not present. The scuba diving activity manifested an unstructured management approach resulting from the lack of knowledge regarding the dynamics of tourism, generic training materials and weak collaboration amongst actors. The following figure 5 shows the initial observations from the study which define the diving experience and the shortcomings of each stakeholder group building on the helix partnership model (Calzada, 2019) described above. However, the study did also observe that the experience had potential to develop insight-seekers with a commitment to ocean literacy. To meet this challenge, the research also revealed the significant role of stakeholders in development of recreational diving on the island. Moving forward, the roles of these stakeholders in further developing the partnerships supported by SDG 17 deserves to be discussed.

Figure 5: Analysis of diving partnership challenges in Mallorca



Discussion- A partnership map for knowledge transfer

The influence of *exponomy* (experience economy) and hedonism in the leisure of this century engenders demand for personal experiences that are unique, varied and constantly changing (Bordas, 2003). Within the increased standardization of the diving industry, place-based ocean literacy can support experiences that could compete with other diving destinations in the Mediterranean region (for example Malta or Turkey). To that end, the study suggests that diving can facilitate a transition from passive to active observant diver, with a special focus towards the insight-seekers over the species-seekers. As a result, the 'sense of place' (local sea) through *place meaning* and

place attachment is promoted (Wynveen et al., 2012). The goal is that, once returning ashore, there is a shift from spectators to actors, making decisions that include the marine realm in their personal norms, as required by SDG14. Yet, as has been shown, the industry is not currently prepared to implement the Ocean Literacy approach. Therefore, the entire structure has to be involved, creating cross-sectorial collaboration through the connections, partnerships and mutually beneficial business identified in the scuba diving tourism system (Dimmock & Musa, 2015). The development and transfer of this knowledge is the joint task of the entire structure. Consequently this challenge requires the proactive role of the stakeholder groups identified and the individual responsibilities of the partners are described below.

Dive Industry: facilitator

The dive centre should be the focus for innovation, becoming the local knowledge centre for divers. To achieve this aim, knowledge providers have to make an extra effort to incorporate local insights (Robinson & Picard, 2011). Towards this task, the international certifiers have a responsibility to represent the diversity of the ocean in their narratives. The development of regional material (The Mediterranean; the Red Sea; or North Atlantic, as examples) could be jointly developed in order to highlight the cultural, historical and ecological richness of the regional marine realms. For example, a local manager interested in scientific diving highlighted archaeological heritage as having a significant role in this new narrative, as well as the existing scientific awareness of Mediterranean ecology present in Mallorca. In this way, the diver will not focus on coral reefs when the course is carried out in the Western Mediterranean. This role could be assumed by the professional association to bring together the local ocean literacy and incorporate it within the certification schemes. Skills to share the stories of local seas need improvement in the staff training and these could be developed in collaboration with a more effective local professional association. However, the greatest requirement of the professional association is to better consolidate the diving activity within the tourism framework of the island (Hillmer-Pegram, 2014). Greater knowledge regarding the importance of the dive

activity itself would be a good starting point to foster stronger partnerships with other stakeholders (Green Bubbles, 2014).

Government: supervisor

The umbrella function of government requires improved understanding about the extent and nature of this scuba diving activity. The notion of a blue society requires a holistic view in order to include the multiple users and interests of the marine realm (Hammerton, 2014). To start with, the official designation of the activity could evolve from its active/adventure focus to a broader ecotourism lens where the blue humanities (e.g: history, literature, art) are included. At the same time, the domestic and international marketing of Mallorca has room to improve. Being part of the official marketing agenda could provide a boost for the diving activity in competition with other diving destinations in the Western Mediterranean. However, it is important to note that the overlap of competences and regulations is currently a barrier to improving action (Lucrezi et.al, 2017). It has been noted that, for proper marine stewardship (Dobson & Valencia Saiz, 2005), regulations have to be well-known and every user group would benefit from developing their own code of conduct to maintain ocean health. The recent change towards island based tourism administration is a positive step to improve tangled official responsibilities, and should allow for more holistic partnerships.

Science: decoder

The development of a working relationship among the diving sector and scientific field is another critical factor. In this regard, Mallorca showed some promising efforts, represented by the citizen science projects. An individual responsible for these suggested that the reproduction season of *Posidonia* in May was

a good example, where divers (particularly locals) could re-discover a diving resource which has become 'boring' for them. Placing value on these ecosystems and species through citizen science partnerships could reinvigorate connections to place (Hyde, 2015). At the same time, this diver generated information could help update the data about the state of the marine environment. The interlinked nature of this ecosystem means that scientific projects often cover a vast territory, so the importance of this is not overlooked;

'we need all of the eyes which we can find in order to register what it is going on underwater' (Sea Watchers Programme officer of ICM).

This example demonstrates the potential incursion of knowledge into diving which increases the probability of feeling interested. Scientific partners could adopt the challenge to develop material for the other users of this shared environment and consider diving activity as a target for their institutional dissemination objectives. With this scientific grounding, the diving sector, in turn, has to promote the appreciation of those scientific discoveries in their products.

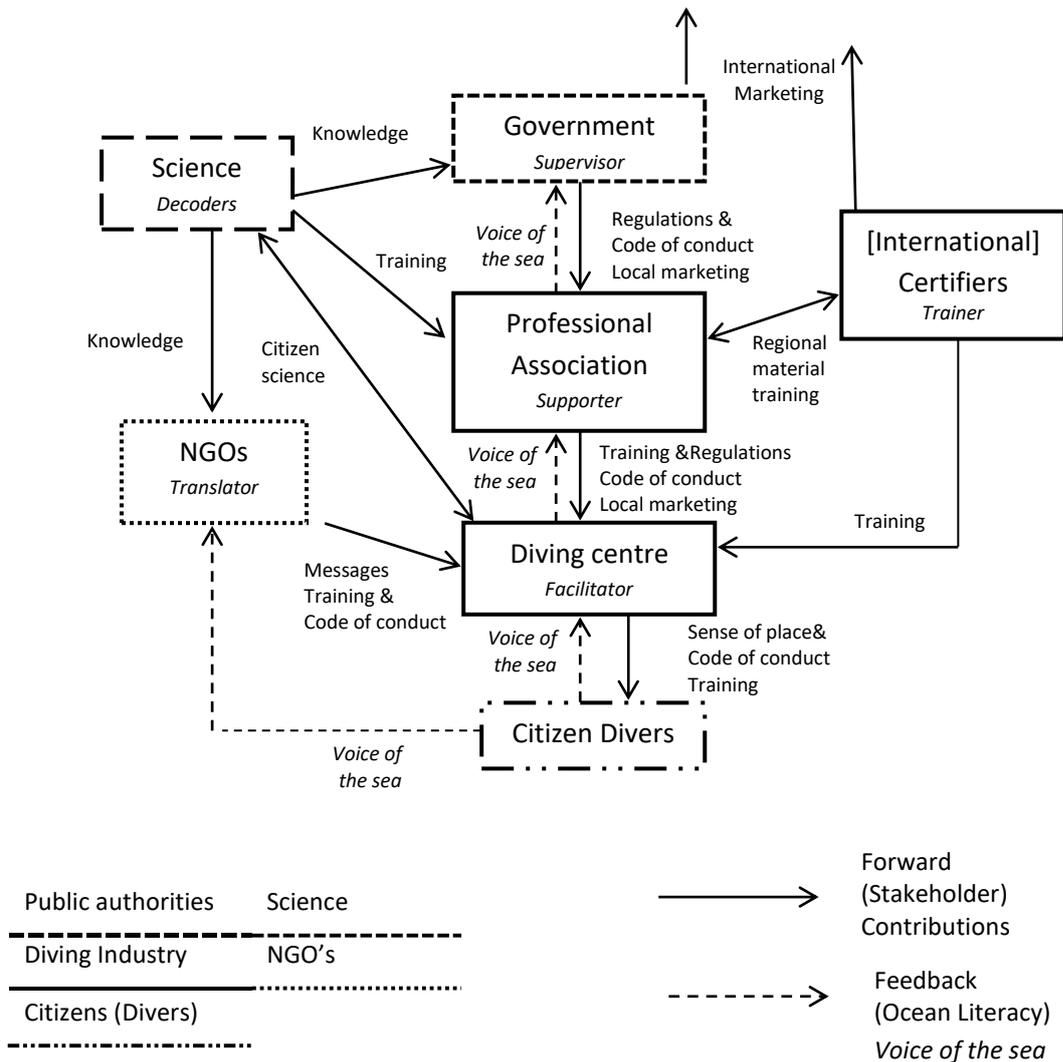
Additionally, the relationship with other stakeholders has to be reinforced and extended. For example, the design of socio-environmental messages could be strengthened and delivered to marine officers and staff on the ground. In common with the established relationship between fishing industry and science, the diving sector could design a set of best practice or code of conduct incorporating rigorous scientific knowledge. It can be helpful to routinely engage these experts under a regular knowledge transfer group to maintain a dialogue with scientific partners (Branchini et al., 2015). To that end, the scientific institutions have to reinforce their outreach department to decode and facilitate the goal of marine literacy to a wider spectrum of users.

NGOs: translator

NGOs are another translator of ocean literacy, but their emphasis is on the relationship with society, encouraging actions in an eco-friendly direction. The challenge in Mallorca was that these groups included the wider meaning of the ocean in their environmental commitments to engage more sectors. The interviews confirmed their sources of information are usually universities or other research institutions. The role of NGOs to bridge between experts and the general public has the power to translate that raw information into relevant material for different target groups. As a result of this scientific dialogue they could provide the diving activity; a set of marine-friendly messages and practices for the diving script; a contribution to the code of conduct; and enhanced training systems (Green Bubbles, 2014). The involvement of diving activity in the protection of Posidonia meadows, is a recent example of the potential for that sort of multi-stakeholder collaboration. Equally, NGOs' lobbying role was important for this new partnership between sectors, as they are often already represented on various policy groups; *'we could be the speaker of the diving activity in the environmental boards in some councils'* (the main environmental organization, personal comment).

The final figure 6 illustrates the map of the partnerships required to carry out this collaborative approach towards ocean literacy.

Figure 6: Partnerships for ocean literacy in the diving sector



The grid of this structure is the pentahelix approach (Pentahelix.eu, 2019; Calzada, 2019) with a more complex hierarchy due to the fact that the relationships happen in the ocean: one of the largest and most unknown common goods. Government is the main guarantor and facilitator; Science acts as the decoder of the sea; NGOs work as socially vigilant translators of the knowledge; and diving centres (with the support of international certifiers and their professional association) are the receptacle of that ocean literacy and the facilitators of the emotional [re]connection to the sea. Hence, the divers can play an active role as ocean citizens, but are guided by the entire structure because of the limited knowledge about the marine realm. Indeed, if this structure could be implemented more effectively, divers could be considered as advocates for ocean literacy (*voice of the sea*) in society more broadly.

Conclusions

Overall, scuba diving activity in Mallorca demonstrates a lack of partnership approaches arising from the lack of knowledge regarding the dynamics of tourism, leading to the challenges described in this paper. The diving activity was still conceptualised as a sport, with low priority given to local marine knowledge within the diving frameworks, resulting in a limited, repetitive and unsustainable offer. However, Mallorca does demonstrate potential to promote ocean literacy in recreational diving by adopting a cross-cutting approach for the entire sector. In promoting first-hand experiences of the ocean, the diving experience is based on '*what you see*', so with the required support, it has the potential to help in understanding what is seen towards increased ocean literacy in order to develop '*what you feel*' and '*what you think*'. To that end, the activity has to be designed to attract divers with biospheric and social-altruist values whose motivation is related to insight-seeking, and where they feel comfortable in an ecotourism framework reinforced by the sense of place. Whilst this may not initially seem possible in a mass tourism setting, the popularisation of environmental issues such as plastics and climate change, combined with an experiential shift does offer significant possibilities. However in order to achieve this, the activity needs a change of mind-set amongst all of the partnership stakeholders.

Drawing on the aspirations of SDG 17 this paper has illustrated a partnership model whereby the tourism activity is the vehicle to develop social change and sustainability in the achievement of the Sustainable Development Goals. In this case, the ocean literacy narrative is the channel to intertwine all the elements in generating a product that is unique and innovative as a result of its local foundations. Therefore, the general framework based on place could be extrapolated from this case study to be implemented in other diving destinations and even in other marine tourism activities focused on life underwater (SDG14). However it will be important to note the following limitations. Firstly this study has taken place in a western cultural context, and so attempts to define a place-based narrative need to pay attention to the respective socio-cultural context. Secondly, the profile of the divers here were lay visitors engaging in mass tourism, and did not show any significant knowledge about

the marine realm. Lastly and perhaps controversially given our arguments, as the Western Mediterranean marine ecosystem lacks the appealing biodiversity of other areas, the role of the staff becomes more significant in the diver's satisfaction because it cannot offer iconic species promoted by the media and the standardized marketing of diving. Sadly, taking into account the increased loss of biodiversity, these seascapes are becoming common over the world, so this will become ever more important. In conclusion, the design of the ocean literacy framework acquires relevance as a pathway for the identified stakeholders to connect to the local seas. Establishing this foundation and developing resilient partnerships (SDG17) for future marine-based ecotourism can contribute towards genuinely sustainable life below water (SDG 14) and ultimate achievement of the goals.

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