

# 1 Introduction

The ambitious Convention on Biological Diversity (CBD) 2010 initiative (Millennium Development Goals) to significantly reduce or halt the loss of biodiversity on a global scale has just ended with a disappointing result. While there have been some successful implementations of policies, the failure on the global level is due to insufficient resources and political will. (Secretariat of the Convention on Biological Diversity, 2010)

The conservation of biodiversity is confronted with three major challenges. Firstly, there is a lack of financial resources, secondly due to the complexity of biodiversity there is a lack of knowledge and thirdly there is a lack of time.

The way to address the first problem is to generate new financial resources and to improve the allocation efficiency of existing resources. The lack of knowledge increases the difficulty to find the path towards optimal resource allocation and finally, the facts that many species are already on the verge of extinction and certain ecosystems are about to break down define the time limit to find the solutions for the first and the second problem.

While solving the problems with traditional methods might work, if their application is improved, finding new alternatives is the second option. Given the urgency of biodiversity conservation, both methods are applied.

Using a broad analysis of the topic of biodiversity conservation from an economic point of view as a basement, the main objective of this master's thesis is to investigate the potential of a new approach, the use of financial derivatives to insure a potentially required last-minute conservation effort. The application of this new conservation method promises to increase allocation efficiency by creating conservation incentives and to generate new financial resources for conservation initiatives. (Mandel, Donlan, & Armstrong, 2009)

In order to derive conclusions on the potential of this new conservation method, its benefits and costs have to be analyzed. This question cannot be answered absolutely, but requires comparisons to traditional conservation methods and to evaluate these traditional methods a thorough understanding of the subject biodiversity is crucial.

Section 2 therefore introduces the topic of biodiversity with a focus on the key aspects concerning the application of the new conservation approach, e.g. how to measure biodiversity, i.e. how to define useful indicators or how to quantify the value of biodiversity. Moreover, background information on the state of biodiversity and the expected future development underline the urgency of countermeasures against the loss of biodiversity. Thereafter, Section 3 analysis the conservation of biodiversity. Based on past experiences, a conservation framework that specifies the important aspects and major difficulties of biodiversity conservation with a focus on monetary incentives is established. Furthermore, the shortcomings and challenges faced by specific traditional conservation methods with similarities to the new method are discussed. Section 4 explains the new conservation approach in detail and uses the framework of Section 3 and the lessons learnt from similar conservation methods to specify the product in more detail. In Section 5 a specific product is priced using a closed form solution derived by applying the Black Scholes Option Pricing Model (BSOPM) (Black & Scholes, 1973) and its performance is evaluated. Finally, Section 6 evaluates the performance of the new conservation method and proposes characteristics for a potential product based on the findings of the master's thesis.