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Policy options to achieve culturally-aware and environmentally-sustainable tourism in Fiji

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A B S T R A C T

Increased visitation rates are expected to further impact ecosystems and local communities depending on them to generate income from tourism. We measure how different sustainable tourism management options of such areas in ways that respect the concept of *vanua*, the Fijian understanding of the connectiveness of the natural environment, humans and traditions, are perceived by a representative sample of potential visitors of the UK population. We then consider some plausible management options and how these may impact welfare. Results show that prospective UK respondents are willing to donate approximately £73 for a management option that enforces medium restrictions by local communities to enter coastal and marine areas in Fiji, so that *vanua* is respected. A management option that instead denies access to local communities is not seen favourably by prospective UK visitors to Fiji. In terms of time preference, UK respondents, in particular those with previous experiences of tropical areas, prefer environmental projects that restore and protect coastal and marine ecosystems to be completed as soon as possible. Our findings seem to support the introduction of more sustainable and community-based management practices in Fiji as they appear to increase welfare of visitors respecting local traditions and customs, as long as some access is provided to tourists. Donations from tourists or a change in tourism management from a traditional to a more sustainable practice may support the sustainable development of the local coastal communities in Fiji.

1. Introduction

International agreements such as the Sustainable Development Goals (SDGs) and The Convention on Biological Diversity (CBD, 2017) set out targets for countries worldwide to seek a more sustainable future. Sustainable tourism may have a significant role within this setting. In September 2015, all 193 Member States of the United Nations committed to achieving an aspiring 17 Sustainable Development Goals and 169 associated targets by 2030 (United Nations, 2017). Building on the Millennium Development Goals, the SDGs aim towards a comprehensive agenda that incorporates social, economic and environmental targets, for both developed and developing countries (Hajer et al., 2015). Sustainable tourism can contribute directly or indirectly to achieve Goals 8, 12 and 14, which are all associated with all-encompassing and sustainable development (UNWTO, 2016). Therefore, sustainable tourism is an important element in the post-2015 development programme. In fact, the CBD sets out recommendations to promote the relationship between tourism and biodiversity encouraging land-use developments to focus on sustainability as well as endorsing education and capacity building as means of sustainable tourism (Secretariat of the Convention on Biological Diversity, 2004). Private investment and expenditure can therefore be focused particularly on sustainable tourism, especially for Small Island Developing States (SIDS). For example, as set out by SGD 8.9, policies that promote sustainable tourism creating new jobs and promoting local culture are encouraged to be implemented by 2030. Sustainable tourism advocates environmental protection while relying on the environment and natural resources (Pforr, 2001). The term sustainable tourism is defined by Yu et al. (2011) as practices that generate benefits for locals while minimizing negative impacts on the natural environment and local culture. Yu et al. (2011) definition of sustainable tourism include practices such as eco-tourism and agri-tourism and is the definition adopted in this paper. Sustainable tourism is presented by the SDGs as a potential means to enhance economic growth, biodiversity protection, and promote and conserve local culture. If the SDGs are to be achieved, examining the preferences of the citizens of western countries, who constitute the majority of SIDS visitors, to engage in sustainable tourism and its related activities is crucial. Understanding the underlining factors affecting visitors' decisions is also fundamental for the future planning of SIDS policy and decision making around sustainable development.

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In 2013, tourism expenditure in Pacific SIDS (PSIDS) totalled to US $1.4 billion, an average of just over US$1000 per visitor. Furthermore, in 2014 there were 1.37 million overnight visitor arrivals across the eleven[1] countries in the South Pacific, with Fiji, Papua New Guinea (PNG), Palau, Samoa and Vanuatu making up the top five destinations (Perrottet and Garcia, 2016). PSIDS saw a 2.2% increase in international tourist arrivals between the period 2009 and 2013 (UNDP, 2014), and in 2017 instead an annual increase of 8.4% (South Pacific Tourism Organisation, 2017). The World Bank (2015) reported a smaller annual growth rate (4,5%) for the area in the period of 2005–2014 than that reported in UNDP (2014); however, this is still higher than the global average growth of tourism of 3.9%.

In Fiji, for example, tourism is one of the main economic sectors comprising 10% of national GDP (Fiji Bureau of Statistics, 2016). Fiji received more than 842,844 visitors in 2017 (Reserve Bank of Fiji, 2018), who spent 1.6 billion Fijian dollars (FJ$) (approximately US $0.82 million) across the industry, keeping employed approximately 119,000 Fijians (MITT, 2018). In Fiji, tourism has replaced sugar as the primary export, making tourism the primary income generator in the country (World Bank, 2015). On the other hand, tourism has been found to have negative environmental consequences (UNWTO and UNEP, 2008) which are not always taken into consideration (Neto, 2003). In particular, species and habitats are negatively impacted by high-impact tourism, where arrivals numbers put stress on the capacities of host areas (Castellanos-Verdugo et al., 2016). In fact, heavy reliance on conventional tourism activities can become a driver for biodiversity loss, which would be at odds with the achievement of the CBD targets. For example, Fiji's mangrove, estuaries, reef and foreshore ecosystems have significantly decreased in size due to tourism development (Bernard and Cook, 2015).

Currently, the Fijian government is working on a plan for tourism development called 'Fijian Tourism 2021' that aims to set a strategy to develop the country's tourism sector in a sustainable way (Ministry of Industry, Trade and Tourism, 2017). The current draft plan involves 28 strategies, one of which, Strategy n. 20 aims to "Engage in Protection of Reef and Marine Areas". Strategy n.20 is particularly important to Fiji's tourism industry because this is mostly marine and coastal based, but in need for "new legislation to protect the marine environment" (Ministry of Industry, Trade and Tourism, 2017, p. 13). Especially, the draft Fijian Tourism 2021 declares the marine environment as integral to indigenous Fijian lifestyles valued "FJ$2.5billion (US$1.15 million) per annum from tourism, as well as commercial, and subsistence fishing activities, and from coastal protection and carbon-storage values" (MITT, 2018, p.65).

The decision to visit a sustainably managed tourist area has been linked to several factors ranging from tourist satisfaction, previous experiences, an eco-friendly attitudes (Castellanos-Verdugo et al., 2016), to an existent sense of place held by residents of the tourism area (Bricker and Kerstetter, 2006), as well as personal motivations and environmentally responsible behaviours (Kil et al., 2014). Previous studies have discovered that place attachment can be influenced by destination image, attractiveness, involvement and satisfaction as well as psychological factors such as well-being (Mandal, 2016).

Practices that would be more appealing to prospective tourists are examined by identifying prospective tourist' preferences within a sustainable tourism framework and investigating the context for sustainable tourism development in Fiji. Knowledge of these visit-influencing factors is important in the design of policy to trade-off human disturbance on the environment due to tourism practices with the economic returns of tourist's expenditure and the indirect contribution of tourism to the local economy. Failure to address tourists' preferences by tourism developers can negatively affect the sense of place of residents and consequently the quality of the tourism experience for visitors (Bricker and Kerstetter, 2006). We investigate the willingness to pay of UK visitors for different sustainable tourism policy options that could be implemented in Fiji and investigate the temporal preferences of the same sample for sustainable tourism project realisation in Fiji. We conclude our study recommending a possible way forward for sustainable tourism in Fiji inclusive of sustainable development and respectful of cultural and spiritual values of the local coastal communities.

2. Literature review

2.1. Review of cultural ecosystem services

To understand the welfare benefits and trade-offs involved in the practice of sustainable development in Fiji we use an ecosystem services (ES) approach. For this analysis we used the framework suggested in the UK National Ecosystem Assessment – Follow-on (UKNEA-FO, 2014). Within this framework, we have identified two benefits of the cultural services category that have not received attention within the ES economic valuation literature: spiritual and cultural well-being, and education. Studies on tourism and recreation in coastal and marine areas, have already received some attention and some valuations exist for different places around the world, including tropical areas (Enriquez-Acevedoa et al., 2018).

Cultural Ecosystem Services (CES) are defined in the Millennium Ecosystem Assessment (MEA, 2005) as "the non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experiences" (MEA, 2005 p.40). In their CES definition Chan et al. (2011) have also included the attachment that individuals demonstrate with a specific area. CES have been recognized as important (Chan et al., 2012) but they are still lacking influence on policy and decision making (MEA, 2005). CES are expected to play a more important role in cultures where individuals have strong connections to the local environment (MEA, 2005). CES are not to be confused with the services from the creative or cultural industries sector. This sector refers to the industry that relies on products such as souvenirs sold in markets and services offered that are derivatives of local cultures in a region (Throsby, 2015). In fact, in an ES framework such services would be grouped under 'Provisioning' services as they are, or depend on, crafted products of local ecosystems to be used as ornaments such as shells, corals and wood. So far, the focus in the CES assessment literature has been on recreation and scenery and less has been done to examine spiritual values and cultural identity (Chan et al., 2012). This lack of research might be caused by the multitude of definitions of CES existing in the literature (Gould and Lincoln, 2017), their weak linkages to material aspects of human well-being (MEA, 2005), the lack of substitutability with other ES (MEA, 2005) and their intangibility (Milcu et al., 2013) which makes it difficult to assess monetarily (de Groot et al., 2005). Another aspect of CES that makes their valuation more difficult is it.

Failure to identify the existence and importance of CES can lead to public discord with negative consequences for local communities and governments (Chan et al., 2012). CES can play an important role in sustainable natural resource management, especially in countries with strong connections between people and their land in terms of cultural significance and inter-and-intra-generational traditions (Pascua et al., 2017), as we have identified for Fiji. Finally, in decision-making, correctly identifying CES can have a positive impact in resource management, benefiting both managers and the local population (Turner et al., 2008).

2.1.1. Tourism and nature watching

Advancements identifying the impact of cultural benefits using economic valuation methods have been made in the literature since the

[1] Papua New Guinea (PNG), Solomon Islands, Vanuatu, Fiji, Tonga, Samoa, Kiribati, Palau, Marshall Islands (RMI), Federated States of Micronesia (FSM) and Tuvalu.

1980s (e.g. Throsby and Withers, 1983). The MEA (2005) portrays the cultural value of ecosystems as an important determinant on the value of ecosystems. For example, Wright and Eppink (2016) in their meta-analysis found 48 studies around the world referring to the economic valuation of cultural values published between 1995 and 2015. Most of those studies focused on buildings as historical and cultural heritage sites (e.g. Choi et al., 2010) and much less on the CES provided by natural ecosystems. Nevertheless, recent examples in the literature that value cultural services include values derived from historical natural sites (Melstrom, 2015), agricultural landscapes (van Berkel and Verburg, 2014) and historical landscapes (Melstrom, 2014). In fact, given the difficulties in valuing cultural services, landscape research on aesthetic values can become a good proxy for valuation (Schaich et al., 2010). To preserve natural ecosystems that provide tourism and nature watching benefits within each ecosystem's environmental carrying capacity, restrictions to entry can be introduced (Tuan and Navrud, 2008). General population groups in the Pacific region, such as Australia, have been found willing to accept small increase in fees for the protection of cultural heritage sites but reported negative values for high levels of protection (Rolfe and Windle, 2003). Restrictions in visits are already introduced in Fiji in the cases of shark-diving tourism which can operate in no-take zones (Vianna et al., 2011). Vianna et al., 2011 also report that benefits from such management practices can promote coral reef preservation. Payments to the local community to allow access to their traditional fishing grounds are made through entry fees.

2.1.2. Spiritual and cultural well-being

Intangible aspects of culture and heritage, such as traditional dances, rituals and events, can impact on human well-being and demonstrates a close link to local landscapes and seascapes, suggesting that the local environment cannot be untangled from the spiritual and cultural well-being and aesthetic benefits for visitors and residents alike. Most of the relevant literature has been focusing on the economic impact of heritage and history sites, as well as cultural landmarks, in the local economy (e.g. Bowitz and Ibenholt, 2009) or the valuation of the sites themselves (e.g. Choi et al., 2010; Melstrom, 2015). The value of tangible and non-tangible aspects (e.g. visiting and experiencing nature in unison with traditional monuments and artefacts) of an area generate large values to recreationists and to indigenous people (Boxall et al., 2003). For example, Boxall et al. report that prospective recreationists in a nature park in Canada were willing to change their planned route choices to view historical monuments of spiritual value to indigenous population. Experiencing local culture has also been found to be highly important to Westerners visiting 'exotic' locations as they appear to be more interested in less tangible concepts such as cultural experiences than visitors from areas closer to these destinations (Suh and McAvoy, 2005). In Fiji, the commercialisation of vilavilairevo (firewalking) is an example of intangibility that while considered an 'iconic' attraction for tourists and an expression of cultural heritage by the people of Beqa, its traditional value and 'story' is rarely understood by visitors (Stymeist, 1996). Cultural performances, originally performed by indigenous Fijian land-owning communities, are now being performed in hotels and resorts by 'professional' dance troupes as 'entertainment' that includes an amalgamation of Pacific cultures (mainly Polynesian[2]), rather than authentically Fijian mekes or traditional dances (Movono, 2018). Accordingly, in Fiji, the cultural experience does not always lead to a cultural enrichment and education. This might be attributed to the commercialised nature of the cultural services offered which are tailored to the expectations of tourists rather than to the real traditions of the area, which has also led to a "loss of identity" in Fiji (Prasad 2014, as seen in Throsby, 2015).

In an attempt to fill in such gaps in the literature, in the context of Fiji, we consider the well-studied cultural ecosystem service of 'tourism and nature watching', but we also the cultural ecosystem service of 'spiritual and cultural well-being. In addition, we aim to test whether restrictions to entry to improve the ecosystem services provided by coastal and marine ecosystems in Fiji by reducing human impact generates positive welfare changes for prospective UK tourists in Fiji. Finally, we test whether introducing more culturally aware management of marine and coastal ecosystems in Fiji to increase spiritual and cultural wellbeing benefits and economic welfare of prospective UK tourists.

2.2. Review of community based management in Fiji: the example of the locally managed marine areas

Countries in South Pacific, such as Fiji (up to 88%) have high percentages of their land under customary tenure which allow rights for access only to specific groups of people. In Fiji, the ecological system has a land (*qele*) and marine (*qoliqoli*) component referred to as one's *kanakana* or area from where sustenance is derived (Movono, 2018; Ravuvu, 1983). Indigenous Fijians interact with their environment through culturally defined livelihood practices as well as totemic connections which are the foundations of traditional knowledge, pride and identity. People belonging to the same tribe are connected by their totemic affiliations with each other, "through the sharing of a totem tree, totem fish and totem bird, forming a cultural bond that links people to each other, links people to the *vanua* and the *vanua* to the people" (Movono, 2018, p.296). Totemic connections are geographically unique, mandate links between people and their natural environment and impart a sense of responsibility and custodianship of the *vanua* as a system in which indigenous Fijians can cohabit with nature (Movono, 2018).

Fiji's ethnic and national identity depends highly on this practice of customary tenure which also has enabled the establishment of "Community Conserved Areas" (CCAs) (Ausaid, 2008). Although CCAs are named differently in the literature, in Fiji for example, one area is described as "Managed Nature Reserve" as seen in Thaman et al. (2016) and others as "Locally Managed Marine Area" (UNDP, 2014), they all reflect a form of managed areas for natural resource use under local or governmental jurisdiction. In the South Pacific region, CCAs designations can either take the form of sacred areas, called '*tabu*' (or *taboo*) areas, or of Marine Protected Areas (MPAs) and Western style parks (Govan et al., 2009). *Tabu* areas are of particular importance as they refer to bans or temporary closures to areas and have been increasingly used by local populations to counter the increase of external pressures on resources (Govan et al., 2009). These bans usually take the form of temporary bans and closures to fishing areas to users of the natural resources. In Fiji, fishing areas that local communities are given the right to control or own are referred to as 'customary fishing rights areas', or *qoliqoli* (UNDP, 2014). There are 411 registered *qoliqoli* in Fiji by the Native Land and Fisheries Commission that span an area of 30,011.09km^2 (Sloan and Chand, 2016). *Tabu* areas are considered to be more driven by cultural traditions than MPAs which take different forms depending on the country and area they are implemented. MPAs also depend on government intervention and enforcement, sometimes requiring outside interventions (Govan et al., 2009). From a government perspective, in 2005 the Fijian government committed to have at least 30% of inshore and offshore areas under MPA status by 2020 (UNDP, 2014).

The distinction between '*tabu*' areas and MPAs is rather difficult in Fiji. For example, the Locally Managed Marine Areas (LMMAs, sometimes referred to as *Fijian* LMMAs) combine elements from both definitions. LMMAs also do not classify as typical MPAs according to UN-OHRLLS Factsheet (2013) with only 0.10% being classified as such. LMMAs were the first type of community-based management of a resource introduced in Fiji, and were first established in Ucunivanua in 1997 (UNDP, 2014). By 2009, 25% of Fiji's inshore area (more than 10

[2] Referring mainly to the countries of New Zealand, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Samoa.

INFORMATION about the more sustainable tourism project in Fiji	Current situation	Project A	Project B
Natural habitat	N/A	Mangroves	Seagrasses
Eco-friendly tourist accommodation management	No action	Waste management & Energy and water savings	No action
Community management for tourism (*Vanua*)	Visits possible but moderate access	No visits allowed	Free to visit
Time for project implementation	N/A	Immediately	25 years
Donation	No donation	£60	£20

Fig. 1. Example of a choice card.

thousand square kilometres) was under LMMA status (UNDP, 2014). LMMAs focus on combining traditional/local knowledge and scientific/expert knowledge and residents operating in the area have a "social, non-legally binding contract" to operate according to the values and objectives of the individual LMMA (Keen and Mahanty, 2006). Despite being locally managed, LMMAs in many cases are dependent on external funding to operate (Keen and Mahanty, 2006). LMMAs have also been seen by locals as helping to increase knowledge of environmental and development issues (Veitayaki et al., 2007), increase cultural awareness and facilitating the maintenance of local culture and traditions (van Beukering et al., 2007) and increase locals' income when operating within a LMMA as compared to an area with no such plans in place (van Beukering et al., 2007). Overall, information is scarce on the economic benefits and costs of LMMAs as local communities do not always engage in monitoring and data collection (Keen and Mahanty, 2006). Similarly, MPAs in Fiji have been established to ensure wildlife conservation while generating income for local communities through the creation of no-take zones (Brunnschweiler, 2010) while enabling community empowerment (Farrelly, 2011), but the area they cover remains some of the lowest of all SIDS (UNWTO Factsheet, 2013).

Community-based management in harmony with the natural environment is a common occurrence in communities with strong ties between people and place (Pascua et al., 2017). With respect to tourism, the UN's World Tourism Organisation (UNWTO) is highlighting the need to include local communities in decision-making for tourism development while establishing a beneficial interaction between locals and tourists (WTO, 2015). Management of natural resources impacted and utilized by tourism that accounts for CES sits well within the concept of *vanua* in Fiji, where environmental, social and economic factors coexist with respect for tradition (Crosby, 2002). Indigenous Fijians (*i-Taukei*) have a special relationship with the *vanua* which comprises a 'holistic' world view, that perceives humans as part rather than separate from the land (Ravuvu, 1983, p.70). Given their dependency on, and interconnectedness with, the environment, they grow up caring for and protecting their *vanua*. The following are examples of different types of marine management - community owned resorts such as Wayalailai Ecohaven Resort, Kuata Nature Resort, Botaira Resort, Manta Ray Resort and Barefoot Lodge in the Yasawa Island Group in Fiji that have chosen to implement a traditional *tabu* rather than MPA in the belief that the community were more likely to comply (Gibson, 2014; LäjeRotuma, 2013). Vatuolailai village on the Coral Coast which is closely linked to the Naviti and Warwick resorts have their own marine park protected through Fijian LMMA and the villagers are well-informed in issues of sustainability and conservation (Movono, 2018).

Managed areas that have *vanua concepts* in place are found to be beneficial to promote local knowledge (Crosby, 2002; Farrelly, 2011), traditions and priorities (Clarke and Jupiter, 2010), increase perceived equity in the distribution of management benefits (Clarke and Jupiter, 2010; Veitayaki, 2008) and revitalise local cultural practices (Sroypetch, 2016). Lack of appreciation for *vanua* principles from tourists is observed to have a negative impact on societal values and behaviours among the locals (Sroypetch, 2016). Nevertheless, *vanua* utilized as a traditional community-based natural resource management tool for CCAs, can be quite complex to implement and it is possible that conflicts arise between customary rules and national laws (Clarke and Jupiter, 2010). Therefore, community-based management that considers the 'resources management systems' of people with different perceptions of the environment, in this case indigenous Fijians (Johannes, 1978), and includes features of culture and tradition, including conflict and dispute settlement protocol, can provide an appropriate resource management system that is embedded in a social system observed by local communities (Veitayaki, 2008).

3. Methods

Grilli et al., *under revision* have used a stated preference technique called choice experiment (CE) (e.g. Johnston et al., 2017), which is a survey-based technique. We use the results in Grilli et al., *under revision*, to estimate welfare changes that respondents derive from different policy options to inform the decision maker on how future policies regarding sustainable tourism in Fiji could be implemented.

In CE, respondents are guided through a set of choice situations and, for each of them, are asked to choose their most preferred one between mutually exclusive alternatives representing the different goods/projects under consideration. The choice card in Fig. 1 portrays the choice that respondents faced in Grilli et al., *under revision*. From the statistical analysis of the CE responses we can derive:

1. preferences for changes in single attribute of a hypothetical sustainable tourism project in Fiji (in Grilli et al., *under revision*); and
2. welfare changes for different policy options characterised by multiple concurrent changes in attributes to help decision making, for example, to design policies that aim at higher levels of tourism sustainability.

In this study we will expand on the second point, namely analyse welfare changes for different tourism policy options. The analysis is based on the preferences for changes in single attributes which are extensively explored in Grilli et al., *under revision*.

Table 1
Results from the Multinomial Logit model (Grilli et al., under revision).

Attributes	Model MNL	Model MNL-V	Model MNL-NV
ASC – status quo	−0.415**	−0.425**	−0.525**
Habitat – sandy beach	−0.002	0.028	−0.001
Habitat – coral reef	0.135**	0.166**	0.134**
Habitat – mangroves	0.008	0.127**	−0.090*
Waste management	0.171**	0.081	0.290**
Waste management + energy and water savings	0.284**	0.230**	0.391**
Vanua – no visit allowed	−0.174**	−0.167**	−0.204**
Vanua – moderate access	−0.001	−0.041	0.047
Time for project completion	−0.007**	−0.003	−0.012**
One-off donation	−0.005**	−0.003*	−0.007**
N	842	304	538
Pseudo R^2	0.050	0.062	0.052

Notes: ** statistical significance at 5% level, * statistical significance at 10% level.

The CE in Grilli et al., *under revision* has been administered in 2018 to a national representative sample of 843 UK citizens and results from one of the models therein employed, namely the Multinomial Logit model (MNL), are summarised in Table 1 (see Grilli et al., *under revision* for the full demographic information). The MNL model is a variation of the common logit model and aims to describe the impact of single attributes on the probability of choosing one option versus the others. In the MNL model, the probability for individual n of choosing option i can be written as:

$$P_{ni} = \frac{e^{\beta x_{ni}}}{\sum_{j=1}^{J} e^{\beta x_{nj}}}$$

where the estimated parameters β, reported in Table 1, describe the relative importance of each attribute x in explaining the choices made by respondents when facing the different options in the CE choice cards.

4. Results

Table 1 reports results for the full sample of UK respondents (Model MNL) and the two sub samples of UK residents who have already visited SIDS (Model MNL-V), and those who have never visited SIDS (Model MNL-NV). From an overall analysis of coefficients, it is possible to rank the attributes that are perceived as most important for designing new tourism policies. The Alternative Specific Constant (ASC) parameter signals that perpetuating the current situation is generally perceived by respondents as a negative policy. Results also show that UK residents exhibit stronger preferences for protecting the coral reef, for introducing a more eco-friendly management of tourist accommodations, and for policies guaranteeing the possibility to access and visit local communities. Visitors of SIDS reveal a stronger and significant preference for mangroves and a moderate aversion against access to local communities' areas. These differences highlight the role of knowledge and experience in expecting specific tourism policy changes. Therefore, using this information, prospective sustainable tourism policies in Fiji can be specifically tailored to meet tourists' preferences and needs, considering the trade-offs between different tourism attributes. For a detailed discussion on the difference in preferences between groups see Grilli et al. (*under revision*).

Coefficients can be used for policy appraisal purposes to consider the effect of simultaneous changes in single characteristics of hypothetical policy option (Table 1). In this study, this translates in using these coefficients to derive welfare changes values for alternative policy options supporting sustainable tourism management choices in Fiji. We assume these coefficients truly reflect the respondents' preferences for each single attribute and we can simulate how changes in tourism policies influence changes in tourists' welfare (Table 1). The literature of CE describes this as aggregate values that measure the total preferences of the sample or subsample (Train, 2009). The welfare values describe the changes brought by the proposed new sustainable tourism projects as respondents' WTP.

Since new environmental projects/policies can be implemented in the near as well as in the far future, we also calculate the discount rate representing the individual's time preference for the implementation of the proposed sustainable tourism projects in the CE. This approach used in the CE literature (see, for example, Viscusi et al., 2008) is made possible by the flexibility of CE in terms of estimating the preferences for disaggregated time horizons. The individual discount factor δ can be obtained as

$$\delta = \left(1 + {cost_n}/{cost_0}\right)^{1/n}$$

where $cost_n$ is the cost of the policy to be implemented in time n (the WTP as derived from the model) and $cost_0$ is the present cost of the proposed policy (the cost as actually presented to respondents in the CE cards). The individual discount rate (r) can be then obtained from the standard discount rate formula as a function of the discount factor

$$r = \left({1}/{\delta}\right) - 1$$

The monetary amount that prospective tourists would be, on average, willing to donate for the improvement of tourism sustainability in Fiji over the current situation ranges from £0 to £35 (Table 3). Based on the policy characteristics presented to respondents in the CE (see Fig. 1), sustainable tourism policy actions can be grouped in three broad classes:

- environmental actions, related to enhance natural habitats;
- cultural actions, related to higher protection of cultural traditions and local communities; and
- industry actions related to improvements in the eco-friendly tourism

Table 2
Characteristics present in the proposed policy scenarios.

Characteristic	BAU current situation	Policy 1 habitat protection	Policy 2 cultural values	Policy 3 eco-friendly industry	Policy 4 complete sustainability
Mangroves protected		✓			✓
Corals protected		✓			✓
Beaches protected		✓			✓
Seagrasses protected		✓			✓
No visits allowed to local communities			✓		✓
Moderate access to local communities	✓	✓		✓	
Free access to local communities					
No eco-friendly management	✓	✓	✓		
Waste management					
Waste + energy & water savings management				✓	✓

accommodations' management.

On this basis, we assume four possible sustainable tourism policy scenarios as summarised in Table 2.

Considering the parameters (Table 1) we have measured the welfare changes produced by the switch from the current management to four policy scenarios (Table 2). The status quo (the current situation) in our setting that the respondents could decide to maintain, is providing moderate access to LMMAs and natural ecosystems but poor protection of natural habitats and sustainability of tourism accommodations. The different policies (Table. 2) offer one or more changes from the status quo. In particular, we focus on the change (an increase) in the provisioning of ecosystem services from coastal and marine ecosystems in Fiji. These changes in the quantity of services will lead to changes in the probability of satisfying expectation of prospective tourists who are willing to donate a monetary amount. The coefficients (Table 1) define different utility levels and analysing their aggregated effect is fundamental to capture the trade-off between social, environmental and industry's changes. The advantage of the CE is that it captures economic values from goods and services sold in real and hypothetical markets (e.g. more coral reefs in an area can generate higher recreational opportunities through diving and spiritual well-being). While the activity of diving can be priced through the expenditure of an individual going diving, spiritual well-being from interacting with the coral reefs and the consequent changes in human welfare cannot be economically valued. This welfare change measured through respondents' Compensating Variation (CV) equals to the amount that on average respondents are willing to donate to support the different policies (Table 2). Individuals' WTP represent the monetary amount individuals are willing to pay to secure the increase in the provisioning of ecosystem services.

Table 3 reports the average welfare changes for the four policies (Table 2) for the full sample and the sub-sample of UK residents who have already visited SIDS and those who have not.

5. Discussion

Variations in CV resulting from the introduction of policies that towards a higher protection of natural habitats (Policy 1) and a higher eco-friendly standard required for tourist accommodations (Policy 3) is positive apart from those that never visited SIDS. This means that respondents would generally receive a benefit by moving from the current policy situation to policies improving the environmental sustainability of the tourism sector in Fiji. In particular, UK respondents would be, on average, willing to donate £13.9 to secure the benefits of the environmental improvements produced by Policy 1. This amount increases to £59.4 for respondents who had previously visited a SIDS. In contrast, respondents who have never visited SIDS would not be willing to donate to implement Policy 1. This result shows that respondents without a direct experience of visiting SIDS do not perceive a benefit from a policy option focused solely on habitat protection. The improvement related to tourist accommodations management in Fiji provided by Policy 3 and encompassing the highest standard of waste management and water and energy savings is positively valued by UK prospective tourists. The average willingness to donate is equal to £35.6, with the amount slightly decreasing to £26.4 for respondents who have visited SIDS and slightly increasing to £39.7 for those who have not. This result is completely reversed with the introduction of Policy 2. This policy scenario aims at preserving Fijian cultural values and traditions by not permitting visitors to access local communities. The null values in Policy 2 indicate respondents have strong preferences against the suggested restriction of access and would not be willing to donate any money to support such policies. Therefore, the possibility to access Fijian local communities is of great importance for prospective tourists. It is interesting to note how the presence or absence of previous experience in visiting SIDS shapes the benefits derived from the different policy options. Respondents who visited SIDS would favour policies providing higher environmental sustainability over the other policy options; respondents who have not visited SIDS would instead prefer policies related to higher industry sustainability (see Grilli et al., *under revision*, for an in-depth analysis of individual perceptions of different groups).

The scenario of Policy 4 includes all the sustainability actions proposed, and its introduction would consistently result in a positive change in benefits for UK prospective tourists, with an average willingness to donate for the policy bundle equal to £34.7. However, looking at the respondents' tastes for the single characteristics of possible policies (Table 1), an additional *plausible* policy option, along the lines of those presented in Table 3, could be considered. This policy option would include improved environmental protection, improved management of tourist accommodation to the highest eco-friendly standard, and moderate access to visit local communities. For this new policy option, UK prospective tourists would be on average willing to donate £73.4 to secure these benefits, with a willingness to donate of £129.8 for those who already visited SIDS and £50.6 for those who have not. Results of the latest policy option highlight that balancing and accounting for the trade-offs between the different characteristics of a prospective policy would result in higher welfare outcomes linked to the implementation of improvements of tourism sustainability in Fiji.

For making a decision among alternative policy options, it might also be useful to investigate when respondents would prefer to see a project carried out. According to the main literature on discounting, the higher the discount rate, the sooner the respondent prefers a project to be realised. Table 4 shows the results of the rates of individual time preference calculated using the data collected through the CE (Table 1). Respondents that visited tropical destinations before, have a high discount rate for the project to be implemented within 5 years with a lower discount rate for the implementation of the project towards the end of a first cycle of generations (i.e. 25 years), showing their impatience to enjoy the benefits of the project. This implies that the current generation would enjoy the benefits of the implemented project but would also bear the costs of it. The respondents that never visited a tropical destination also have a positive individual time preference. However, when compared to those that visited tropical areas before, their impatience is definitely lower; for the project being implemented within 5 years they showed a 11.5% discount rate, which is similar to that of 25 years for those that visited tropical areas before (8.6%); the lowest within this group.

These results are in line with similar literature (for example, see Bateman et al., 2002) and are what we would have expected as the experience of a place educates individuals on its importance, confirming the value of the less tangible cultural ecosystem services. Our

Table 3
Compensating variation (CV) for the possible policy scenarios.

Policy scenario	Pooled sample	Already visited SIDS	Never visited SIDS
Policy 1	£13.9	£59.4	£0
Policy 2	£0	£0	£0
Policy 3	£35.6	£26.4	£39.7
Policy 4	£34.7	£94.9	£10.1

Table 4
Individual rates of time preferences by experience of visiting a tropical destination.

Time to complete the project	Pooled sample	Not visited a tropical destination	Already visited a tropical destination
5 years	21.0%*	11.5%	34.2%*
10 years	10.3%*	5.8%*	20.6%*
25 years	5.5%*	6.1%*	8.6%*

Notes: * statisticall significance at the 10% level.

results suggest that sustainable tourism projects in Fiji should be implemented sooner rather than later so to satisfy the preferences of those that do visit tropical destinations; respondents that had visited tropical destinations before are in fact willing to donate more for the realisation of strongly sustainable tourism related projects than those that did not because the realisation of those projects will increase their visiting experience as shown in the possible policy scenarios we presented.

6. Conclusions

Results show that there is an interest from prospective UK tourists to visit sustainably managed tourism destinations. Monetary valuation of different policy practices with respect to tourism in Fiji was explored, aiming to show how welfare measures such as the WTP of respondents increases or decreases when offered a mixture of options. UK respondents, seen as prospective visitors to Fiji, were found to have strong values when asked to state their preferences and willingness-to-pay for financing sustainable tourism projects in Fiji, as seen by their preferences to personally experience Fijian coastal and marine ecosystems. We examined different policy options, from promoting conservation by enforcing permanent closures in coastal and marine areas to focusing entirely on minimizing the impacts of the tourism sector to the environment. Our proposed policy of a more feasible mix of characteristics, with moderate access for tourists to Fijian communities and marine and coastal resources and a considerable mitigation of human impacts from tourism (through proper waste management in tourist accommodations) yielded the highest CV per person, when compared to the average donation when all projects are considered. Therefore, we find that policies that are directly driven by conservation purposes are not appealing to consumers and do not maximize their welfare. The suggested policies therefore reveal the trade-offs between the natural and social capital, showing how increases in natural capital (more and better quality of CES provided by marine and coastal ecosystems) impact social capital (income and subsequent welfare). Past experiences play a key role in WTP levels, with people who have visited being more willing to pay (i.e. donate) to visit. If barriers to entry in areas with coastal and marine ecosystems were enforced for tourists, respondents would be less willing to donate and visit such destinations. A balanced policy that allows some access to coastal and marine ecosystems, minimises human impacts in hotels, and is realised within a short timeframe yield significantly higher changes in welfare. This result is important because, for example, donations raised among tourists could be used by local LMMAs to subsidise lost income from visits and touristic exploitation of marine and coastal resources towards a more sustainable management instead.

The use of a plausible policy which takes into account the trade-offs highlighted in our analysis, such as allowing moderate access to local communities by which the CES may not be as preserved as if a total closure was enforced, resulted in the highest welfare values (i.e. WTP). Policies that restrict entry to tourists at specific times of the year may also potentially ensure that *tabu* areas are respected by tourists and local communities would still benefit from income generated by tourism. This might result in Fiji moving away from high-impact tourism that can in turn harm the environment (see Neto, 2003) and instead manage tourist numbers based on ecosystem services being enhanced and maintained, while still being experienced by tourists. The simultaneous protection of cultural and natural assets and enhancement of income from tourism is in line with the findings of the Pacific Strategy report (2014) which highlights that increased visitor expenditure, length of stay, retained income within the region are key to economic growth and involvement of local communities in tourism activities. The report also brought forth the need for conservation of local ecosystems and cultures through an increased protection and sustainable management of key environmental assets and to enhance and protect authentic local cultures through conservation and education. CES such as education and spiritual and cultural well-being were extremely important for prospective tourists as demonstrated by their non-positive preferences when no access to the local communities is allowed (Policy 2).

Prospective UK tourists have a positive time preference, as reported in Table 4, with those with past experiences of tropical areas being willing to wait much less than those who have never been to SIDS to see a sustainable tourism project realised in Fiji. This highlights the importance and role of past experiences when interacting with natural resources in a tourist setting. Fiji can therefore benefit proportionately more from having UK tourists returning to the country as they are both more willing to pay to sustainably manage of natural resources in the country and willing to still visit if restrictions to enter to areas such as LMMAs exist, while short-term projects should be preferred from policy-makers compared to programmes with longer completion time.

For economic benefits due to increased welfare of UK tourists to be enjoyed by local communities, clear management rights of coastal and marine resources need to be defined. Rights to enforce bans of entry to define no-take zones in such areas are some examples of management rights. Management rights are not enough to ensure that benefits are enjoyed by local communities as funding allocation needs to be in place as well. A clear set of priorities needs to exist for where funding sourced from tourism is directed to, which criteria should be in place for LMMAs to benefit from tourist-generated income.

Designating more areas under LMMA status while providing clear management rights can also help Fiji progress towards achieving several SDGs related to the marine and coastal environment, protecting areas of cultural and spiritual significance (as most such areas in Fiji are found in close proximity to coastal and marine areas). SDGs related from assigning protected status to marine areas (SDG 14.5), reinforcing local culture and increasing income from sustainable tourism (SGD 8.9) can be advanced for Fiji by adapting the suggested policies. Finally, in the event of such funding streams becoming available to local communities, the promotion of culture through sustainable tourism as suggested by SGD 8.9 will also be enhanced.

Making sustainable development work in the tourism sector is the challenge SIDS are facing today. Countries where deep connections between nature, people and spiritual and aesthetic values exist are particularly challenged to address this issue. In Fiji, the *vanua* principle of understanding and engaging with nature offers a unique opportunity for a growth in sustainable tourism with culturally responsible practices. Such findings come as a re-enforcement of existing practices of community management in Fiji, allowing for a continued and even increased flow of income from tourism while impact on natural resources is minimized. This also ensures that the unique way of Fijians to perceive and interact with nature (*vanua*) can be preserved and potentially enhanced. LMMAs in Fiji have long been used in Fiji as ways of safeguarding income-generating practices for coastal communities and as means of preserving and respecting local traditions and culture. We suggest that the LMMAs' functioning could benefit from funds paid by international tourists while more management rights are given to local coastal communities to introduce more cultural-appropriate closures to LMMAs, without depriving communities from income generated by tourists. LMMAs have broadly being reliant on government income to operate and if such income can be provided from tourism sources, government income can be freed for other uses. Finally, the trade-offs between different policies can be used by policy makers to explore the margins of acceptability of environment-related policies from prospective tourists, while considering the impact on local populations.

Author statement

ET: Conceptualisation, Methodology, Roles/Writing - original draft, revised draft,
GG: Investigation; Methodology; revised draft,
DG: Writing - review & editing,
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