



The Economics  
of Ecosystems  
and Biodiversity  
on St Eustatius

# The tourism value of nature on St Eustatius



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## The Economics of Ecosystems and Biodiversity on St Eustatius

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This study is part of “The Economics of Ecosystems and Biodiversity Netherlands” (TEEB NL) study. It is being conducted for the Caribbean Netherlands on behalf of the Dutch Ministry of Economic Affairs.

## The Challenge

The tourism industry is an important pillar of the economy of St Eustatius. This is recognized by the Strategic Development Plan commissioned by the Executive Council of St Eustatius in 2010, which advocates diversification of the economy of the island. Developing the tourism sector is an important part of the plan. The historical heritage and ecosystems of St Eustatius provide touristic activities that largely depend on the quality of the natural environment, such as diving, snorkelling, enjoying beaches, and participating in land activities, especially hiking. The economic value of the contribution of nature to St Eustatius’ tourism has not sufficiently been quantified, nor have the most important aspects of nature for tourism been identified for the island. To assist policy-makers in understanding the relationship between nature and the economy, it is essential to determine the value of the ecosystem services to tourism as well as the impact of tourism on ecosystems of St Eustatius.

## The Approach

To determine the value of the ecosystems of St Eustatius for the tourism industry, a survey among visitors is conducted on St Eustatius. This study reveals the average expenditures of these visitors, as well as their Willingness-To-Pay (WTP) for protection of ecosystems and historical heritage. The result of this survey also elucidates tourists’ perceived value of different aspects of nature on St Eustatius. The tourism value of the ecosystem services is combined with spatial data to determine which ecosystem locations are the most economically valuable with regards to tourism.

## Results

The annual expenditures by tourists on St Eustatius are approximately \$14 million. Around 70% of these spendings can be attributed to the natural environment. Marine ecosystems are found to be more economically significant than terrestrial ecosystems on the island. A high WTP for nature management indicates that there is an opportunity to increase the nature fees on St Eustatius. In addition, a positive WTP is found for extra management of the island’s historical heritage.

## The Challenge

In the current era of financial insecurity, environmental degradation and a slow shift from fossil to sustainable energy sources, it becomes clear that classical investments are not always contributing to a strong economy. In reaction, a growing minority is working to show that the prosperity of the economy and a resilient environment are very interlinked. In fact, a healthy environment is critical to human as well as financial wellbeing, especially in the long run. The challenge is to find methods to accurately measure and value these ecosystem services subject to a ‘tragedy of the commons’ scenario: public spaces, access to waters and parks, healthy ecosystems, etc. The insight can be used to design mechanisms that prevent these ecosystem services from being overexploited.

The study deals with the socio-economic value of tourism as a service of ecosystems on St Eustatius. Ecosystems provide many touristic attractions that depend on the quality of the natural marine and terrestrial environment, including diving, snorkelling, boating, enjoying beaches, and participating in land activities, like island tours, hiking and

bird watching. It is therefore very likely that the natural environment of St Eustatius is an important attraction for tourists.

The tourism industry is of significant size to the economy of St Eustatius and has a potential to grow substantially according to most stakeholders on the island. The island is home to approximately 4,000 residents, and roughly 10,000 visitors arrive on the island per year. Most people arrive on the island by airplane and a small amount arrives by yacht. There are no structural cruise ship visits at the moment.

### Paradox

Development of the tourism industry requires investments to create a proper infrastructure and sufficient facilities for visitors. On the other hand, an increase in the number of tourists and investments in infrastructure put extra pressure on the very same ecosystems that attract these visitors. It is essential that the economic value of the tourist industry and its dependence on appropriate conservation of ecosystems of St Eustatius is determined to assist policy-makers in understanding this paradoxical relationship to achieve sustainable economic development.

*Development of the tourism industry requires investments to create a proper infrastructure and sufficient facilities for visitors.*





### Country Overview

St Eustatius is a Caribbean island in the Lesser Antilles with an area of approximately 21 km<sup>2</sup> and approximately 4,000 permanent inhabitants. Since 2010, St Eustatius is part of the Netherlands as a public entity. Although transshipment by NuStar is the island's main source of income, tourism accounts for a large part of economic activity on the island. The tourism sector and the wellbeing of many of the Stian residents rely on the quality of the island's ecosystems. The coastal waters are officially a Marine Protected Area in an effort to conserve what are considered to be among the well-preserved marine ecosystems in the Caribbean. The St Eustatius National Marine Park was created in 1996 and covers the coastal waters around the island from the high water line until the depth of 30 meter. The Marine Park includes two marine reserves in which fishing and anchoring is prohibited. The terrestrial national parks go by the names of Quill and Boven. All parks are managed by the St. Eustatius National Parks Foundation (STENAPA).

The coral reef of St Eustatius attracts divers and snorkelers seeking to interact with what is considered to be the most quickly declining ecosystem on the globe. Combined with the rich cultural heritage and lavish vegetation a small selection of travellers from all over the world is attracted to what is historically known as "the Golden Rock".

Like most coral reef ecosystems, the quality of the marine environment on St Eustatius has seen a decline in recent years due to human influence. On the other hand, the island wants to develop its tourism sector. An increase in tourism would lead to more pressure on this fragile ecosystem. Protecting the environment while securing the wellbeing and economic prosperity is a crucial challenge for St Eustatius.

## The Approach

'Ecosystem services' are defined as "the benefits that people obtain from ecosystems" (MEA, 2005). The goal of this study is to put an economic value to the contribution of nature to the tourism industry and to put a comprehensive indicator (i.e. a monetary unit) by tourists on their value of protecting the ecosystems of St Eustatius.

A tourist exit survey has been conducted to estimate the benefits to suppliers and consumers in the tourism industry and the dependence of this created welfare on the nature of St Eustatius. The study identifies the activities in which tourists participate while visiting St Eustatius, and quantifies the benefits that are created through these activities for the tourism industry. By estimating the dependence of the activities on the ecosystems of St Eustatius the importance of nature for the tourism industry is estimated. The study then uses spatial data to determine which ecosystems have the highest economic value with regards to tourism.

### Methodology

The tourist exit survey is also used to investigate the expenditures of tourists visiting St Eustatius, as well as their willingness to pay (WTP) for protection of nature on the island. This clarifies tourists' perceived value of different aspects of the natural environment. To gain more insight into the development and composition of the tourism industry on the island, three distinct types of visitors have been interviewed: stay-over tourists visiting the island exclusively for leisure, people visiting family and friends, and business travellers that combine their work trip with leisure.

Using a choice experiment as a valuation tool, the study estimates the impact of changes in the natural environment on St Eustatius to the Consumer Surplus (CS) of the tourist industry. Revenue is estimated through the responses about tourist expenses that were collected in the survey. In the study, the annual value of nature for the tourism industry is calculated. Moreover, a wide range of qualitative insights is generated.





Figure 1: Result of the question whether the tourists would return to a more crowded St Eustatius; or to a St Eustatius with significantly degraded coral reefs.

## Results & Recommendation

The study estimates that visitors spend approximately US\$14 million annually on St Eustatius. It is estimated that around 60% of these revenues are depend on ecosystems services on St Eustatius. Important for the prosperity of the tourism industry is whether people enjoyed their stay and are planning to come back. Around 35% of the tourists that come purely for leisure have visited St Eustatius before and over 60% of the tourists would like to return. This desire to return is very dependent on the state of the local ecosystems as is indicated in Figure 1.

When the marine environment severely degrades, little under 40% of the leisure tourists want to return, while a total of 30% absolutely does not. This significantly lower percentage can be explained by the large share of divers among tourists on St Eustatius. An increase in tourism does not have much effect on the willingness of tourists to return (figure 1). This indicates that growth in the tourism industry is possible, as long as the impact of the interaction of tourists with the island's natural wealth is taken into account. A total annual value of approximately \$3 million is calculated for the marine

and terrestrial ecosystems. Of the estimated added value that is created in the tourism industry, around \$2,2 million is attributable to nature. The study estimates that visitors are willing to contribute \$750,000 to maintain the natural beauty of St Eustatius. This supports the hypothesis that nature is a crucial factor for the islands tourism.

While the willingness to pay for the marine ecosystems is largest, the terrestrial ecosystems are still very relevant for touristic activities. A positive willingness to pay of \$120,000 is calculated for the management of historical heritage.

Figure 1

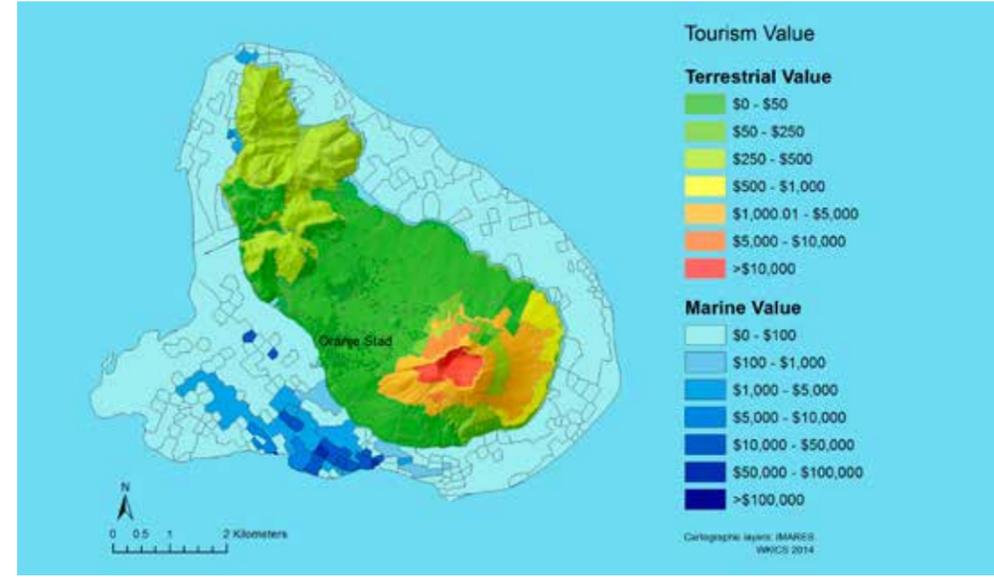
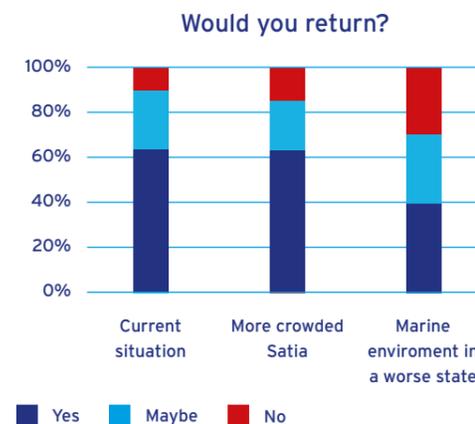


Figure 2: The spatial distribution of the tourism value. This map shows the total economic value (TEV) of all natural habitats of St Eustatius. It is a result of the sum of the values of tourism carbon sequestration, fisheries, archeology and local recreation and culture.

Terrestrial layer: de Freitas 2012  
 Marine layer IMARES 2014  
 Wolfs Company 2014

Figure 2 demonstrates which areas are most valuable to the tourism industry. Both terrestrial and marine habitats are considered to be important. The southwestern part of the Marine Park and the quill area are especially important for tourism.

## Recommendations

The study discovered that the tourists' consumer surplus is not optimally exploited by St Eustatius, since tourists are willing to pay much more than they currently do to preserve nature on the island. This suggests that the fees for the use of the nature reserves on the island can be raised.

The survey also shows that there is a large discrepancy between the amount of hikers and the amount of sold trail tags, which indicates that there is room for improvement of the payment for nature conservation mechanisms as well.

A lack of tourism statistics on St Eustatius limits the accuracy of the study. It is advised that monitoring of the second most important economic source of the island is increased. Developing the sector in a sustainable manner can only be done with information about the preferences of visitors. The study clearly shows that that degradation of the natural environment will have serious implications

for the desire to develop the tourism industry. It is advised that investments in infrastructure are complemented by investments in environmental conservation to develop the tourism industry sustainably.

### Further Information

For further information about valuing Ecosystem Services on the island of St Eustatius, contact Esther Wolfs at [esther@wkics.com](mailto:esther@wkics.com) or Pieter van Beukering at IVM [pieter.van.beukering@vu.nl](mailto:pieter.van.beukering@vu.nl) and the webpage [www.wolfscompany.com](http://www.wolfscompany.com)

References  
 Van de Kerkhof, S, Schep, S, Van Beukering, P, Brander, L, (2014), The tourism value of nature on St Eustatius, in assignment of the Ministry of Economic Affairs the Netherlands.

# Tourists are willing to pay to conserve the nature on St Eustatius

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