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The Ocean Economy in SIDS – Environmental Taxation

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Abstract: Over the years, with the increase in consumerism and accelerated globalisation, there has been a growing trend in the use of water resources, including oceans. This results in, among other things, pollution. In order to assess the existing state of the oceans and the instrument that can mainly contribute to the protection of water resources, environmental taxes are used. The objective of this study was to evaluate the significance of environmental taxes in SIDS (Small Island Developing States) with particular emphasis on ocean-related taxes. The article describes the current threats to the ocean economy, in particular pollution and loss of biodiversity. Based on the analysis of the literature and quantitative data, it can be concluded that the number of taxes related to the oceans in SIDS is marginal. Tax revenues from environmental taxes in SIDS are relatively small compared to other countries. The research methods used in the paper are literature analysis, analysis of existing data and the inference method.

Keywords: ocean economy, tax revenue, SIDS

1. Introduction

In the era of rapid globalisation and growing consumption, the increasing utilisation of free resources can be observed. One example is the ocean waters, which, despite dominating the Earth surface (71%), require protection and, above all, immediate action. Oceans serve not only as a habitat for millions of living organisms, but they are also an integral part of the global economy. The importance of the oceans should be considered holistically. Nevertheless, they undeniably constitute an ecosystem demanding protection, facing threats such as human-induced pollution and overexploitation, including overfishing. Nowadays, oceans face substantial risks, stemming from industrial activities such as pollution and overexploitation, as well as natural factors which include climate change (Nham and Ha, 2023).

Undeniably, the ocean economy is beginning to gain in importance. This is shown not only by employment data, but also by financial statistics, for example export volumes for selected countries regarding fishery products. In Norway in 2020 this amounted to US$ 12 426.93 million (OECD.Stat, 2021); from the viewpoint of the overall ocean economy, this was valued in 2022 at between US$ 3 trillion and

US$ 6 trillion (UNCTAD, 2023). The reference to employment also appears crucial, as it is estimated that the ocean economy provides approximately 150 million direct jobs (United Nations, 2023a). However, the degree to which oceans are important to countries varies greatly. This is determined primarily by geographical location, degree of economic development and trade structure. Experts also distinguish countries that are located in the immediate vicinity of the oceans, but due to development obstacles encountered, they are unable to effectively benefit from the resource – a group of such countries comprises the Least Developed Countries (LDCs).

The objective of this study was to evaluate the significance of environmental taxes in SIDS (Small Island Developing States) with a particular emphasis on ocean-related taxes. To fulfill this, the following research hypotheses were formulated:

H1: Tax revenues associated with the ocean have experienced an upward trajectory over the years – in a global perspective.
H2: Taxes are one of the main instruments for ocean protection – in a global perspective.
H3: Countries classified as Small Island Developing States do not have significant revenue from taxes related to the ocean.

The research methods used in the paper included literature analysis, analysis of existing data and the inference method. The data were sourced from various entities, including OECD, UNCTAD, and the World Bank.

2. Terminology

The ocean economy is an extremely broad concept that is thoroughly researched by experts from various disciplines such as economics and finance, environmental engineering, and socio-economic geography. To gain a deeper comprehension of the significance of the ocean economy, it is essential to reference and elucidate the provided definitions.

2.1. The Ocean Economy

Even though the concept of 'the ocean economy' is relatively new, it has become a permanent part of the ocean protection community. The term was initially introduced in 2012 at a conference held in Rio de Janeiro. (United Nations, 2022). The main purpose of the conference was to make an agreement on sustainable development.

When analysing the above issue, it is worth paying attention to two concepts that, although similar, may refer to different aspects related to the oceans. The concept of the ocean economy refers to all entities and industries related to the oceans, whilst 'the blue economy' places an emphasis on the sustainable use of this resource. There is no universally accepted definition for this term, instead, it encompasses significantly different interpretations and methodologies (Eikset et al., 2018). To illustrate these distinctions, Table 1 was prepared, enabling the identification of both similarities and differences. For the purposes of this study, the definition of the ocean economy proposed by the OECD was be used.

Table 1. Selected definitions of the ocean economy and the blue economy

Term	Source	Definition
The ocean economy	OECD	*(…) the sum of the economic activities of ocean-based industries, together with the assets, goods and services provided by marine ecosystems.*
The ocean economy	Charles S. Colgan	*the economic activity, which indirectly or directly uses the ocean (…) as an input (…)*

The ocean economy	Judith T. Kildow Kwang Seo Park	*the economic activities that take place in the ocean, receive outputs from the ocean, and provide goods and services to the ocean.*
The blue economy	The World Bank	*(...) sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.*
The blue economy	Richard Spinrad	*(…) a knowledge-based economy, looking to the sea not just for extraction of material goods, but for data and information to address societal challenges and inspire their solutions.*
The blue economy	Nguyen Thi Hong Nham Le Thanh Ha	*(…) maintains the seas' environmental condition while it brings social and economic advantages for both the present and the future.*

Source: (Colgan, 2007; Nham and Ha, 2023; NOAA, 2023; Park and Kildow, 2014; OECD, 2023a; The World Bank, 2017a).

In order to understand better the concept of the blue economy it is essential to differentiate certain sectors that are a part of it. According to the World Bank, these include:

- fisheries,
- maritime transport,
- coastal tourism,
- aquaculture,
- marine biotechnology and bioprospecting (The World Bank, 2017a).

To effectively address matters concerning the ocean and the economy, it is also important to recognise that the terminology employed can vary based on geographical location. For instance, 'ocean' is commonly used in the USA, while the term 'marine' is more widely adopted in the UK, France, Australia and Canada (Park and Kidow, 2014).

For the purposes of this work, the term 'ocean' was used, understood as: "a continuous body of saltwater that is contained in an enormous basin on the Earth's surface" (Britannica, 2023). The term 'marine' is understood also as a term related to the ocean but specifically "used to describe things relating to the sea or to the animals and plants that live in the sea" (Collins Dictionary, 2023).

2.2. SIDS – Small Island Developing States

The term 'Small Island Developing States' (SIDS) is employed, among its other uses, by the OECD to define a group of nations heavily reliant on the oceans. Nations identified by the OECD as SIDS are countries that could encounter economic, social, and environmental difficulties (UNCTAD, 2014). Currently, there are 39 such countries – the combined population of all Small Island Developing States (SIDS) totals 65 million, just under 1% of the global population (United Nations, 2023b).

After analysing the literature, several features were identified that describe SIDS regarding the ocean economy, such as:

- high exposure to the consequences of ocean pollution (including plastic pollution),
- insufficiently developed ocean-related sectors,
- significant dependence on marine transport.

When attempting to create a profile of SIDS, it was necessary to cite their three main features indicated by UNWTO, namely:

- "small size,
- remoteness and isolation,
- maritime environment" (UNWTO, 2023).

SIDS, despite receiving assistance, consistently require ongoing support. Initiatives led by the United Nations aimed at benefiting these countries encompass endeavours to attain sustainable development.

Taking into account Official Development Assistance, intended to contribute to the achievement of sustainable development goals, it can be observed that it is not satisfactory for SIDS. In 2021, it amounted to US$ 2.45 billion (target 14.7), while the amount allocated to marine pollution (target 14.1) was US$ 23.25 billion (OECD, 2021a).

3. Oceans – A Resource Requiring Protection

Oceans are commonly viewed as a habitat for numerous animal species, yet it is frequently overlooked that excessive exploitation plays a role in diminishing biodiversity, potentially leading to a global crisis in the future. In order to show the current condition of the ocean, key data should be indicated.

3.1. Biodiversity

One of the important features characterising the aquatic environment should be biodiversity in order to maintain balance in the natural environment. Unfortunately, there is a noticeable decrease in biodiversity resulting, among others, from water pollution and factors related to climatic changes. An example are coral reefs, which die as a result of increasing water temperatures and make it impossible for some organisms living on coral reefs to survive. According to The Intergovernmental Panel on Climate Change, a temperature increase of less than 2°C can cause enormous damage to coral reefs (IPCC, 2023). It is also reported that the increase in pollution has a long-term impact on food production.

The data below show that the real threat is the number of endangered species.

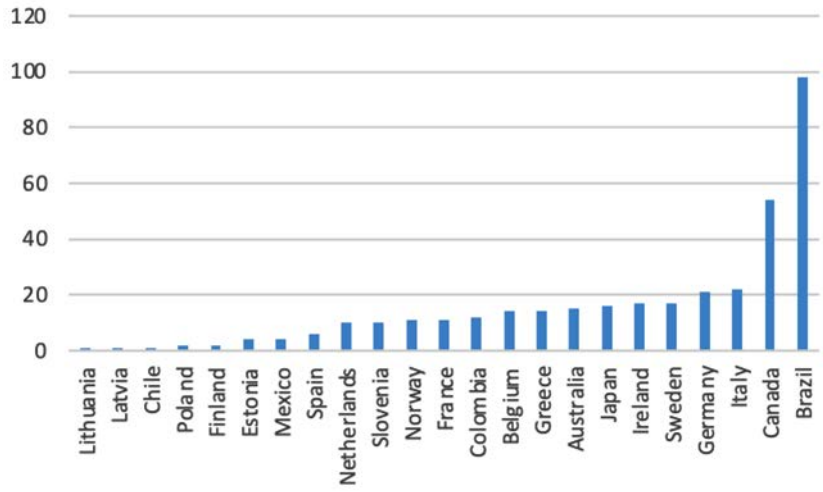

Fig. 1. The number of threatened fish species in 2022 in selected countries

Source: (OECD, 2023b).

Figure 1 displays data for chosen OECD nations. Brazil stands out with the highest count of endangered species. This is concerning due to the observed upward trend. Preserving the biodiversity of aquatic ecosystems relies heavily on safeguarding endangered fish species.

3.2. Pollution

An equally important threat that has far-reaching consequences is pollution. The escalating presence of waste in the global oceans is causing significant environmental and economic consequences. Annually, approximately 5 to 12 million metric tons of plastic find their way into the ocean, incurring an economic

cost of around US$ 13 billion per year (United Nations, 2023c). It is estimated that 390.7 million tons of plastic were produced in 2021 alone. This is an increase compared to 2020 by as much as 15.2 million tons (Plastic Europe, 2022). According to available data, fossil-based plastics predominate.

When analysing the importance of pollution for the ocean economy, it also appears important to provide figures related to the type of pollution. According to the available data, on the deep ocean floor, as much as 22.6% of garbage is made up of plastic bottles, 18.4% – plastic bags, 10.2% – beverage cans, and 48.8% – other (Morales-Caselles et al., 2021).

4. Environmentally Related Taxes

Taxes are indicated as one of the main instruments that can contribute to the protection of the oceans. According to the OECD, "taxes can help speed up the transition to a sustainable ocean economy but their use remains limited" (OECD, 2021b). In the majority of countries, economic measures aimed at promoting ocean sustainability are in place, with taxes being the most common form (OECD, 2020b). The data allowing to analyse tax revenues came from the OECD database.

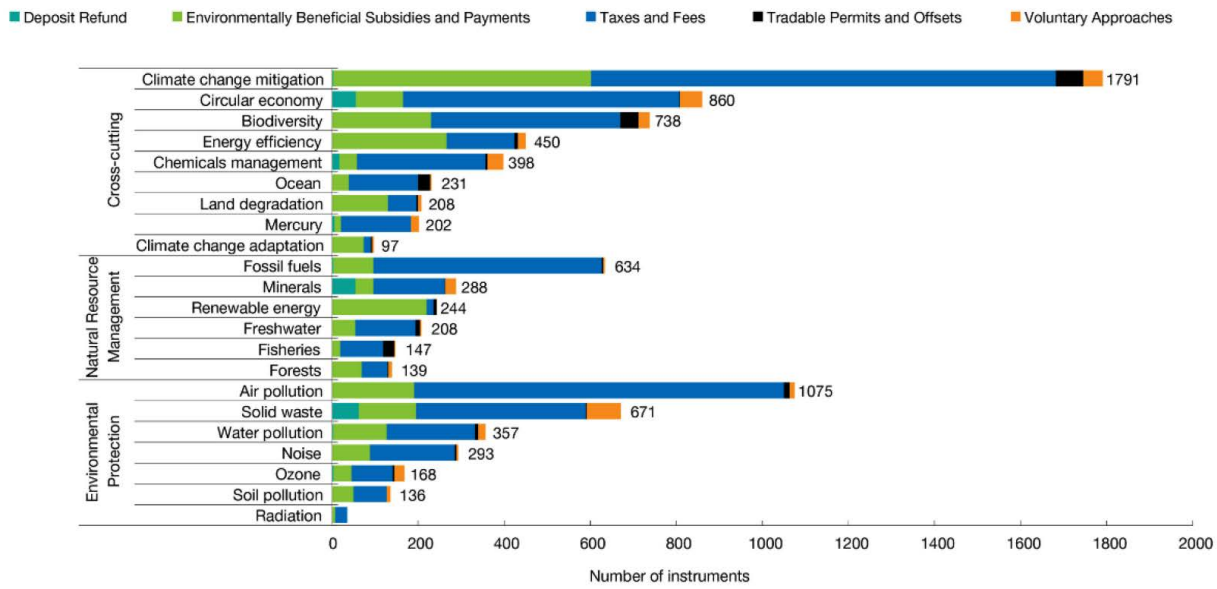

Fig. 2. Environmental domain tags by type of policy instrument

Source: (OECD, 2023c).

From the viewpoint of various environmental instruments, the dominance of taxes is visible. The database encompasses 22 environmental domains and includes five categories of policy instruments.

In order to illustrate the total tax revenues for all OECD countries, data expressed in millions of USD covering revenues from environmental taxes (category: all tax bases, Environmental domain: total environment) are presented in Figure 3.

Year by year, there was a visible increase in income from environmental taxes (Figure 3). Tax revenue in 2021 increased by 84% compared to 1994, while the average annual rate of change was 7%.

However, the above data apply to the general environment. Referring to the scope of work, income from taxes should be indicated, but with a distinction in the 'oceans' category. The ocean category is described by the OECD: "taxes on energy products for maritime transport, use or ownership of

maritime transport vessels, taxes on resource extraction from oceans, fishing licences, revenue from auctioning individual transferable quotas for fisheries, taxes directed at containing ocean pollution etc." (OECD Statistics, 2022).

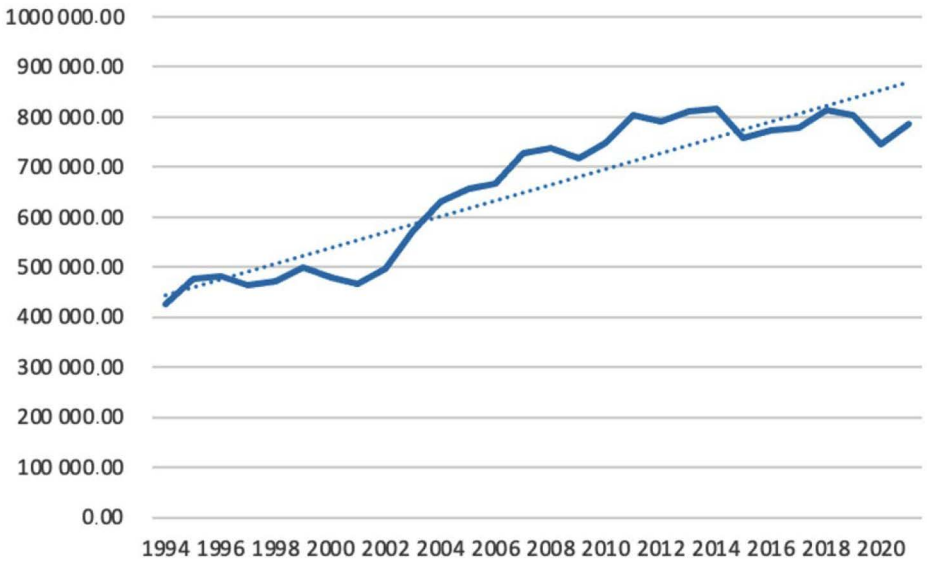

Fig. 3. Tax revenue, millions USD, Total environment

Source: (OECD.Stat, 2023a).

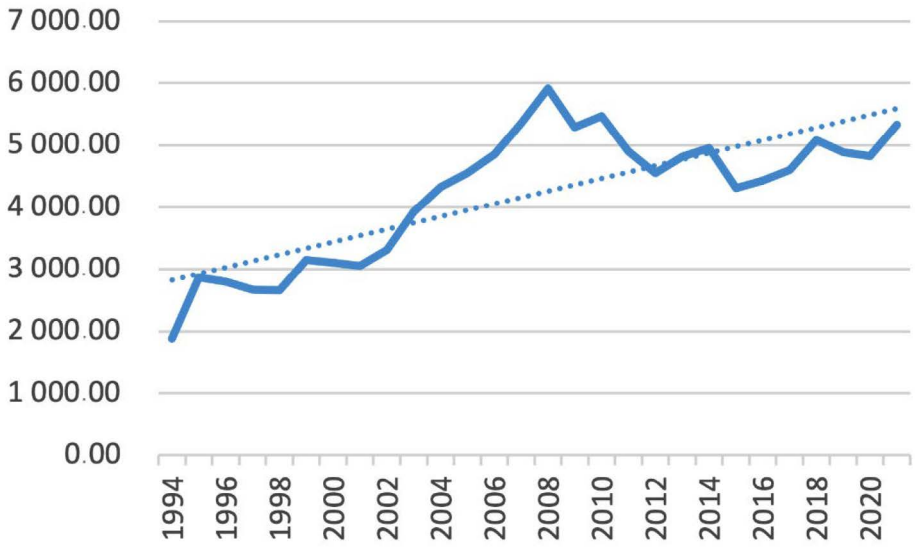

Fig. 4. Tax revenue, millions USD, Ocean

Source: (OECD.Stat, 2023a).

In analysing the data presented in Figure 4, an upward trend was also visible for tax revenues in the 'Oceans' category. The average annual rate of change was 10%, However, it should be taken into account that in 2021 this category was responsible for only 0.68% of the total income from environmental taxes for all the OECD countries. In the period 1994-2021, the percentage of ocean tax revenues never exceeded 1% of total environmental tax revenues – the highest percentage share was 0.80% in 2008, and the lowest 0.44% in 1994.

An important indicator that shows the share of environmentally related tax revenue is the percentage share in total tax revenues for the OECD. In 2020 this was 4.56% (OECD, 2020a). The highest percentage share was recorded in 2020 in the Solomon Islands (20.12%), followed by India (17.47%) and Sierra Leone (15.47%) (ibidem).

Another significant measure highlighting the role of taxes in safeguarding the oceans is the number of taxes associated with ocean protection. While these figures are approximations, they provide insights into specific relations. Regarding the OECD, a collective total of 63 taxes linked to ocean protection existed in the OECD countries in 2022. When considering individual nations, noteworthy examples include the United States with 12 taxes, followed by Costa Rica with 10, France with 5, and Norway with 5 (OECD.Stat, 2023c).

It is important to highlight that countries categorised as SIDS do not impose a substantial quantity of taxes, for example the Maldives, a non-OECD member, reports having only one tax related to the ocean. This pattern is mirrored in the Bahamas (no taxes) and Cape Verde (no taxes).

According to the OECD, Small Island Developing States (SIDS) and Least Developed Countries (LDCs) situated along coastlines encounter obstacles related to scientific capabilities. These challenges encompass a deficiency in taxonomy expertise, struggles in attracting and retaining proficient marine scientists, as well as constraints in research infrastructure and financial means (The World Bank, 2017b).

Table 2. The number of ocean-related taxes in selected SIDS

Country	Number of ocean related taxes	Country	Number of ocean related taxes
Antigua and Barbuda	0	Papua New Guinea	0
Bahamas	0	Samoa	0
Barbados	0	Singapore	3
Belize	0	Seychelles	0
Cabo Verde	0	Solomon Islands	1
Cook Islands	0	Trinidad and Tobago	0
Dominican Republic	0	Nauru	0
Fiji	2	Mauritius	1
Guyana	0	Maldives	0
Jamaica	0		

Source: (OECD, 2023b).

When highlighting the factors contributing to the comparatively low incidence of ocean-related taxes, it is essential to consider the economic development of this cluster of nations. Emphasising the significance of regulatory systems within these entities is crucial.

SIDS should place greater emphasis on tax revenues to support their national budgets. In addition to development aid, of which they are one of the largest beneficiaries, these countries should develop some kind of new tax framework.

Some of the recommendations formulated by the Government of Canada for SIDS are as follows:

- “Provide financial and capacity building support to harness ocean opportunities.
- Explore cost-sharing mechanisms for the protection of ocean assets” (Government of Canada, 2022).

5. Conclusions

The valuation economy is part of our world and protecting it should be a global priority. One of the instruments that can change the current situation of the oceans are instruments such as taxes, even though, apart from a number of advantages, there are also some disadvantages, such as the increase in prices of food or the broadly understood products – this depends on the tax that is levied.

When trying to find a solution to improve the situation related to ocean economy in SIDS, one should refer to the article by Preeya S. Mohan, who suggested collaboration with their national statistical offices in order to assist in setting precise mitigation goals related to the ocean (Mohan, 2023).

After analysing SIDS and ocean-related taxes, it can be concluded that the number of these instruments is marginal (H3). This may result from insufficiently developed legal regulations, relatively slow economic growth and/or lack of tools to implement new instruments. When studying SIDS, it should be kept in mind that these countries already struggle with many obstacles and environmental protection may be only one of them. Note that tax revenues are, on average, lower than those in comparable developing countries at similar levels of development (OECD, 2020c).

However, globally, tax revenues are increasing year by year (H1). This may result from the desire to protect resources by developed countries that undertake certain pro-ecological activities. After analysing data mainly provided by the OECD, the dominance of taxes as the main instrument used by countries was clear. One can also distinguish different types of charges, which, however, have a different mechanism of action (H2).

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Gospodarka oceaniczna w krajach SIDS – opodatkowanie środowiskowe

Streszczenie: Na przestrzeni lat, wraz ze wzrostem konsumpcjonizmu i przyspieszoną globalizacją, następuje zwiększenie wykorzystania zasobów wodnych, w tym oceanów. Skutkuje to między innymi zanieczyszczeniami. W celu oceny istniejącego stanu oceanów oraz instrumentu, który może w głównej mierze przyczynić się do ochrony zasobów wodnych, stosuje się podatki środowiskowe. Celem tego badania jest ocena znaczenia podatków środowiskowych w SIDS (Small Island Developing States), ze szczególnym uwzględnieniem podatków związanych z oceanami. W artykule scharakteryzowano współczesne zagrożenia dla gospodarki oceanicznej, w szczególności zanieczyszczenia oraz utratę różnorodności biologicznej. Na podstawie analizy literatury oraz danych ilościowych można stwierdzić, że liczba podatków związanych z oceanami w SIDS jest marginalna. Dochody podatkowe z podatków środowiskowych są stosunkowo niewielkie w porównaniu z innymi krajami. Metody badawcze zastosowane w artykule to analiza literatury, analiza danych zastanych oraz metoda wnioskowania.

Słowa kluczowe: gospodarka oceaniczna, dochód z podatków, środowisko