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## Does the voluntary carbon market promote sustainable development in developing countries? A portfolio comparison of VCS, GS and CDM

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The Clean Development Mechanism (CDM) was set up under the Kyoto Protocol to enable cost efficient greenhouse gas (GHG) mitigation by Annex I (developed) countries and promote sustainable development (SD) in non-Annex I (developing) countries. However, the market-based mechanism has been widely criticized for failing to deliver its SD goal. Its failure is often in reference to the cheap large-scale mitigation projects that the market support, namely industrial gases destruction projects that deliver limited co-benefits beyond GHG abatement. In addition, CDM projects are mostly hosted in emerging economies that are already attracting large foreign direct investment, whilst the African region where carbon finance is most needed has largely been sidelined. The voluntary carbon market (VCM) on the other hand has been promoted for its contribution to poverty alleviation and biodiversity conservation, thanks to its unregulated nature that allows for flexibility and innovation. However, such claim is mostly based on anecdotal evidence such as the market's demand for offsets generated from charamastic projects such as clean cook stove dissemination and forest conservation projects. In this presentation, I will discuss the factors that contribute to the failure of the compliance market in delivering SD, which in turn are the advantages offered by the VCM. Then I will present the project portfolio developed within the VCM, mainly under the Voluntary Carbon Standard and Gold Standard, and compare to the CDM project portfolio to examine if the two markets are different in term of the projects they support and therefore their contribution to local SD.

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## Database of climate change hazards to marine ecosystems

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The current rates of change in physical variables may exceed the tolerance thresholds of many marines organisms, and they are predicted to accelerate over the next several decades. Therefore, the assessment of these changes over these valuable resources is necessary in order to manage them properly. To accomplish this objective the projection of key physical and chemical variables for the ecosystem functioning is needed. With this aim, a database of projected met-oceanic variables was developed (e.g. sea surface temperature, salinity, wave height, nutrients). First, relevant variables for some engineering seagrasses and algae species in European coasts were selected. Data were obtained from the best sources available: Remote sensing, in situ measurements and reanalysis. The selection of descriptive parameters of each variable, representative both of average and extreme conditions, is a crucial step. To do that an objective procedure was applied. The selected parameters were projected under two different Representative Concentration Pathways, one optimistic and one pessimistic. Predictions were extracted from the best Global Climatic Models in the area, whose suitability for European coasts was previously assessed. This set of physical and chemical variables, consistent with species ecological requirements, can be used to create theoretical maps of the environmental conditions favouring or preventing the presence of key marine organisms. Therefore, they constitute a promising approach to be considered in the future regulatory framework.

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