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Greening trade policies in African Small Islands Developing States (AFSIDS).

Suggestions for the Way Forward under the African Continental Free Trade Area (AfCFTA)*

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This paper suggests trade policies for AFSIDS that will help them build workable and effective trade regimes to protect their environment. The paper makes three contributions: (i) provides a dashboard of the environmental challenges across AFSIDS; (ii) reviews existing environmental trade provisions in RECs treaties, iii) suggests reductions in tariffs on Environmental Goods (EGs), like electric equipment and machinery needed for environmental management.

JEL categories: F18, Q56

Keywords: Environmental Goods; WTO; Climate Change, fisheries, blue economy

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United Nations Economic Commission for Africa

International Economics Strategic Analysis For Growth & Development

African Trade Policy Centre

Greening trade policies in African Small Islands Developing States (AFSIDS): Suggestions for the Way Forward under the African Continental Free Trade Area (AfCFTA)

Abstract

AFSIDS (* indicates LDC status) Cabo Verde, Comoros*, Guinea Bissau*, Mauritius, São Tomé and Príncipe*, Seychelles) depend strongly on international trade. AFSIDS are also vulnerable to all forms of environmental degradation, of which part are related to international trade, the domain of the AfCFTA. Some, like those caused by climate change are beyond their control. Others like deforestation, loss of biodiversity or degradation of their maritime and terrestrial environments including depletion of fish stocks in their Extended Economic Zones (EEZs) are, at least, partly, under their control. So far, progress towards environmentally-supportive trade policies have failed at the WTO and across the African Regional Economic Communities (RECs). Moreover, the new African Continental Free Trade Area (AfCFTA) does not even mention the environment as an objective in its preamble.

This paper suggests trade policies for AFSIDS that will help them build workable and effective trade regimes to protect their environment. The paper makes three contributions: (i) provides a dashboard of the environmental challenges across AFSIDS; (ii) reviews existing environmental trade provisions in RECs treaties, iii) suggests reductions in tariffs on Environmental Goods (EGs), like electric equipment and machinery needed for environmental management.

For the LDC AFSIDS that have applied tariffs around 10 percent on EGs, the first step should be to remove tariffs on EG) on an MFN basis to all trade partners. This approach would jump-start addressing their environmental challenge of environment preservation, avoiding the decade-long schedule via AfCFTA. Furthermore, AfCFTA only covers removing most tariffs on intra-African trade.

For Mauritius, Seychelles, and Cabo Verde that have zero tariffs on imports of goods on EG lists, their immediate challenge is to adopt trade policies that will improve the conservation of their biodiversity needed to provide performing ecosystem services. As shown by the environmental dashboard prepared for this paper, the environmental profile and conservation policies differ significantly across AFSIDS, irrespective of their wealth per capita. Taking a comprehensive and ambitious step toward land and marine ecosystems preservation will be crucial for SIDS to protect their economy from the brunt of the impacts of the coming climate change.

JEL categories: F18, Q56
Keywords: Environmental Goods; WTO; Climate Change, fisheries, blue economy

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Acronyms

AEC : Africa Economic Community
ACCTS : Agreement on Climate Change Trade and Sustainability
AEO : African Economic Outlook
AfCFTA : Africa Continental Free Trade Area
AFSIDS : African SIDS (Cabo Verde, Comoros, Guinea Bissau, Mauritius, Saõ Tomé, Seychelles)
APEC : Asia Pacific Economic Cooperation
AU : African Union
AU2063 : Agenda 2063
BAU : Buisness As Usual
BBNJ : Biodiversity Beyond National Jurisdiction
BDH : Biodiversity and Habitat Index
CARICOM : Caribbean Community
CCH : Climate Change Index
CET : Common External Tariff
COMESA : Common Market for East and South Africa
COP 21 : Conference Of Parties 21
CU : Customs Union
DESTA : Design of Trade Agreement
EAC : East African Community
ECCAS : Economic Community of Central African States
ECDPM : European Centre for Development Policy Management
ECOWAPP : West African Power Pool
ECOWAS : Economic Communities of West African States
ECS : Ecosystem services Index
EEZ : Extended Economic Zone
EG : Environmental Goods
EGA : Environmental Goods Agreements
ELF : Ethno-Linguistic Fractionalization
EPI : Environmental Performance Index
EPISI : Environmental Performance Index for Small Islands
EPP : Environmentally Preferable Products
ES : Environmental Services
ETLS : ECOWAS Trade Liberalization Scheme
EU : European Union

EVI : Economic Vulnerability index

FAO : Food and Agriculture Organisation

FSH : Fisheries Index

FTA : Free Trade Area

GDP : Gross Domestic Product

GEM : Good for Managing Environment

GGC : Gulf of Guinea Commission

GHG : Green House Gases

GPG : Global Public Good

HDI : Human Development Index

HLT : Health of the Ecosystem Index

HS : Harmonized System Description and Coding System of tariff nomenclature

IATA : International Air Transport Association

ICT : Information and communication technologies

IEA : International Energy Agency

IGAD : Intergovernmental Authority on Development

IMF : International Monetary Fund

IOC : Indian Ocean Commission

ITC : International Trade Centre

IUCN : International Union for Conservation of Nature

IUU : Illegal Unreported and Unregulated fishing

LDCs : Least developed countries

LICs : Low-income countries

MEA : Multilateral Environment Agreement

MFN : Most Favoured Nation

MPA : Marine Protected Area

NPG : National Public Goods

NTBs : Non-Tariff Barriers

NTMs : Non-Tariff Measures

OAU : Organization of Africa Unity

OVMG : Organisation pour la mise en Valeur du fleuve Gambie

OWD : Our World in Data

PG : Public Goods

PICTA : Pacific Island Countries Trade Agreement

PPP : Purchasing Power Parity

PSI : Pre-Shipment Inspections

PTA : Preferential Trade Agreement

PVCCI : Physical Vulnerability climate change index

REC : Regional Economic Communities
RFB : Regional Fishing Body
RFMO : Regional Fishing Management Organisation
RLI : Red List Index
RO : Regional Organisation
ROW : Rest of the World
RPG : Regional Public Good
RTA : Regional Trade Agreement
SACU : Southern African Customs Union
SADC : Southern African Development Community
SAPP : South African Power Pool
SDA : Sustainable Development Agenda
SDGs : Sustainable Development Goals
SDT : Special and Differential Treatment
SIDS : Group of 34 Small Island Developing States
SPCR : Strategic Program for Climate Resilience
SPM : Special Protection Measures
SPS : Sanitary and Phytosanitary
SSA : Sub-Saharan African
T&A : Textile & Apparel
TBTs : Technical Barriers to Trade
TFA : Trade Facilitation Agreement
TREND : Trade and Environment Database
UEMOA : Union Économique et Monétaire de l'Afrique de l'Ouest (also WAEMU)
UNCLOS : United Nation Convention on the Law of the Sea
UNCTAD: United Nations Conference on Trade and Development
UNDP : United Nations Development Program
UNECA : United Nations Economic Commission for Africa
UNFCC : United Nations Framework on Convention Climate Change
VSS : Voluntary Sustainability Standard
WB : World Bank
WGI : World governance indicators
WTO : World Trade Organization
WTO-X : Measures not covered in multilateral negotiations

1. Introduction

Because of their small size, despite their geographical isolation, SIDS depend strongly on international trade.[1] At the same time, health of ecosystems in SIDS is threatened by climate change and biodiversity loss.[2] Therefore, these countries depend on an environmentally-friendly world trading system which is yet to be delivered as several initiatives that have tried to 'green the world trading system have failed'[3] .

SIDS are vulnerable to external economic shocks over which they have little control. This is the case for changes in their terms-of-trade whose effects are amplified because their high trade share in GDP. Their vulnerability is also increased by their export baskets concentrated in few commodities.

Natural ecosystems in SIDS are threatened by climate change and biodiversity loss[4]. While mitigating the impacts of climate change is largely beyond their control, degradation of land and maritime environment including the management of their shores and the protection of natural habitat, the depletion of fish stocks in their Extended Economic Zones (EEZs) are, at least partly, under their control. As shown in this paper, an environmental Dashboard is useful to document the environmental threats as well as the response to those challenges.

Environmental degradation is faster in AFSIDS than in other countries, and costs of adaptation are higher because the size of their economies is limited and the expected effects are important. Moreover, these costs will only increase as the adoption of appropriate policies is delayed.

This predicament, shared by most SIDS, applies to the six African SIDS (henceforth AFSIDS), Cabo Verde, Comoros, Guinea Bissau, Mauritius, Saõ Tomé and Seychelles, the object of this paper. It documents the multi-dimensional vulnerability of AFSIDS and gives recommendations for national and regional trade-related policies to help better address these vulnerabilities.

The paper proceeds as follows. Section 2 presents a dashboard that helps identify vulnerabilities to climate-change related environmental shocks most strongly felt by AFSIDS. Section 3 reviews environmental provisions in the African Regional Economic Communities

[1] The gains from international trade are greatest for small economies. This is why the great majority of small countries have higher trade to GDP ratios (larger trade ratios reflect greater gains from trade). SIDS depend heavily on international trade (exports and imports of goods and services, revenues from tourism) for their development. However, the gains from trade depend strongly on the prevailing institutional setting in African SIDS ranging from open access (e.g. open water fishing) to full property rights (aquaculture).

[2] The dimensions of the vulnerability of SIDS are well documented: climate risk (Nurse et al 2014, figure 29.2), low resilience to global change and external shocks (Robinson 2020, Mc Gilivray et al 2010). Also, trade in goods results in negative externalities on the environment through multiple channels (Melo 2013). These externalities are widespread in the particularly vulnerable environment of the SIDS. These are captured in indices of vulnerability to climate change discussed in section 2 and reported in table 2.2.

[3] In a widely recognised study 'Greening the GATT' written in 1994, Daniel Esty proposed steps to ease the mounting tensions between the trade and climate regimes heading on a collision course. The failed attempts include the Doha Round and the Environmental Good Agreement.

(RECs) Treaties with AFSIDS membership noting that they pay scant attention to areas of environmental interests of AFSIDS. Section 4 discusses three options for implementing an efficient and environmentally supportive trade policy: (i) at the AFCFTA level; (ii) unilaterally;(iii) among a small group of like-minded countries along the lines of the recently launched negotiations towards an Agreement on Climate Change, Trade and Sustainability (ACCTS). Recommendations are provided in section 5.

2. Exploring African SIDS vulnerabilities using an environmental Dashboard

Small Islands Developing States (SIDS) are first and foremost a political alliance focused on global environment issues which has proven an efficient negotiating group since the first Rio "Earth Summit" in 1992[1]. Notably, this alliance successfully campaigned to include in the Paris Agreement (Art. 8) the acknowledgement that climate change threatens SIDS of specific "loss and damage". The following dashboard highlights these vulnerabilities and put them into perspective by outlining an environmental profile for each of these diverse countries.

The AFSIDS fall in two groups: The LDC group with Comoros, Guinea Bissau and São Tomé and Príncipe (expected to graduate from LDC status in 2024) and a second group of "emerging countries" includes Cabo Verde, Mauritius and Seychelles[5]. With low poverty levels, the latter have the means to prioritize protection of the environment as part of their sustainable development strategies[6] while the LDCs are more constrained in implementing ambitious environmental policies. The environmental dashboard presented here helps to identify the different aspects of the sustainability of the AFSIDS development paths.

2.1 An environmental Dashboard for African SIDS:

Table 2.2 presents an environmental dashboard designed to address three aspects of the environmental challenges facing African SIDS. These are: (i) the physical vulnerability to climate change; (ii), the current health of their environment, and; (iii) the state of preparedness to meet rising environmental challenges. The dashboard is built around these three groups of indices, each a composite of sub-indices. (All sub-indices and their weights are listed in Annex 2, table A2.1).

Because these indexes are ordinal rather than cardinal, one should focus on rankings rather than on the particular values for the indices and their components. This is why table 2.2

[5] The Rio de Janeiro UN conference of 1992 described SIDS as "low-lying coastal countries that share similar sustainable development challenges, including population, limited resources, susceptibility to natural disasters, vulnerability to external shocks, and extensive dependence on international trade". Yet, as pointed out in the introduction, there is no UN definition and associated criterion for SIDS.

[6] AFSIDS display further diversity in economic and geographical characteristics. These are summarized in Casella and Melo (2021, table 2.1). For example, Mauritius and Seychelles have large EEZs with marine to land ratios a multiple time higher than those of other AFSIDS. All, except Guinea Bissau depend heavily on tourism. 15% of the population in Guinea Bissau and Seychelles live at less than 5 meters from sea level.

displays the rankings for the following three sets of indices (the complete table with scores and rankings appears in Annex 4 as table A4.1):

- A Physical Vulnerability to Climate Change Index (PVCCI) and its components (cols 1-6)
- The Red List Index (RLI) an indicator of the risk of extinction of species (cols 7).
- Four indices of preparedness to environmental challenges selected from an overall Environmental Performance Index (EPI) suitable for all countries and a modified index for SIDS (EPISI) constructed for this paper to reflect more closely the preparedness in the SIDS (cols.8-15). Both indices are described in annex 2.

Two considerations guided the selection of indexes. First, data availability for SIDS is scarce, especially so on environmental issues. The indexes used here have a good coverage for the African SIDS[7]. Second, to take into account the three challenges mentioned above, the indexes were chosen so that the dashboard differentiates between exogenous (col 1-6) and endogenous factors (col 7-15). Thus the PVCII describes exogenous physical - vulnerabilities to climate change (e.g. temperature change) while the other indexes of the dashboard incorporate endogenous components (e.g. the quantity of pollutant in water). Furthermore, the endogenous part of the dashboard focuses either on the health of ecosystems (col7-8) or the policy response to degradation of ecosystems (col 9-12). As designed, the dashboard provides an instrument to compare countries based only on environmental considerations[8].

Physical vulnerability to climate change

The **PVCCI index** (cols. 1) ranks countries according to their physical vulnerability to climate change. A high rank indicates greater vulnerability to climate change. The index is built up from the five sub-indices listed in cols 2 to 6 (sea level rise, increased aridity, rainfall, temperature shifts and frequency of storms). The PVCCI score ranges from 0 (not vulnerable) to 100 (very vulnerable). This index presented in Feindouno et al. (2020) only includes vulnerabilities to climate change that are exogenous to a country's policies. The index covers two types of risk related to climate change: (i) long-term risks of progressive slow-onset shocks (e.g. flooding due to sea level rise, growing aridity), and (ii) an increase in the intensity of recurrent shocks (heavy rainfalls, tropical storms, extreme heat events). For African SIDS, the risk of intensification of recurrent climatic shocks with extreme events is important for storms and floods (see figure 2.1A). As to risk of sea level rise, it receives the highest degree of confidence in detection and in attribution in the IPCC AR5 report (Nurse et al. 2014).[9]

Environmental health

The next group of indices relates to the health of the environment at the national level. These metrics include two sets of indices: the **Red List Index (RLI)** and the **Health of the ecosystem (HLT).** The HLT index captures the health of the ecosystem by measuring the level of pollutants

[7] Among others, Our World in Data (OWD), Notre Dame university and International Economics also have dashboards relevant for African SIDS. However comprehensive data on a wide array of environmental issues was not available using these sources.
[8] Other index and indicators like the environmental part of the EVI measures the impact of environmental shocks on human activity, but not the human activity impact on ecosystems.
[9] Coral bleaching in SIDS has both a high degree of confidence in detection and attribution. See confidence categories in Nurse et al. figure 29.2

in the air and water. While those pollutant levels have direct consequences on the state of natural ecosystems, this index captures mostly the impact of pollutants on human life (death or disease). The rankings on HLT in table 2.1 follow closely the rankings for the HDI and per capita GNI for African SIDS, hinting that wealth is a deciding factor in improving air and water quality.

The **Red List Index (RLI)** classifies all fauna and flora species that are considered endangered from least to most at risk of extinction**.** The ranking of the RLI shows that the species living in higher-income African SIDS face higher threat of extinction. According to this index, Indian Ocean SIDS face a real risk of collapse of part of their native ecosystems (Mauritius and Seychelles show the highest risk of extinction among 192 countries).

Not surprisingly, as shown in table 2.1, the HLT is highly correlated with GDP p.c. However, the low correlation between biodiversity and per capita income shows that, as they move up the per capita income ladder, countries tend to have lower protection of their ecosystems (See also Annex 4 fig A4-2). The correlation between RL index and p.c. GDP is the lowest in table, confirming that remaining preserved ecosystems resides in low per capita income countries.

Table 2-1 Correlation across indicators of Environmental Health

	RL index	BDH index	HLT Index	EPI index	GDP p.c. 2018
RL index	1.00				
BDH index	0.17	1.00			
HLT Index	0.09	0.28	1.00		
EPI index	0.20	0.49	0.94	1.00	
GDP p.c. 2018	0.16	0.28	0.84	0.79	1.00

Notes: Sample: 175 countries. We included BDH in this correlation table as it measures the conservation efforts of a country. BDH and HLT indices are part of the overall EPI index.
Sources: Casella and de Melo (2021) in IEC-UNECA report

Preparedness to environmental challenges

The last set of indices in cols. 9-12 is taken from the EPI index. These indexes are proxies of a country's overall preparedness to environmental challenges. Table 2.3 displays the correlations across these indexes.

The **Biodiversity and Habitat Index (BDH)** captures preparedness at confronting and limiting biodiversity loss. The index reflects the level of completion of national targets agreed at the 2010 Aichi's Convention on Biodiversity Convention as well as the protection of the habitat of the species. BDH intends to approximate long term dynamics of ecosystems conservation.

The **Ecosystem services index (ECS)** measures the loss of services provided by ecosystems to human societies by calculating on a 10 year average the surface of natural area lost to anthropogenic activities. (ECS is almost exclusively (90%) estimated by tree cover loss.) The rankings for African SIDS are high and are consistent with their relative high BDH rank.

The fishing sector is essential to all SIDS both for food supply and for foreign exchange. The **Fisheries Index (FSH)** is included in the dashboard as a proxy for the overall sustainability of fishing activities. FSH includes three components: status of fish stocks, trophic index, use of trawling (see Annex 2.4 for descriptions of the components of the FSH index).

The Climate change index (CCH) ranks countries according to their response to climate change. Even though SIDS contribution to climate change is very low and their mitigation efforts will have negligible impact on climate change, this index is included in the dashboard[10]. This composite index measures the growth of all GHG emissions over a ten-year period. Sub Saharan Africa is the region with lowest contribution to GHG emissions, both in total and on per capita terms even if the faster growing African SIDS have a higher ranking[11]. SIDS efforts at mitigation – and that of other LDCs - should therefore focus on the reduction of externalities that are directly beneficial to them. As example, black carbon (CO) is a pollutant with local damages, hence a candidate for mitigation especially in view of recent research[12].

These reasons explain the modification brought to the EPI to sharpen the distinction between adaptation and mitigation policies. The paper therefore develops an Environmental Performance Index for Small Islands that is used here in col 15 [13]. Arguably the EPISI index is a more appropriate indicator of overall preparedness for SIDS than the EPI.

[10] Climate change mitigation is also pivotal for the political stance of SIDS alliance in the international climate negotiations where they posture as herald of temperature's rise limitation.
[11] See the extended version of the environmental Dashboard (table A4.1) in Annex 4 that differentiates between the rise in GHG emissions (CCH Index) and per capita level for African SIDS compared to other country groups (SIDS, Africa, SSA
[12] A recent study suggests that air pollution, mostly from fossil fuel combustion is the 4th highest cause of death worldwide.
[13] The EPISI removes the climate contribution from the EPI and augments the weight of the fisheries index. Refer to annex 2 which elaborates on the construction of EPISI and its relation to EPI. See also table A2.3 that compares countries' ranking with EPISI and EPI.

Table 2-2 Environmental Dashboard for African SIDS

Category of indexes	Vulnerability to Climate Change induced effect						Health of the ecosystems by estimating the risk of extinction for species and the risk to human life		Preparedness to selected environmental issues				Overall environmental performance		
Sub Indexes	Physical Vulnerability to Climate Change Index (PVCCI)	Flooding due to sea level rising	Increased aridity	Rainfall	Temperature	Storms	Red List Index (RLI)	Health of the ecosystem (HLT)	GHG emissions growth using CCH Index	Biodiversity protection using BDH Index	Wooded area preservation using ECS Index	Sustainable fisheries using FSH Index	Environmental Performance Index (EPI)		EPI for Small Islands (EPISI)
	rank	score	score	score	score	score	rank	rank	rank	rank	rank	rank	rank	rank in Africa	rank in SIDS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Guinea-Bissau	88	7.9	50.4	59	83.8	3.1	38	174	144	57	152	128	161	39	29
Comoros	109	17.7	41	79.9	73.8	0.6	155	131	113	144	83	25	148	28	28
Sao Tome and Principe	49	1	38.8	62	75.3	0	147	124	140	99	1	34	119	14	19
Cabo verde	108	11.7	34.9	65.1	78.2	46.3	80	119	122	175	14	19	144	27	27
Mauritius	176	10.2	50.3	60.1	75.2	**91.8**	192	41	88	169	43	48	82	4	12
Seychelles	119	43.8	38.8	64.5	82.2	30.4	186	59	19	36	19	30	38	1	2

Sources: Authors Calculations: columns 1 to 6 Feindouno, Guillaumont, Simonet (2020); column 7 The IUCN Red List of Threatened Species; columns 8 to 15 from EPI 2020 report.

Notes

- *Annex 2 describes the EPI the Environmental Performance Index for Small Islands (EPISI) indexes.*
- *See Annex 4 the table A4.1 for an extended version of this environmental dashboard with scores and ranks for all indices in table 2.2*
- *Rankings are from scores in table A4.1. A High score translates into a higher rank except for PVCCI where a higher score indicates greater vulnerability (e.g. Mauritius is more vulnerable than Seychelles).*
- *PVCCI and RLI rank 192 countries; EPI, HLT, CCI, BDH rank 180 countries, ECS ranks 175 countries and FSH ranks 135 countries. EPI ranks 51 countries in Africa and EPISI ranks 33 SIDS. PVCCI: colour increments in cols. 1-6 show growing vulnerability to each specific threat ([30:50]; [50:70]; [70:90]; [90:100]). PVCCI global score is obtained from root mean square of the 5 sub-indices (cols. 2.to 6)*

Table 2-3 Correlation across indicators of Preparedness to environmental challenges

	CCH index	BDH Index	ECS index	EPI index	GDP p.c 2018
CCH index	1.00				
BDH Index	0.26	1.00			
ECS index	-0.08	-0.22	1.00		
EPI index	0.82	0.49	- 0.05	1.00	
GDP p.c 2018	0.53	0.26	- 0.06	0.79	1.00

Source: Authors' calculations from EPI sub-index in annex 2
Notes: Sample: 172 countries. Fisheries Index (FSH) not displayed here as data is available for only 128 countries.

2.2 Dimensions of the environmental profile of AFSIDS

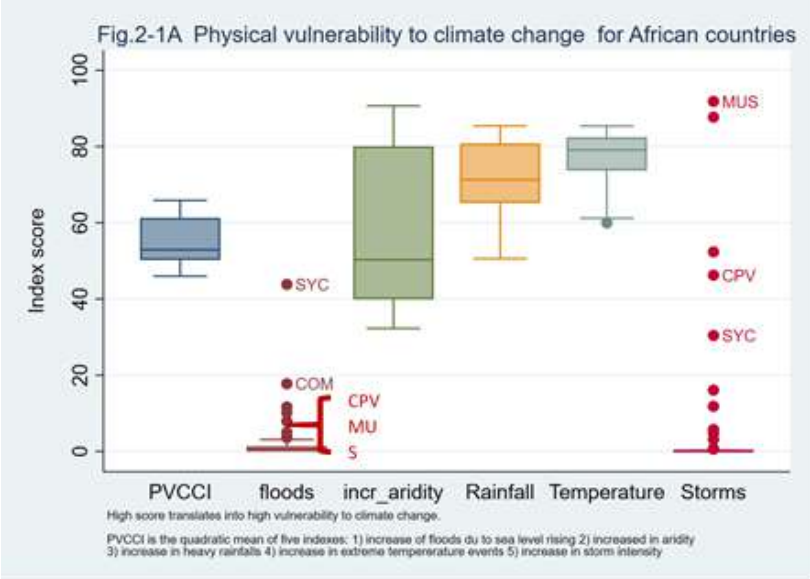
The EPI and the EPISI indexes (cols. 14 and 15 in table 2.2) situate African SIDS relative to the world (col. 13), relative to African countries (col. 14) and relative to other SIDS (col. 15). The three LDC SIDS score in the bottom quartile worldwide, confirming that they are among the countries the most at risk of environmental degradation. The **Environmental Performance Index (EPI)** score being is a proxy for both the state of the environment of a country and the ambition of its response to global environmental threats. Seychelles is the star performer both within Africa and in comparison with other SIDS. Mauritius also scores well in Africa and is in the top tercile across all SIDS. At the other end, the LDCs, Comoros and Guinea Bissau, have a low rank both in Africa and among SIDS.

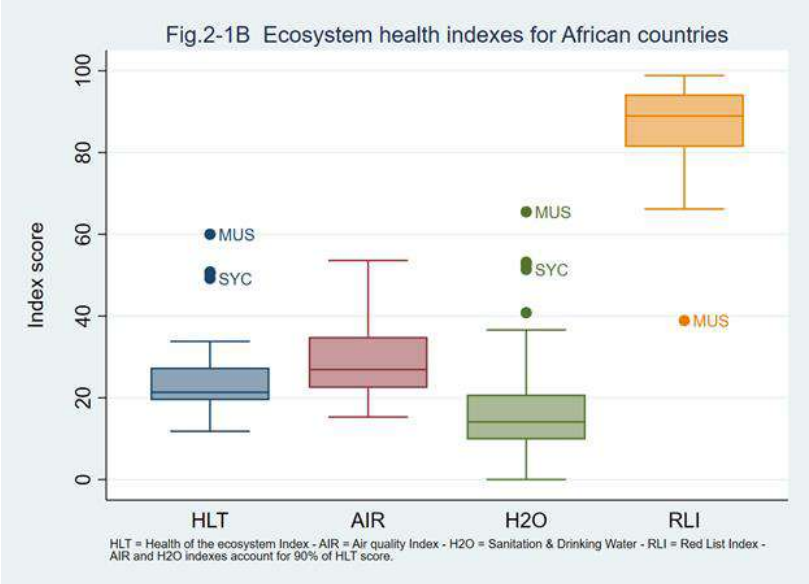
The boxplots in figure 2.1 give further granularity to these rankings since they show the scores and identify the outliers in the group. We only consider here the African SIDS within a group of 51 African countries. When SIDS are outliers, they are identified in the corresponding figure. Figure 2.1-A shows that SIDS stand out on the components related to storms and rainfall. This has been documented in Nurse (2014) but this figure evidences the extent to which SIDS stand out on the African continent. The boxplot also shows a large variance in aridity across the continent.

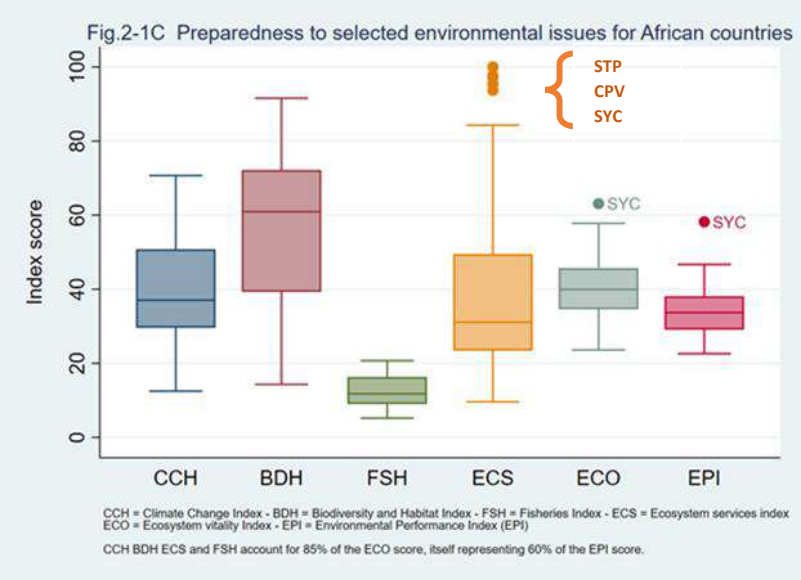
Figure 2.1-B confirms the outlier status of Mauritius and Seychelles as richer countries enjoying a noticeably healthier environment (HLT) than their continental neighbours; this is particularly true for water quality (H2O). On the other hand, both perform rather poorly on animal species conservation (RLI) while a majority of African countries have high values with a median score of around 90 (out of a maximum of 100).

Figure 2.1 C shows overall preparedness to global environmental threat. The conservation part of the policy is the most developed on the continent with important variations (BDH and ECS indexes). We can notice that SIDS over-perform on the ECS index and that the worst performing form this category is the only one that is mostly continental (Guinea-Bissau).

Figure 2-1A, 1B, 1C: Boxplots of environmental indicators across African countries



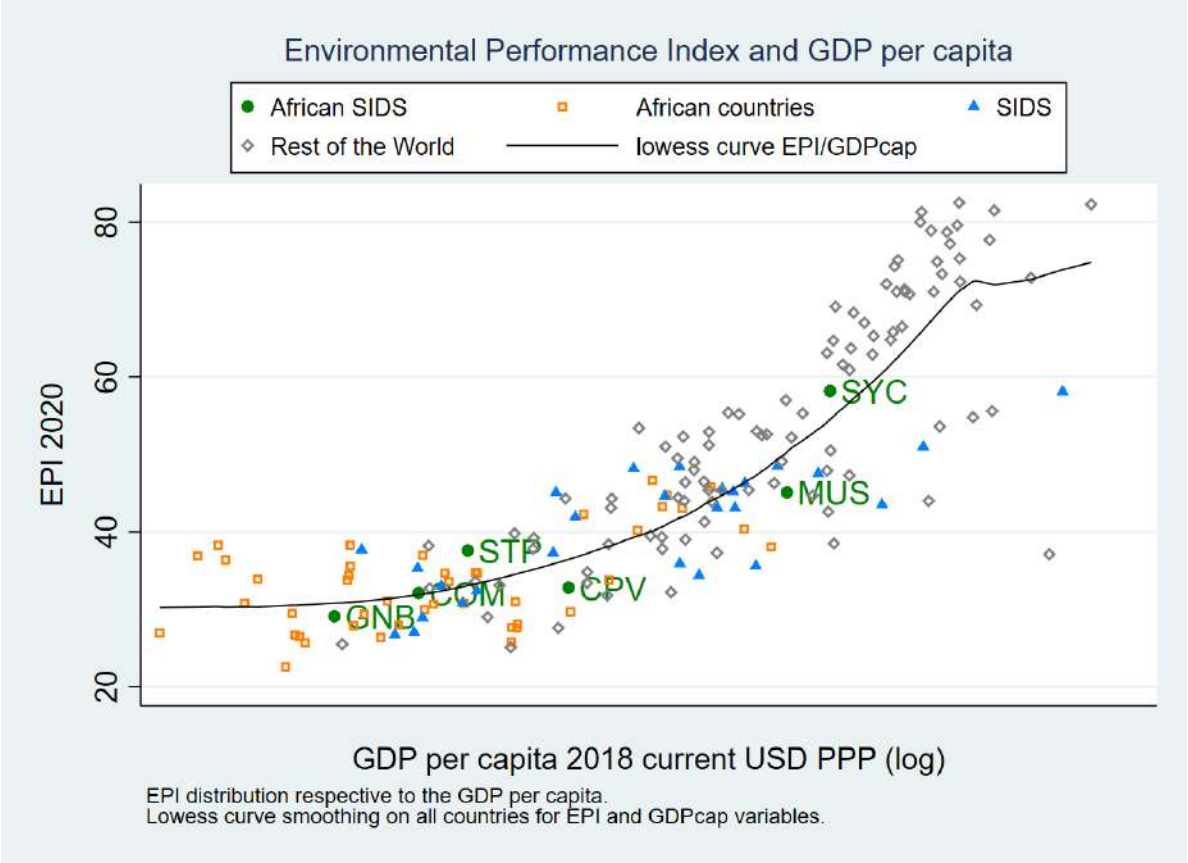




Notes. *Boxplots show the median, interquartile range and 90th percentile. For observations outside the 90th-and 10th percentiles only African SIDS are identified.*
Source: Authors' calculations from table 2.2 and annex 2. The sample is 50 countries in all three figures.

Further scrutiny of the dashboard confirms that richer countries have a superior performance on the environment and that Seychelles is a "first-in-class" both among SIDS and across Africa. Figure 2-2 plots the EPI score against GDP per capita for 180 countries. The lowess curve confirms a clear correlation between GDP per capita and the global environmental protection score as captured by the EPI. But the curve also suggests country specificities, once controlled for per capita income. When comparisons are across SIDS that share common features these differences are capturing, at least partly, the effects of policies. In this regard, the comparison between Mauritius and Seychelles is noticeable. Seychelles over, and Mauritius, under-performs. Seychelles and Mauritius present different faces with Seychelles harnessing resolutely the environmental shift needed to answer the climate change and biodiversity loss.[14]

Figure 2-2 : EPI vs. GDP per capita: SIDS, African SIDS, African countries



Source: Authors' calculations from EPI Index. Sample 180 countries. Qatar excluded from the lowess curve for fitting purposes. Standard settings for lowess curve (tricube weighting and bandwidth 0.8).
Notes: A higher score indicates a better overall environmental performance.

[14] Seychelles' Blue Economic Roadmap adopted in January 2018 intends to put forward an integrated approach to development consistent with the Sustainable Development Agenda.

3. Looking for environmental dimensions in existing regional trade agreements

Trade and environment policies continue to be designed separately on the world stage in spite of the increase in physical linkage across countries [15]. First, globalization-induced increases in trade flows can magnify trade-embodied pollution, as discussed in the abundant 'pollution haven' literature; production of pollution-intensive goods relocates from countries with strict environmental regulations towards countries with weak environmental regulations. Second, improvements in technology make it increasingly easy to intensify the exploitation of natural capital, potentially exacerbating its depletion (e.g. timber, fish stocks), especially in the weak governance environment of many LDCs that contain a large part of the natural capital on earth.

To achieve the global climate goals and build a more resilient world economy, the rules and institutions of global economic governance must align around a green economic transition. Birbeck (2019) proposes 10 trade-related policy reforms necessary to remove barriers to, and create drivers for, climate action. Removing barriers to trade on EGs and ESs, a major focus of this paper features among their recommendations. They are addressed in section 4.

Because of their fragile environments and limited bargaining power, SIDS along with the LDCs are the main victims of the current architecture. They would be great beneficiaries of these recommendations for institutional reform starting with implementation of the Sustainable Development Agenda (SDA) adopted in 2015. This is especially important for SIDS (and a fortiori for AFSIDS) that have difficulty in having their voices heard in the arena of institutions covering sustainable development issues, both at the African and multilateral levels.

3.1 The limited progress on Global Policies to protect the SIDS' environment

On the trade front, the Doha Round launched in 2001, dubbed the round for the "developing countries and for the protection of the environment" was to address the fears that the gains from growth and globalization could be undermined by their environmental side-effects[16].

[15] …and of the adoption of the Sustainable Development Agenda (SDA). Helbe and Shepherd eds (2017) and WTO-UNEP (2018) give several examples of how trade policies can be designed to be supportive of the preservation of the environment.

[16] Launched in 2001, the Doha Round was to be about the environment and the developing countries. Only a limited number of countries could agree on a modality to negotiate (reduction in trade barriers on goods, excluding services), but could not go further and agree on a list of Environmental Goods (EGs) for tariff reductions. See De Melo and Soleder 2020

Early objectives of the Doha Round negotiations were to deal with fisheries subsidies and reducing tariffs on Environmental Goods (EGs). Both were chosen because they were viewed as areas where negotiations might succeed. Both failed as no comprehensive deal on either issue has been reached.[17]

Other important environment-related policy measures of interest for the SIDS include the Aichi Convention on Biological Diversity (2010)[18]. This convention established guidelines as well as national targets on the global issue of conservation of biodiversity. So far, the 10-year targets established at the Aichi Summit on Biodiversity have not been met by the large majority of countries.[19]

This slow progress is tempered by some examples of success through collaboration reported in a joint WTO-UNEP (2018) that showcases these efforts at making trade work for the environment. Nonetheless, it is hardly an exaggeration to conclude that the Multilateral Environment Agreements (MEAs) have largely failed for the SIDS when it comes to protect their environment. This leaves the AFSIDS with little leeway to address policies supportive of their environments. These will have to be addressed at the regional/continental levels and/or at the national levels.

3.2 Regional environmental Policies to protect the environment of the AFSIDS

Across the African continent, the AU2063 agenda - and the associated flagship projects - is the policy architecture that is driving regional reforms to achieve sustainable development and economic integration. AU2063 flagship projects are Regional Public Goods (RPGs) requiring collective action and cooperation among participants. So far, however, integration efforts in Africa at the continental level have failed to attract attention on preservation of the environment. Among the 15 AU2063 flagships projects, none, except perhaps the Inga project has a focus on the environment. Lacking a hegemon, the provision of that (and other) RPGs has, and continues, to fall short of adequate provision (see Annex 3 for a detailed discussion on RPGs and AfCFTA). This is particularly detrimental to AFSIDS as their voice is not being heard.

The failure of Multinational agreements draws attention to Regional Trade Agreements (RTAs) as a promising alternative for AFSIDS to address environmental sustainability.

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[17] To put these challenges into context, recall that following an early warning that trade and the environment regimes were heading towards collision (Esty (1994)), WTO members were to negotiate on the elimination of protection on EGs and ESs under the Doha Round. These negotiations, and others, like those towards an agreement on Environmental Goods agreement had failed by 2016 even before the sharp increase in nationalism and restrictive trade policies of key players, flouting the spirit (and the commitments) at the WTO. This is particularly damaging for the prospects of the African SIDS.AFSIDS. As shown in this paper (section 3), the international trade policy and climate regime has not delivered for them since the launch of the Doha Round in 2001.

[18].Objectives include: halving the loss of natural habitats by 2020 (target 5); protecting at least 17% of terrestrial and inland water areas and 10% of coastal and marine areas (target 11). [18] Targets like putting an end to unsustainable fishing (SDG 14) were not met by 2020 (here).

Morin and Jinnah (2018) list four reasons why RTAs have the potential to address environmental issues. First, the limited number of partners is conducive to reaching a conclusion during negotiations. Second, direct-reciprocity augurs well for a dispute-settlement process. Third, the small group environment can be conducive to policy experimentation (e.g. applying the subsidiarity principle). Fourth, RTAs are best positioned to address trade-related aspects (e.g. border taxes) of mitigation (Morin and Jinnah (2018, p. 543-44)).

For the AFSIDS, only when they are members in a same organization with a broad mandate (and a broad support) can they approach the critical mass to have their voice heard (as this is the case for the climate SIDS alliance). For AFSIDS, all members of the AU and are all signatories of the AfCFTA, the problem is that the environment does not figure as a separate goal in the Treaty. As discussed below and in section 4, even for the modest objective of reducing trade barriers on Environmental Goods (EGs), countries have failed to move forward, either at the multilateral level, or in smaller groups at the plurilateral level.

SIDS interests are diluted in RECs and other ROs with large memberships

Table 3.1 describes the membership of each AFSID across RECs and other African ROs. For each organization, the table lists in parenthesis the date of creation followed by the number of members. Only Cabo Verde and São Tomé and Principe have single membership, while the others are members to two or three RECs. Multiple memberships may complicate decisions on tariff policies, but since RECs do not share the same agenda, multiple memberships can help SIDS having their voice heard.

Note that all SIDS are members of large RECs, each with at least 15 members. This creates a general problem for implementation since it is harder to reach agreement in large clubs. And RECs with overlapping membership complicates the implementation of the AfCFTA because the variable geometry negotiation principles adopted for the negotiations follow the principle of the 'acquis'. The acquis is the principle that recognizes that tariff reductions and exceptions negotiated under the different RECs are here to stay. Importantly for the African SIDS, their voice is diluted in these large clubs with many objectives on their agendas.

For the SIDS (particularly the LDCs), belonging to multiple RECs puts a strain on their limited negotiation capacity even though membership in several RECs help meet their different objectives[20]. Seen in this light, overlapping REC membership is not an accident or an unintended consequence of the legacies of colonialism, but the result of deliberate choices. This means that not all members in a REC will have the same preferences when setting the agenda for reforms. African SIDS thus end up being members of several RECs with a large menu of objectives, most not corresponding to their main interests. The AfCFTA, in spite of

[20] As example, Rwanda left ECCAS in 2007 to focus on integration in the EAC, but rejoined in 2013 to deal with regional politics, peace and security.

all its current environmental shortcomings, could be the opportunity to build a coherent environmental agenda at the continental scale.

The same observation about large numbers applies to SIDS membership in the other African Regional Organisations (ROs) listed in columns 2 to 6. [21] Except for Cabo Verde, all SIDS also belong to several among the ROs listed in columns 2 to 6. Strikingly, in spite of the importance of the environment for all African countries, only the two ROs in column 6 have a focus on environmental issues, both with large memberships.

These specialized ROs meet the subsidiarity principle that their jurisdiction (as captured by membership) covers the areas where the externalities occur. For example, the IOTC with the mandate of coordinating the regulation and management of tuna in the Indian Ocean has a narrow focus that corresponds to the interests of all the countries fishing tuna in the Indian Ocean.

Table 3-1: African SIDS membership in RECs and other African (ROs)

African SIDS	Regional Economic Communities (RECs)	Other Regional Organisations (ROs)	Energy – based ROs	River and lake (ROs)	Peace & security (ROs)	Environment-related (ROs)
Column	1	2	3	4	5	6
Cabo Verde	ECOWAS (1975;15)					
Comoros	COMESA (1994;15); CEN-SAD (1998;28); SADC (1992;16)	IOC (1982;5)			EASF (2004;10)	
Guinea - Bissau	CEN-SAD (1998;28); ECOWAS (1975;15)	WAEMU (1994;8)	ECOWAPP (1999; 14)	OMVG(1978;4)		
Mauritius	COMESA (1994;15); SADC (1992;16)	IOC				IOTC 8(1996,33)
São Tomé and Príncipe	ECCAS (1983;11)	GGC (2001 ;8)	PEAC (2003;10)			COMIFAC (2000;11)
Seychelles	COMESA (1994;15); SADC (1992;16)	IOC (1982;5)	SAPP (1995 ;14)		EASF (2004;10)	IOTC (1996;33)

Source: Casella and Melo (2021, table 3.1). From *ECDPM, PEDRO Project https://indd.adobe.com/view/f49ac87d-7aa3-4cf7-822e-841d674bbc92.*

[21]These ROs are extracted from the PEDRO interactive tool at ECDPM which lists 39 ROs on the African continent. The map shows that some countries are members to up to 14 different ROs.

Notes: Date of creation and current (as of 2018) number of countries in parenthesis. Abbreviations: IOC: Indian Ocean Commission; ECOWAPP: West African Power Pool; GGC: Gulf of Guinea Commission; OMVG: Organisation pour la Mise en Valeur du fleuve Gambie; SAPP: South African Power Pool ; WAEMU: West Africa Economic and Monetary Union ; COMIFAC : Commission des Etats d'Afrique Centrale ; EASF : East Africa Standby force, IOTC: Indian Ocean Tuna Commission; GGC: Economic Community of the Great lakes; PEAC: Central African Power Pool

However, once one factors in the limited negotiation and implementation capabilities of most AFSIDS, recognizing the large number of RECs and ROs, it would not seem commendable to suggest yet another RO that might correspond to the objectives of the African SIDS

Environmental Provisions in RECs with SIDS membership

Over the past 30 years, Regional Trade Agreements (RTAs) have increasingly included provisions to protect the environment, especially for North-South agreements (WTO-UNEP 2018, figure 3.1). However, the degree of enforceability is generally low.[22] Frequencies of provisions by issue area follow the order: biodiversity, waste, water, and climate (Jinnah (2018, figure 2)). Table 3.2 displays the results of an extraction of environmental issues covered in the RTAs in the TREND data base involving AFSIDS and comparators. The table is organized around the RECs and other RTAs for the comparators with AfCFTA at the top. It is remarkable that AfCFTA makes no mention of preservation of the environment as an objective, not even in the preamble.[23]

Starting with the RECs, only four include environmental provisions. The number of provisions is high in COMESA and ECOWAS. By contrast, in spite of the relatively high-income South Africa, the number of provisions in SADC is low. Biodiversity and environmental pollution (water and air) and their spillover to neighboring countries are the most frequently covered issues. Biodiversity is mostly approached from the conservation angle, stressing the need to protect habitat. In any case, the agreements are non-binding for parties (no punishment mechanisms) as the REC treaties do not provide ways for enforcing environmental regulations. From the count of environmental provisions in table 3.2 and the spread of AFSIDS on the two sides of the African continent, it appears that the RECs are not suited to tackle local and regional environmental issues for AFSIDS, or at least those environmental issues have not received much attention so far.

[22] The Design of Trade Agreements (DESTA) database is the source for the TREND (Trade and Environment Data base) presented in Morin et al (2018). The data base has 691 trade agreements with environmental trade provisions. The data base documents the range of environmental measures based on 286 (yes or no) criteria using a manual coding method (cross-checking from two examiners with a systematic research of discrepancies).

[23] AfCFTA is not in the TREND data base. A word search for 'environment' returns 4 occurrences, only 1 referring to environmental protection. 'Sustainable development' is mentioned as a specific objective alongside reaching SDGs but without any detailed steps to foster it , 'climate change' 'biodiversity', 'waste', 'water', returns no occurrence.

Table 3-2 Main environmental provisions covered in RECs with SIDS memberships

	Regional Economic Communities (date of treaty analysed in TREND)	Nbr of env.provisions in the treaty	Nbr of SIDS (Nbr of members in REC)	Specific environmental issue covered by the treaty*
African Continental Free Trade Area	AfCTFA ratified 30 May 2019	0	6	Environment not mentioned in preamble
African Regional Economic Communities	Common Market for Eastern and Southern Africa (COMESA) (1993)	63	3 (19)	Precautionary principle; polluter pays principle; coherence of environment with other economic sectors (tourism, mining, etc); specific mention of biodiversity, conservation, water and forest
	Economic Community of Central African States (ECCAS-CEEAC) (1983)	9	1 (11)	Environmental coordination; renewable energy sources
	Economic Community Of West African States (ECOWAS) (1993)	17	2 (15)	Intent to collaborate on environmental issues: fish and oceans, biodiversity, and hazardous waste
	Southern African Development Community (SADC) (1992)	5	3 (16)	Conservation of natural resources
Other Regional Integration Arrangements with high SIDS representation	Caribbean Community (CARICOM) revised (2001)	53	15 (15)	Wide range of specific and general collaboration on environmental issues: Climate change, biodiversity, local pollution (oil spill).
	Pacific Island Countries Trade Agreement (PICTA) (2001)	4	10 (12)	Conservation of natural resources

Source: Casella and Melo (2021, table 3.2) From *TREND Database. See Morin et al (2018).*
*Notes: ECCAS not reviewed in TREND database * Synthesis by the authors using codification from Morin and treaties.*

The bottom part of the table includes two other RTAs with large SIDS participation for comparison. All 15 members in CARICOM are SIDS and, in PICTA, all but two are SIDS and located the same oceanic region. PICTA has few environmental provisions, mentioning only the importance of natural resources conservation. On the other hand, CARICOM is a fully-fledged alliance of small islands that strives to achieve development goals through economic integration and regional cooperation on security and all environment-related aspects. The

environmental provisions contained in the revised version of the treaty are numerous and cover various subjects from local cooperation on oil spills to synchronized climate effort. For example, all CARICOM heads of state endorsed as early as 2012 a Strategic Program for Climate Resilience (SPCR) covering the major sectors of their economies (agriculture/coastal/water/forestry, coastal zone and marine/energy/health) with a description of the activities taking place at the national or regional levels.

CARICOM is striking by the ambitious coverage of environmental issues. African SIDS could take inspiration from CARICOM should they decide to pursue their environmental agenda in a regional setting.

African SIDS' have limited bargaining power within the current RECs. Furthermore, existing regional treaties are not tailored to address environmental concerns which is ultimately detrimental to SIDS fragile environment. Three avenues towards an ambitious environmental agenda are:

- lobbying within the AfCFTA negotiations to encompass environmental concerns;
- act alone;
- join and promote immediate action within a small "club of like-minded countries" that could take inspiration from the CARICOM example.

These three routes are explored in the next section.

4 Outlining three paths towards an environmentally-friendly trade policy across the African SIDS

Below, we identify three paths African SIDS could take to shift their trade policies towards environmental sustainability. Section 4.1 reviews the limited tariff reduction commitments under AfCFTA, raising doubts about the effectiveness of this approach. AFSIDS could push for the treaty to address explicitly environmental trade - related issues starting with the "easy win" of removing tariffs on Environmental Goods (EGs). Section 4.2 presents the 'unilateral' option. Here African SIDS move towards a greener trade policy by removing unilaterally tariffs on EGs. Section 4.3 proposes a middle-ground small- club approach taking inspiration from the agenda in the Agreement on Climate Change, Trade and Sustainability (ACCTS).

4.1 An AfCFTA driven trade policy for preserving the SIDS environment

AfCFTA is expected to enhance regional integration and provide sizeable trade benefits that would help SIDS in transitioning towards greener technology.

African SIDS are members of the AfCFTA. In principle, this is the right way to help break the curse of the very small markets in the SIDS. [24] Because it is a Free Trade Area (FTA), members can pursue their preferred trade policy with the rest-of-the-world. This is very important for the SIDS because small countries are less protectionist than large ones. The continental FTA keeps open the option of avoiding the trade diversion effects that would result from a Customs Union (CU) where the more protectionist larger countries (e.g. Egypt, Nigeria, South Africa) would likely imposed higher tariffs on non-members via a higher Common External Tariff (CET) as was the case for ECOWAS and EAC. [25]

AfCFTA is therefore expected to bring sizeable economic benefits to trade-dependent SIDS. However, this could be also detrimental to the environment as trade can contribute to deteriorate the environment, especially in the context of weak governance (WTO report 2011). The preamble of AfCFTA does not even refer to the environment as a goal in itself which is an ill omen for the environment and a testimony to the difficult road ahead to mainstream environmental considerations at the continental level.

Tariff removal on Environmental Goods is an easy win on the environmental front and a first step towards greening the AfCFTA

Removing tariffs on EGs and ESs could be the first shot at bringing trade policies closer to environmental goals across the continent. This objective has several advantages.

First, tariffs are visible and easily measured which is not always the case of NTM measures that can be protectionist or precautionary. Second, they are easy to monitor. Third, their effects are more easily identifiable than other measures affecting trade. For these reasons, removing tariffs on EGs and ESs was, and still is, the logical first step for African SIDS to pursue more systematically environmentally-friendly trade policies.

By opening their markets of EGs to trade, SIDS will be in a better position to meet the challenges of sustainable development. First, tariff-free access to 'end-of-pipe' goods and services (e.g. services for the detection and control of losses in transmission lines or wastewater management services, recycling, etc.) lower the costs of cleaning up the environment, and lessen the impact of human activities. Second, the transition towards renewable energies will be less costly if the technologies-- virtually all imported for African SIDS-- do not face tariff barriers. Third a shift towards consumption patterns based on 'green goods'--often called 'environmentally Preferable Products (EPPs)'—will also reduce the country's footprint on the environment.[26]

[24] Already, among the RECs, only the largest REC, CEN-SAD has a combined market size beyond France (in PPP) terms while COMESA, ECOWAS and SADC is smaller (Melo, Solleder and Sorgho (2020b figure 2)..

[25] Melo et al. (2020a section 4.3) show that the adjustment costs to the Common External Tariff (CET) in ECOWAS and EAC fell upon the small countries (Liberia in ECOWAS and Rwanda in the EAC).

[26] EPPs are products that are environmentally less harmful in production, consumption, and disposal.

Tariff reductions and time table under the AfCFTA

As of early 2021 when the AfCFTA preferential trade is to begin among the signatories that have deposited their instruments of ratification, only three of the six African SIDS (Mauritius and Saõ Tomé) are among the 38 ratifiers[27].

Table 4.1 shows the modalities of tariff concessions negotiated so far. All participating member states are to eliminate tariffs on 90% of tariff lines under the variable geometry modality of tariff reductions[28]. The 33 LDCs have twice as long (10 years) to achieve the 90% target than non-LDCs while sensitive products accounting for 7% of the remaining tariff lines. LDCs can also backlog liberalization during the last 8 of their 13 years to eliminate tariffs on sensitive products, a slightly longer time period than for non-LDCs. The 10-year phase down for full liberalization complemented by the sensitive list implies that SIDS LDCs do not have to reduce tariffs for at least years, should they wish to postpone tariff reductions. This SDT gives plenty of leeway for Guinea Bissau, Comoros and Saõ Tomé and Principe.

As to the 3% exclusion of tariff lines from liberalization that applies to all members, they must not account for more than 10% of their total trade.

Table 4-1 Tariff liberalization under AfCFTA: Schedules and Time table

	LDCs [1]	**Non-LDCs**
Full liberalization	90% of tariff lines	90% of tariff lines
	10-year phase down	5-year phase down
Sensitive products	7% of tariff lines	7% of tariff lines
	13-year phase down (current tariffs can be maintained during first 5 years – phase down starting in year 6)	10-year phase down (current tariffs can be maintained during first 5 years – phase down starting in year 6)
Excluded products	3% of tariff lines	3% of tariff lines

Source: Hartzenberg (2019)

Notes: [1] *LDCs list: Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Togo, Uganda, United Republic of Tanzania, Zambia*

The exception for 3% of tariff lines and the 10-year timetable of tariff reductions confirms the limited ambition to market integration. [29] This limited ambition is arguably necessary to build trust among a large group of very heterogeneous countries, before ramping up ambition. However, it is possible, if not likely, that negotiators will exclude the highest tariff lines. Since

[27] As of 19/10/21.

[28] Variable geometry means some State Parties can liberalize faster than others; without being prevented from doing so by those opposing the acceptance of similar obligations. The latter are free to move at a slower pace.

[29] To put things into perspective, starting in 1960, all tariffs on intra-member trade among the 6 original members of the European Common Market were eliminated over an 8 year period.

the efficiency costs of protection rise more than proportionally with the height of the tariff (see below), the result would be reduced gains from participation in the AfCFTA[30].

Environmental goods should be explicitly removed from these tariff removal exclusions, as those exceptions are likely to last As it stands, the average MFN tariff applied to EGs goods from African countries is 5.7%[31]. African countries as a whole would benefit from this removal, and especially small countries that will most likely stand on the importer side of the markets for EGs for the years to come.

Beyond tariff reductions, entry points for greening the AfCFTA.

As Phase 1 negotiations are now complete, the introduction of environmental provision in an economic recovery context by African countries is highly unlikely, but their introduction in Phase II would benefit African SIDS (and other AfCFTA members). When drawing this agenda, policy-makers would benefit from experience elsewhere recently summarized by Monteiro and Trachtman (2020) in a tally of environmental provisions included in 280 PTAs[32].

The first necessary step for AfCFTA will be to amend the preamble to mention the preservation of the environment as an objective. The preamble would then recognize the necessity to balance environment and trade (this is the case for more than 90% of the 280 trade agreements signed since 1956 scrutinized by the authors).[33]

Beyond correcting the omission in the preamble, an environmental agenda would need to take into account the diversity of interests and capabilities across members while focusing on the environmental objectives in line with existing Multilateral Environmental Agreements (MEA) to which African countries are parties (UNFCCC, Aichi Convention on Biodiversity…). This will be a challenge for the many countries with limited implementation capabilities. It will also be a challenge for measures in the 'positive agenda' because they require resources also needed to reboot the economy.

Checking on the provisions covering EGs (beyond the phase I commitment of no EG products on the exception lists for tariff reductions) would be a plausible first entry point. According to the exhaustive tally of environmental provision in the TREND data base, in the last decade, PTAs have included between 500 and 800 new environmental measures every year. As to trade-related environmental provisions, it is noteworthy that 60% of the PTAs signed in 2016 included provisions on EGs. [34]

Second, while drawing the agenda-- which should preferably involve specialists in the areas under negotiation rather than (or beyond) trade negotiators[35]—attention should also focus

[30] See ECA (2018) for an overview of possible options for eliminating the 3% exclusion lines that are left.
[31] EGs from APEC list. See Annex A4 and table A4-2 for supplementary figures on environmental goods tariffs'.
[32] See also Van der Ven and Signé (2021) for a list of policies to "green the AfCFTA".
[33] When entering provisions in the data base, the authors measure depth by evaluating if the provision is: (i) aspirational or legally binding under international law; (ii) whether it is applicable in Dispute Settlement (DS) proceedings brought by other parties either in State-to-State (DS) or by private persons (state-private)
[34] Morin et al. (2018) classify the over 800 provisions in PTAs. Melo and Solleder (2021, figure 2) show a sharp rise in the number of PTAs with provisions on EGs with 60% of signed PTAs in 2016 having an EG provision
[35] See the critique in Cosbey, (2014)

on an ex-post evaluation of the environmental provisions included in African RECs treaties so far, to understand what has worked (not worked) and why[36].

Third, another possible entry point would be to include environmental provisions in Phase II negotiations. For example, the protocol on competition policy could include environmental provisions as avoiding an environmental race to the bottom should be a top priority. Provisions could target environmental standards for public procurement or mutual recognition of the certificates and accreditation procedure provided inspection and certification comply with environmental norms.

Finally, the National Implementation Strategies for Member States and RECs could be directly included in the AFCTA. ECA is currently carrying out a Strategic Environmental Assessment (SEA) to this effect, which could serve as a plea for inclusion of environmental dimensions.

Meanwhile, AFSIDS can decide to move forward on their environmental agenda by removing unilaterally tariffs on EGs.

4.2 African SIDS can remove barriers to trade on EGs unilaterally

Even though for LDCs there is an argument to justify tariffs in weak fiscal environment (tax where you can i.e. at the border), this is still an inefficient way to raise government revenue because a low tax base implies that a higher tariff needs to be applied to raise the same revenue. The LDC SIDS should abandon tariffs as soon as fiscal reform leads to a larger tax base. In any case, fiscal reform is not necessary to remove unilaterally trade taxes on EGs since these goods only account for between 1 and 3 percent of total imports (see table 4.2). This section explores this alternative.

Because the Harmonized System (HS) used to report trade statistics is not concerned with their effects on the environment, isolating products that are beneficial/harmful for the environment is a challenge. Yet, one needs such a classification to choose the Environmental Goods (EGs) on which to remove tariffs. Technically, in spite of recent changes, the Harmonized System (HS) is not well-designed to separate out EGs from other traded goods. In addition, countries differ in their perception of what is an EG.

Annex 1.3 discussed these challenges and proposes the two lists of EGs retained for this paper [number of HS6 products in each list in brackets]: Goods for Environmental Management (GEMs [54]) and Environmentally Preferable Products (EPPs [104]). Table A1.1 gives the description of products on each list.

The APEC list is an accepted list of goods used to manage the environment, such as wind turbine, solar panel and parts for building hydrogenators. None among the African SIDS are in a position to produce these specialized products at scale[37]. EPPs are goods for which

[36] Monteiro and Trachtman (2020) introduce tools to this effect that include a checklist developed by the OECD for negotiators as well as an evaluation framework to realise ex-post assessment of environmental provision (Gallagher and Serret 2011).

[37] Although it should be noted that scale effect here is the main reason (likely to remain) for the difficulty to produce EGs. Shmidt and Huenteler (2017) show that Bangladesh managed to specialized in small hydro generators production despite

developing countries, including African SIDS have, or could have, a revealed comparative (e.g. brooms made of wood rather than metal).

Table 4.2 compares the value of imports for each category of EG against total imports. For most countries, imports of EG from the APEC list are more important than imports of EGs from the EPP list. The difference in imports between the two lists for the high-income and the three LDCs is a telling indicator of the respective efforts of each group of countries at dealing with the management of their respective environments.

For African SIDS, EG imports never exceed 2% of total imports so any loss in tariff revenue for the two high-tariff countries, Comoros and Saõ Tomé and Principe on EG lists would be minimal.

Table 4-2 Imports of African SIDS: All goods and Environmental Goods (APEC and EPP list)

	Import 2018 in millions of USD All goods	**Import 2018 in millions of USD EG - APEC List**	**Import 2018 in millions of USD EG - EPP list**	**Trade ratio APEC list / All goods**	**Trade ratio EPP list /All goods**
Guinea-Bissau*	110,77	0,13	1,01	0,12%	0,91%
Comoros	224,80	0,78	1,16	0,35%	0,51%
Sao Tome and Principe**	148,31	4,01	0,47	2,71%	0,32%
Cabo Verde	814,60	11,89	1,27	1,46%	0,16%
Mauritius	5669,33	78,54	24,78	1,39%	0,44%
Seychelles***	901,73	10,68	1,73	1,18%	0,19%

*Sources: WITS database. Authors' calculation. *For Guinea-Bissau, last data available are in 2005. ** 2018 data available only in H3 (2007) *** some disparities with the country profile on WITS on the total import value*

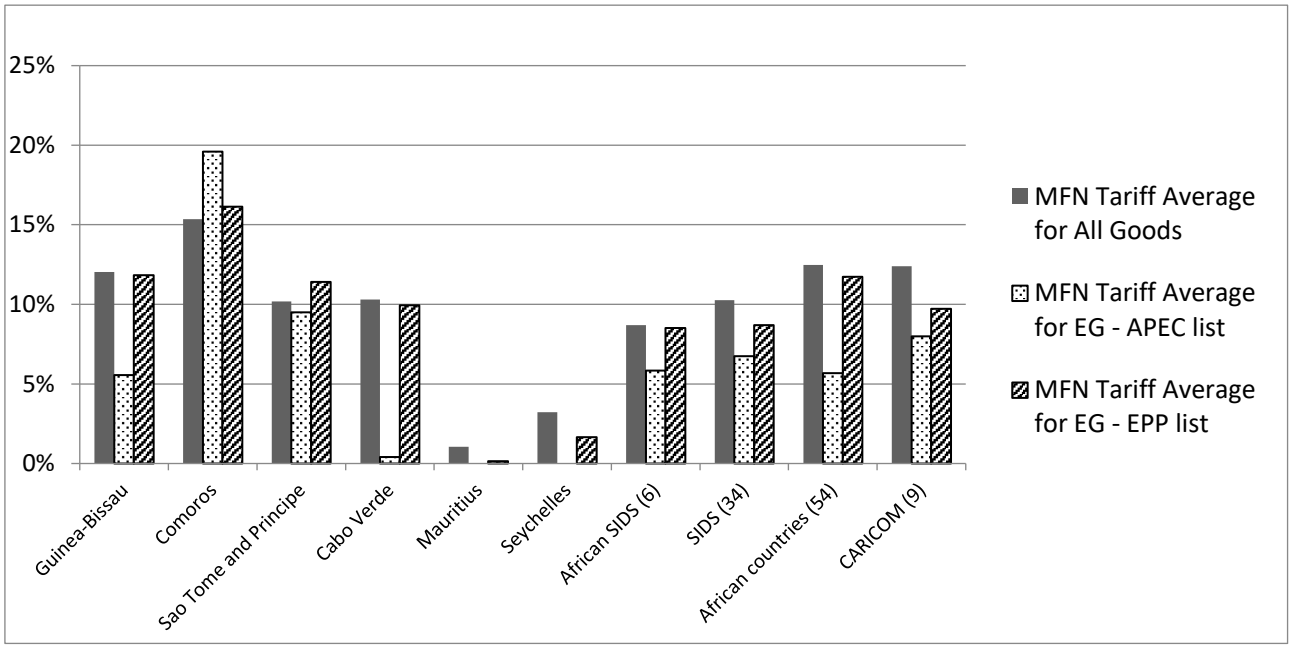
Figure 4.1 shows that the three higher income SIDS, Cabo Verde, Mauritius and Seychelles do not impose tariffs on EGs for environmental management (the APEC list) although Cabo Verde applies on average the same tariff on all goods and EPPs. Mauritius and Seychelles are zero tariff countries across-the-board, which should be the tariff policy followed by all African SIDS. As these countries have no market power in the markets for the goods they trade internationally, and, given their small domestic markets, have no rationale for infant-industry protection.

Comparing the average for African SIDS with comparator groupings shows that all groups apply lower tariffs on the EGs for GEMs. This is to be expected since the GEMs are mostly

limited competitive advantages in producing and designing because of the relatively simple technologies used to produce these goods.

intermediate products that have lower tariffs than final goods.[38] On average, tariffs on EPPs are slightly lower than the average for all goods. Surprisingly, in spite of their focus on the environment, CARICOM countries do not have a comprehensive policy of importing GEMs tariff-free.

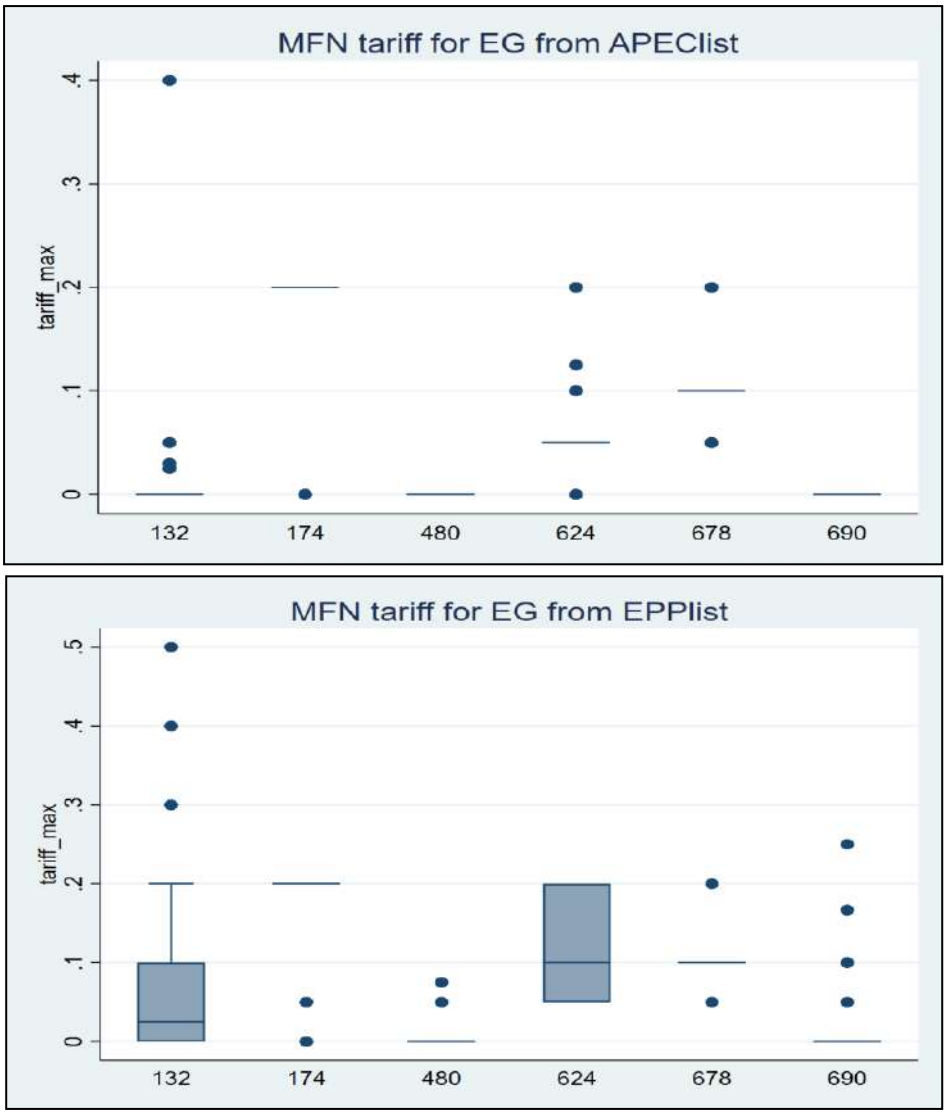
Figure 4-1 Tariffs on Imports of AFSIDS: All goods and Environmental Goods (APEC and EPP list)



Sources: Authors' calculations from applied tariff data in WITS for 2014. Simple averages across goods within groups and across countries within groupings

[38] Comparing averages for GEMs with averages for other intermediate goods would be a more appropriate comparison.

Figure 4-2 Applied MFN Tariff: Boxplots for APEC and EPP list



Source: Authors' calculations from applied tariff data in WITS for most recent year (usually 2018).

Notes: Boxplot shows the median, interquartile range and products outside the 10th. and 90th. percentile. See table 4.3 for descriptions of all 23 products.132 = Cabo Verde, 174 = Comoros, 480=Mauritius, 624 = Guinea-Bissau, 678 = Sao Tome and Principe, 690= Seychelles.

Figure 4.2 shows the boxplots of applied tariffs for the APEC and EPP lists. All EGs in the APEC list are exempt of duties for Mauritius and Seychelles.

Table 4.3 gives the description of outliers for the APEC list identified in figure 4.2. For example, for Cabo Verde (132), a 40% tariff is applied to imports of assembled flooring panels of wood multilayer (HS441872) which is indicated in table 4.3. By contrast, this same product is an outlier on the downside for Comoros (174) as it is the only product on the APEC list that is imported under free trade. For Comoros, all other EGs on the APEC list pay a 20% duty.

The coloring scheme in table 4.3 in table 4.3 flags outliers relative to the median of the EG list (col.4) and relative to the average for all products (col. 5). While the EGs identified in the APEC list are only an approximate description of goods helpful for environmental management

because of difficulties in identification, those EGs with tariffs above the average for all goods (col.5) would deserve further scrutiny. This remark applies, though to a lesser extent, those EGs with tariff rates above the median for EGs (col. 4).

Table 4-3 Outliers on applied MFN tariffs for African SIDS (APEC list)

reporter	HS6 product code	applied MFN tariff	Difference with median tariff on EG	Difference with mean tariff on All goods	Description
(1)	(2)	(3)	(4)	(5)	(6)
CPV	441872	40%	40%	30%	Assembled Flooring Panels Of Wood Multilayer
CPV	841919	3%	3%	-8%	Heaters; instantaneous or storage water heaters, non-electric, other than instantaneous gas water heaters
CPV	850239	5%	5%	-5%	Electric generating sets and rotary converters; Others
CPV	850300	5%	5%	-5%	Electric motors and generators; parts suitable for use solely or principally with the machines of heading no. 8501 or 8502
CPV	850490	5%	5%	-5%	Electrical transformers, static converters and inductors; parts thereof
CPV	854140	3%	3%	-7%	Electrical apparatus; photosensitive, including photovoltaic cells, whether or not assembled in modules or made up into panels, light-emitting diodes (LED)
CPV	854390	5%	5%	-5%	Electrical machines and apparatus; parts of the electrical goods of heading no. 8543
COM	441872	0%	-20%	-15%	Assembled Flooring Panels Of Wood Multilayer
COM	850164	0%	-20%	-15%	Electric generators; AC generators, (alternators), of an output exceeding 750kVA
GNB	441872	20%	15%	108%	Assembled Flooring Panels Of Wood Multilayer
GNB	841919	13%	8%	1%	Heaters; instantaneous or storage water heaters, non-electric, other than instantaneous gas water heaters
GNB	841960	10%	5%	-2%	Machinery; for liquefying air or gas, not used for domestic purposes
GNB	841989	10%	5%	-2%	Machinery, plant and laboratory equipment; for treating materials by change of temperature, other than for making hot drinks or cooking or heating food
GNB	854140	0%	-20%	-12%	Electrical apparatus; photosensitive, including photovoltaic cells, whether or not assembled in modules or made up into panels, light-emitting diodes (LED)
GNB	901380	10%	5%	-2%	Optical devices, appliances and instruments; n.e.c. in heading no. 9013 (including liquid crystal devices)
GNB	903180	10%	5%	-2%	Instruments, appliances and machines; for measuring or checking n.e.c. in chapter 90
GNB	903289	10%	5%	-2%	Regulating or controlling instruments and apparatus; automatic, other than hydraulic or pneumatic
STP	441872	20%	10%	110%	Assembled Flooring Panels Of Wood Multilayer
STP	841919	5%	-5%	-5%	Heaters; instantaneous or storage water heaters, non-electric, other than instantaneous gas water heaters
STP	841939	5%	-5%	-5%	Dryers; for products n.e.c. in heading no. 8419, not used for domestic purposes
STP	841960	5%	-5%	-5%	Machinery; for liquefying air or gas, not used for domestic purposes
STP	841989	5%	-5%	-5%	Machinery, plant and laboratory equipment; for treating materials by change of temperature, other than for making hot drinks or cooking or heating food
STP	841990	5%	-5%	-5%	Machinery, plant and laboratory equipment; parts of equipment for treating materials by a process involving a change of temperature

Source: Authors' calculations from applied tariff data in WITS for 2014.

Notes: Green color indicates that the tariff is below the median for the EG list. Red color that the tariff is above the median of the EG. The median is used for EG to match the figure 4.2. Column 4 = Col.3 –median tariff from Figure 4.1. column 5 = col.3- average tariff from Table 4.1

4.3 An Environmental trade policy for African SIDS in a small group (inspired from the ACCTS)

Instead of relying on the AfCFTA to promote an environmental push, which is unlikely in the short run and in addition to removing tariffs on EGs, which will not be enough to support environmental transition, African SIDS could participate in a small group of 'like-minded' partners that would address broader environmental issues. As pointed out in section 3, existing regional RECs do not seem to be the adequate vessel to foster environmental integration that would mirror the economic integration put forward by AfCFTA.

For a start, the three countries (Cabo Verde, Mauritius and Seychelles) that have already adopted low or zero tariffs on EGs (see table 4.2) could extend their pro-environment trade policy agenda to cover fossil fuel subsidies, ESs, and eco-labeling[39]. In the post-Covid recovery context, Barbier (2020) emphasize the need for cost-effective environmental policy such as phasing out fossil fuel subsidies for carbon tax.

This is the path followed by Costa Rica, Fiji, Iceland, New Zealand, Norway and (shortly after) Switzerland when they decided to launch negotiations towards an Agreement on Climate Change, Trade and Sustainability (ACCTS) in the fall of 2019. The African SIDS could take inspiration from this initiative. As Jacinta Ardern, Prime Minister of New Zealand said about the launch of the ACCTS

> "Trade can't sit outside of our work to tackle climate change. In fact international trade rules are uniquely placed to be part of the solution by removing trade barriers for green products and services and stopping pollution being subsidised…. If trade rules can require subsidies to be removed from things like agriculture, then it is only consistent that they also require subsidies to come off polluting fossil fuels".

The above statement recognizes that an all-round removal of barriers to trade in 'green goods and services' is crucial for the sustainability of the development path for small trade-dependent countries.

The main lesson from the agenda of the ACCTS is that a small group of countries can decide to take seriously (or at least intend to take seriously) trade-related measures that will protect their environment. Note that the ACCTS group intends to apply the reductions in barriers to trade on EGs to ALL countries, rather than only to the negotiating partners. This is crucial since such reduction on a non-preferential basis ensures that removing tariffs will lead to efficiency gains. Removing tariffs on a preferential basis as is the case under AfCFTA does not guarantee efficiency gains.

According to the joint statement at the launch, the ACCTS agreement intends to:

- Remove tariffs on Environmental Goods (EGs) and make new commitments on Environmental Services (ESs)
- Establish concrete commitments to eliminate fossil fuel subsidies
- Develop voluntary guidelines for eco-labelling programs and mechanisms

[39] See also Barbier & Burgess 2020 on cost-effective national environmental policies.

A successful ACCTS-like agenda benefits African SIDS participants directly along the following lines:

- help develop guidelines and policies to improve marine management, following CARICOMs example.
- By sharing efforts with other committed countries, participation in the negotiations will give additional support at home when facing politically difficult decisions such as raising the price of fossil fuels. Furthermore, AFSIDS could rely on the support of the existing SIDS SAMOA Pathway that herald environmental progress as the only path to a sustainable development for SIDS.
- Develop an "environmentally friendly" image which is especially important for the tourist dependent SIDS.

This “small club” could also be applied to regional public goods related to the Blue Economy, especially for the crucial issue of fishery management. African SIDS are very much reliant on fishing activities for food as well as revenue. Fishing catches are expected to drop 38% by 2050 in tropical countries due to climate change[40] and the potential effect on marine habitat could be disastrous (coral bleaching event due to ocean acidification, sea level rising…).

Whereas terrestrial management is largely a National Public Good (NPG) that can be addressed at the country level, the nature of fishing activity is transnational, making it a Regional Public Good (RPG). This transboundary externality requires collective action across jurisdictions which would be best handled in a small group of like-minded countries with some geographical continuity. [41]

[40] See Lam et al 2016 for an overview of the estimated impact of climate change on fishing revenue. Impact calculated under the Business as usual RCP 8.5 scenario of the IPCCC.

[41] Cooperation on fishing regulations across African SIDS is already covered by geographically different Regional Fishing Bodies (RFB) . However, most RFBs currently do not have the tools or the mandate to enforce fishing regulations.

5. Conclusions and Recommendations

Because of their size and exposure to market shocks as well as their exposure to global environmental threats, SIDS dependent strongly on an ambitious international and regional environmental agenda. This paper documents the multi-dimensional vulnerabilities of African SIDS and gives recommendations for **national and regional** trade-related policies to help better address these vulnerabilities. Along many dimensions, diagnosis and policy recommendations for African SIDS can be broken into two groups: LDCs (Comoros, Guinea Bissau and Saõ Tomé) and the remaining SIDS: Cabo Verde, Mauritius and Seychelles.

African SIDS environmental vulnerabilities are multidimensional

The paper presents an Environmental Dashboard for SIDS with three groups of indicators. The first covers their vulnerability to environmental and climate shocks. The second describes the level of pollutants in the air and the water. The third group measures the level of preparedness to deal with environmental challenges of particular importance for AFSIDS: climate change, biodiversity conservation, and sustainable fishery management.

This dashboard is used to put into perspective the environmental performance of AFSIDS relative to other SIDS and to other African countries. For some aspects, overall performance is closely linked to per capita income. However, that is not the case for the conservation of ecosystems, where the wealthiest AFSIDS have a relatively poor performance.

Environmental Provisions in Regional Economic Communities (RECs) and other Regional Organizations (ROs) have not met environmental needs of African SIDS

Increased physical linkages across countries raises the urgency of extending the global architecture of policy making to include the preservation of the environment. The Doha Round, the Paris Agreement, the SDGs, are steps in the right direction, yet changes in the institutional environment that are necessary for the SIDS urgent environmental preservation concerns are still to come.

On the regional front, a tally of environmental provisions included in REC treaties with SIDS membership shows both limited environmental ambitions and low degrees of enforceability. Environmental considerations are a glaring omission in the current AfCFTA treaty, which does not bode well for the capacity of the continental agreement to correct deficiencies on the environmental front at the REC level.

Alternative paths towards an environmentally-friendly trade policy regime across the African SIDS

The paper closes with a discussion of the pros and cons of three alternative paths towards effective and "workable" environmentally-friendly trade policies for AFSIDS: (i) to rely on AfCFTA; (ii) act unilaterally; (iii) pursue a small-club approach with like-minded countries.

The continental route. At its most ambitious level, AfCFTA could result in an all-round elimination of tariffs in a 10-13 year window for all goods. This paper suggests to lobby for

the removal of tariffs on Environmental Goods[42] (EGs) at the continental level. This agenda would have several benefits: it is a policy that is (relatively) easy to enact and monitor, and would results in broader access to cheaper goods needed for better environmental management necessary in any shift towards a more sustainable development path. The paper also details other steps towards greening the AfCFTA including ex-post evaluation of existing environmental provisions in RECs and incorporating environmental provisions in the phase II negotiations.

The unilateral approach would be the most expeditious, a significant advantage for countries where preserving the environment is an urgent issue. It is the path strongly recommended in the paper with respect to removing the policy-imposed barriers to free trade in Environmental Goods (EGs).

AFSIDS have lower average applied tariffs on the two EG lists (a list of Environmentally Preferable Products and a list of Goods for Environmental Management) than the average of all SIDS and of CARICOM. Mauritius, Seychelles, and Cabo Verde have virtually-zero tariffs on imports of EGs on both lists. This is not the case for the LDC SIDS where applied tariffs on EGs average 10 percent. Eliminating protection on EGs is arguably the first step for Guinea Bissau, Comoros and Saõ Tomé in their quest to adopt environmentally supportive policies.

The small-club approach. Inspired by the agenda covering the ongoing negotiations towards an Agreement on Climate Change, Trade and Sustainability (ACCTS), AFSIDS could form an alliance with like-minded partners. Among others, under that agenda elimination of tariffs would be extended to ALL partners and fossil fuel subsidies would be removed. Further application to this small club method would also promote regional integration on blue economy-related issues and fisheries management.

For AFSIDS, the next step on their environmental agenda should be a resolute mix of easy to implement national measure while campaigning at the regional and international level for more ambitious and comprehensive environmental policies.

[42] EGs are goods either used to improve environmental management (e.g. wind turbines or energy-efficient motors), or goods which when in production, use or disposal have a lower environmental imprint (e.g. bicycles).

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ANNEXES TO UNECA REPORT

Trade Policies to reduce environmental and climate vulnerabilities in African Small Islands Developing States

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ANNEX 1: Reconciling trade and environment objectives in SIDS

All human activities have a footprint on the environment. In a growing economy, the footprint of economic activity on the environment is ambiguous as the scale effect leads to greater environmental damage while the efficiency effect usually reduces pressure on the environment because of more environmentally friendly policies and better 'performing' property rights as institutional quality often improves in a growing economy. This annex discusses the trade-environment linkages in an economy to inform SIDS decision-makers in their quest to adopt a green development strategy.

The trade-environment linkages are particularly strong in SIDS. First, SIDS trade more intensely than other countries because of their small size. Second, their exports are concentrated in commodities/products that are intensive in natural capital. Trade then has a crucial role in the sustainability of their development in their more fragile environment. Under strong governance, trade and the environment will be in a virtuous circle. More trade will raise incomes that, in turn, will lead to a demand for greater protection of the environment. Under weak governance, property rights will be absent or poorly applied and trade is likely to lead to an over-exploitation of resources. (Non-renewable resources will be depleted too rapidly while renewable resources will not be given the time to replenish for future harvesting.) [43]In weak governance settings, unregulated trade in natural resources will be detrimental to the preservation of the SIDS' environment. This strong interdependence calls trade policies for that are environmentally friendly.

This annex identifies three linkages between trade and an economy's environment (section A1.1). Section A1.2 then discusses challenges at identifying traded products that have a high (or low) impact the environment. These are identified as Environmental Goods (EGs). They are classified under two categories: Goods for Environmental Management (GEMs) and Environmentally Preferable Products (EPPs). Section A1.3 gives the list of products in each one of these two categories. Both lists are used in the description of tariffs in section 4.

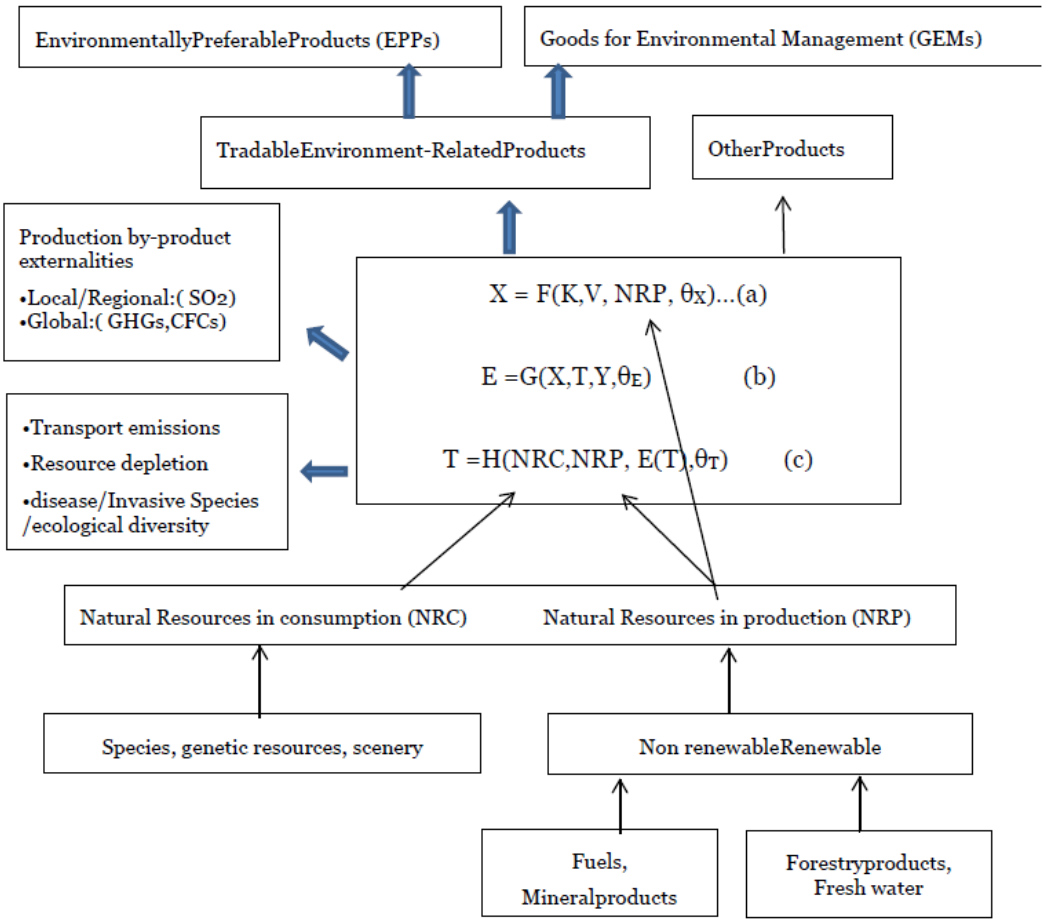
A1.1 Three Trade-Environment linkages[44]

Figure A1.1 isolates three channels of interaction between a development strategy and its environmental implications and where trade enters into these links: (i) pattern of production (a); (ii) by-product externalities resulting from most human activities (b); (iii) direct effects of trade on the environment (c).

[43] Riekhof et al. (2018) study the interdependency between economic growth, international trade and the use of renewable resources.

[44] This section draws on Melo (2012, sections 2 and 3).

Figure A1-1 Natural Resources, the Environment and Trade: Channels of interaction



(a) X= Output; K= physical and human capital; V=Intermediate inputs, NRP= Natural resources in production; θ_X=Output-related policies (e.g. taxes or subsidies on fossil fuels)

(b) E= output-related emissions; Y=per capita income; θ_E= caps/taxes on emissions

(c) T= environment-related Trade; NRC=natural resources in consumption; E(T)=Emission related to transport; θ_T=border taxes

GHG= Green-house gases; CFC=chlorofluorocarbons;SO= Sulfuric oxides;

Source: Jaime de Melo (2012, figure 1)

The first channel is in the pattern of production: does the development strategy manage adequately the environment, and does it produce goods and services that are environmentally- friendly"? The second channel works through the by-product externalities that inevitably accompany human activities, externalities that are becoming increasingly global. However, for SIDS, because of their relative isolation, cross-border externalities are less important. However, as discussed by Nurse et al. (2014, section 5.2), climatic processes observed in SIDS increasingly originate from other countries or regions. To give one example, they report that dust level emissions were a factor of nine lower during the 1950s when rainfall was

at or above normal compared with the 1980s when the Sahel was hit by intense drought (Nurse et al. p. 1633. The third channel covers the direct effects of trade on the environment.

For SIDS, and other low-income countries where natural capital accounts for close to half their wealth, valuation and monitoring of their natural capital is essential. Natural resources can be categorized as non-renewable (fuels, mineral products), or renewable (forestry products, fresh water). [45] Goods are produced with natural resources in production (NRP). These are the raw materials that enter production (relation (a)). Natural resources also enter directly as natural resources in consumption (NRC such as fish, biodiversity and genetic resources). Both NRC and NRP may be characterized by poorly-defined property-rights which may be exacerbated because they are traded (relation (c)). In both cases, the appropriate policy consists of correcting the externality at source (e.g. establishing property rights or applying production/consumption taxes) and if the entire production is traded (e.g. ivory) a trade tax or trade ban is also the first-best policy.

For trade in natural resources, appropriate policies are difficult to design because environmental effects are generally local while policies boil down to laws and regulations at the national level that take should take into account the specificities of the biome and ecosystem. Their impact is difficult to trace in trade flows. Difficulties are also compounded when property rights or open-access (often the case for NRC, i.e. endangered species) or for strong vested interests reflected in lobbying activities (often the case for NRP, i.e. fossil fuels including consumption where the alternative is a shift towards renewable energy which can be incentivized by trade policy). In the case of natural resources, the effects of trade depend on the property rights regime. When these can be secured, trade will be welfare-increasing. When property- rights are ill-defined, or when there is open-access, international trade is likely to lead to over-exploitation or disappearance of the resource as is the case for fishing. Then, if they can be implemented, restrictions on trade or a ban on trade in endangered species can be the appropriate policy in an environment where resources are open-access.

In the LDC AFSIDS limited institutional capabilities complicates implementation of the two approaches used to protect their terrestrial and maritime environments. Andrew (2018) reviews state of play on the two approaches to promote sustainable outcomes for the terrestrial environment: (i) regulatory approach (); voluntary sustainable standards involving the private sector. [46]

To be effective, the policy requires cooperation from trading partners, as for instance, in the ban of trade in ivory. By contrast, an environmental policy to regulate local pollution does not require cooperation to the extent that "virtual trade in pollution" is limited.

A1.2 Classifying traded products linked to the environment

Figure A1.1 classifies production activities (relation (a)) by distinguishing between tradable environment-related products and other products. For the tradable environment-related products and services, their impact on the environment can be classified in two categories:

- Goods for Environmental Management (GEMs). These are production helps manage the environment better (such as pumps for air pollution control)

[45] Close to half of the wealth of low-income countries comes from their natural assets compared with only 3 percent for industrialized countries (Lange et al. 2018 cited in WTO-UNEP 82018, 16)

[46] Andrew (2018) also reviews results from scoping and screening methodologies applied to agriculture and services sectors such as tourism. He notes that until recently, the lack of environmental data at the local level obliged evaluations to concentrate on regulatory aspects and trade policy instrument applied on sensitive products.

- Environmentally Preferable Products (EPPs). These ae products that damage less the environment through their production/use/disposal than other products (e.g. solar panels).

For both GEMs and EPPs, reducing barriers to trade for these goods (or subsidizing the production of clean energy) is good for the environment. The failed negotiations to reduce barriers to trade in GEMs and EPPs illustrate difficulties encountered when drawing up lists of products as GEMs and EPPs (See discussion in Balineau and Melo (2011)).

The main difficulty with GEM is that they generally have multiple end-uses. For example, tubes and pipes used in water treatment can also be used for the transport of natural gas. There is a major identification problem as the Harmonized Commodity Description and Coding System (HS) was not designed according to end-use. A finer HS classification specifying "ex-outs" (goods which are not separately identified at the HS-6 harmonized level so that they have to be identified in national tariff schedules at the 8- or 10-digit level) could partially help solve the multiple-use problem, but this would be particularly costly and difficult to implement for some developing countries. However, encouragingly, the new HS classification to come into effect in 2022 has made notable progress in distinguishing products in terms of their environmental footprint. [47] A list of 54 products, referred to as the "APEC" list because it was used in the APEC negotiations has been, and continues to be the list representative of GEMs.

Contrary to GEMs, environmentally preferable products (EPPs) are single-use products that produce less environmental damage either in their production, their use, or their disposal. Each EPP has a close substitute with a similar use but which is less environmentally preferable (for example the use of biodegradable vs. non-biodegradable products). The main problem with EPPs is 'relativism', in the sense that criteria to judge what is "environmental friendly" are lacking. For instance, while some governments may want to discriminate between wood products derived from sustainably grown forests from other wood products, they cannot do so if the unlikeliness of these two types of wood products is not established at the GATT/WTO where the jurisprudence on PPMs is still in flux. More importantly, such discrimination (through applying differential tariff rates) would require agreement on universally accepted labels in an extended HS classification.

For AFSIDS, the APEC list is the most important one for monitoring tariffs on EGs since their first preoccupation is to use least-cost adaptation technologies.

[47] Steenblik (2020) gives several examples of the new classification that help better classify EGs.

A1.3 Products in the APEC and EPP lists.

Table A1-1 APEC EG List:

HS6 productcode	HS6 product description
441872	Assembled Flooring Panels Of Wood Multilayer
840290	Boilers; parts of steam or other vapour generating boilers
840410	Boilers; auxiliary plant, for use with boilers of heading no. 8402 or 8403 (e.g. economisers, super-heaters, soot removers, gas recoverers)
840420	Boilers; condensers, for steam or other vapour power units
840490	Boilers; parts of auxiliary plant, for use with boilers of heading no. 8402 and 8403 and parts of condensers for steam or other vapour power units
840690	Turbines; parts of steam and other vapour turbines
841182	Turbines; gas-turbines (excluding turbo-jets and turbo-propellers), of a power exceeding 5000kW
841199	Turbines; parts of gas turbines (excluding turbo-jets and turbo-propellers)
841290	Engines; parts, for engines and motors of heading no. 8412
841780	Furnaces and ovens; including incinerators, non-electric, for industrial or laboratory use, n.e.c. in heading no. 8417
841790	Furnaces and ovens; parts of non-electric furnaces and ovens (including incinerators), of industrial or laboratory use
841919	Heaters; instantaneous or storage water heaters, non-electric, other than instantaneous gas water heaters
841939	Dryers; for products n.e.c. in heading no. 8419, not used for domestic purposes
841960	Machinery; for liquefying air or gas, not used for domestic purposes
841989	Machinery, plant and laboratory equipment; for treating materials by change of temperature, other than for making hot drinks or cooking or heating food
841990	Machinery, plant and laboratory equipment; parts of equipment for treating materials by a process involving a change of temperature
842121	Machinery; for filtering or purifying water
842129	Machinery; for filtering or purifying liquids, n.e.c. in item no. 8421.2
842139	Machinery; for filtering or purifying gases, other than intake air filters for internal combustion engines
842199	Machinery; parts for filtering or purifying liquids or gases
847420	Machines; for crushing or grinding earth, stone, ores or other mineral substances
847982	Machines; for mixing, kneading, crushing, grinding, screening, sifting, homogenising, emulsifying or stirring
847989	Machines and mechanical appliances; having individual functions, n.e.c. or included in this chapter
847990	Machines and mechanical appliances; parts, of those having individual functions
850164	Electric generators; AC generators, (alternators), of an output exceeding 750kVA
850239	Electric generating sets and rotary converters; Others
850300	Electric motors and generators; parts suitable for use solely or principally with the machines of heading no. 8501 or 8502
850490	Electrical transformers, static converters and inductors; parts thereof
851410	Furnaces and ovens; electric, for industrial or laboratory use, resistance heated
851420	Furnaces and ovens; electric, for industrial or laboratory use, functioning by induction or dielectric loss
851430	Furnaces and ovens; electric, for industrial or laboratory use, other than those functioning by induction, dielectric loss or resistance heated
851490	Furnaces, ovens and heating equipment; parts of the industrial or laboratory equipment of heading no. 8514
854140	Electrical apparatus; photosensitive, including photovoltaic cells, whether or not assembled in modules or made up into panels, light-emitting diodes (LED)
854390	Electrical machines and apparatus; parts of the electrical goods of heading no. 8543

901380	Optical devices, appliances and instruments; n.e.c. in heading no. 9013 (including liquid crystal devices)
901390	Optical appliances and instruments; parts and accessories for articles of heading no. 9013
901580	Surveying equipment; articles n.e.c. in heading no. 9015, including hydrographic, oceanographic, hydrological, meteorological or geophysical instruments and appliances (excluding compasses)
902610	Instruments and apparatus; for measuring or checking the flow or level of liquids
902620	Instruments and apparatus; for measuring or checking pressure
902680	Instruments and apparatus; for measuring or checking variables of liquids or gases (excluding pressure or the flow and level of liquids and those of heading no. 9014, 9015, 9028 and 9032)
902690	Instruments and apparatus; parts and accessories for those measuring or checking the flow, level, pressure or other variables of liquids or gases (excluding those of heading no. 9014, 9015, 9028 or 9032)
902710	Instruments and apparatus; gas or smoke analysis apparatus, for physical or chemical analysis
902720	Chromatographs and electrophoresis instruments
902730	Spectrometers, spectrophotometers and spectrographs; using optical radiations (UV, visible, IR)
902750	Instruments and apparatus; using optical radiations (UV, visible, IR), (other than spectrometers, spectrophotometers and spectrographs)
902780	Instruments and apparatus; for physical or chemical analysis, for measuring or checking viscosity, porosity, expansion, surface tension or quantities of heat, sound or light, n.e.c. in heading no. 9027
902790	Microtomes and parts and accessories thereof
903180	Instruments, appliances and machines; for measuring or checking n.e.c. in chapter 90
903190	Instruments, appliances and machines; parts and accessories for those measuring or checking devices of heading no. 9031
903289	Regulating or controlling instruments and apparatus; automatic, other than hydraulic or pneumatic
903290	Regulating or controlling instruments and apparatus; automatic, parts and accessories
903300	Machines and appliances, instruments or apparatus of chapter 90; parts and accessories n.e.c. in chapter 90

goods in APEC list with 2007 classification

Source : Authors from WITS http://wits.worldbank.org/. Classification is H5 (2017).

TableA1-2 EPP EG List:

HS6 product code	HS6 product description
121120	Ginseng roots, of a kind used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes, fresh, chilled, frozen or dried, whether or not cut, crushed or powdered
121190	Plants and parts (including seeds and fruits) n.e.c. in heading no. 1211, of a kind used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes, fresh, chilled, frozen or dried, whether or not cut, crushed or powdered
130120	Gum Arabic
130190	Natural gums, resins, gum-resins and oleoresins, n.e.c. in heading no. 1301
130219	Vegetable saps and extracts; n.e.c. in item no. 1302.1
140190	Vegetable materials of a kind used primarily for plaiting; n.e.c. in heading no. 1401
152110	Vegetable waxes (other than triglycerides); whether or not refined or coloured
152190	Waxes, other than vegetable, n.e.c. in heading no. 1521; whether or not refined or coloured
230690	Oil-cake and other solid residues; whether or not ground or in the form of pellets, resulting from the extraction of oils, n.e.c. in heading no. 2306
310100	Fertilizers, animal or vegetable; whether or not mixed together or chemically treated; fertilizers, produced by the mixing or chemical treatment of animal or vegetable products
320190	Tanning extracts of vegetable origin; tannins and their salts, ethers, esters and other derivatives, (excluding quebracho or wattle extract)
320300	Colouring matter of vegetable or animal origin, including dyeing extracts not animal black, whether or not chemically defined; preparations based on colouring matter of vegetable or animal origin
320910	Paints and varnishes; based on acrylic or vinyl polymers, dispersed or dissolved in an aqueous medium
321000	Paints and varnishes; (including enamels, lacquers and distempers), prepared water pigments of a kind used for finishing leather
400110	Rubber; natural rubber latex, whether or not pre-vulcanised, in primary forms or in plates, sheets or strip
400121	Rubber; natural (excluding latex), in smoked sheets
400122	Rubber; technically specified natural rubber (TSNR), in primary forms or in plates, sheets or strip (excluding latex and smoked sheets)
400129	Rubber; natural (excluding latex, technically specified natural rubber and smoked sheets), in primary forms or in plates, sheets or strip
400280	Rubber; mixtures of natural and synthetic rubbers of heading no. 4001 and 4002, in primary forms or in plates, sheets or strip
450110	Cork; natural cork, raw or simply prepared
450200	Cork; natural cork, debacked or roughly squared, or in rectangular (including square) blocks, plates, sheets or strip, (including sharp-edged blanks for corks or stoppers)
450310	Cork; corks and stoppers, of natural cork
450390	Cork; articles of natural cork other than corks and stoppers
480610	Paper; vegetable parchment, in rolls or sheets
500200	Silk; raw silk (not thrown)
500400	Silk; yarn (other than yarn spun from silk waste), not put up for retail sale
500600	Silk yarn and yarn spun from silk waste; put up for retail sale, and silk-worm gut
500710	Silk; woven fabrics of noil silk
500720	Silk; woven fabrics, containing 85% or more by weight of silk or of silk waste other than noil silk
500790	Silk; woven fabrics n.e.c. in heading no. 5007
510111	Wool; (not carded or combed), greasy (including fleece-washed wool), shorn
510119	Wool; (other than shorn), greasy (including fleece-washed wool), not carded or combed
510121	Wool; (not carded or combed), degreased, (not carbonised), shorn
510129	Wool; (not carded or combed), degreased, (not carbonised), (other than shorn)
510130	Wool; (not carded or combed), carbonised
510310	Wool and hair; noils of wool or of fine animal hair, including yarn waste, but excluding garnetted stock

510320	Wool and hair; waste of wool or of fine animal hair, including yarn waste, but excluding garnetted stock and noils of wool or of fine animal hair
510400	Wool and hair; garnetted stock of wool or of fine or coarse animal hair
510510	Wool; carded
510521	Wool; wool tops and other combed wool, in fragments
510529	Wool; wool tops and other combed wool, other than in fragments
510610	Yarn; of carded wool, containing 85% or more by weight of wool, not put up for retail sale
510710	Yarn; of combed wool, containing 85% or more by weight of wool, not put up for retail sale
510910	Yarn; of wool or of fine animal hair, containing 85% or more by weight of wool or fine animal hair, put up for retail sale
511111	Fabrics, woven; of carded wool or of carded fine animal hair, containing 85% or more by weight of wool or of fine animal hair, of a weight not exceeding 300g/m2
511119	Fabrics, woven; of carded wool or of carded fine animal hair, containing 85% or more by weight of wool or of fine animal hair, of a weight exceeding 300g/m2
511190	Fabrics, woven; of carded wool or carded fine animal hair, containing less than 85% by weight of wool or fine animal hair, mixed mainly or solely with fibres n.e.c. in heading no. 5111
511211	Fabrics, woven; of combed wool or combed fine animal hair, containing 85% or more by weight of wool or fine animal hair, of a weight not exceeding 200g/m2
511219	Fabrics, woven; of combed wool or combed fine animal hair, containing 85% or more by weight of wool or fine animal hair, of a weight exceeding 200g/m2
511290	Fabrics, woven; of combed wool or combed fine animal hair, containing less than 85% by weight of wool or fine animal hair, mixed mainly or solely with fibres n.e.c. in heading no. 5112
530110	Flax; raw or retted, but not spun
530121	Flax; broken or scutched, but not spun
530129	Flax; hackled or otherwise processed, but not spun
530210	Hemp (cannabis sativa L.); raw or retted, but not spun
530290	Hemp (cannabis sativa L.); processed (other than retted) (but not spun), true hemp tow and waste (including yarn waste and garnetted stock)
530310	Jute and other textile bast fibres; raw or retted, but not spun, (excluding flax, hemp (cannabis sativa L.), and ramie)
530710	Yarn; of jute or of other textile bast fibres, single
530720	Yarn; of jute or of other textile bast fibres, multiple (folded) or cabled
530810	Yarn; of coir
530890	Yarn; of vegetable textile fibres n.e.c. in heading no. 5306, 5307 and 5308
531010	Fabrics, woven; of jute or of other textile bast fibres of heading no. 5303, unbleached
531090	Fabrics, woven; of jute or of other textile bast fibres of heading no. 5303, other than unbleached
531100	Fabrics, woven; of vegetable textile fibres n.e.c. in heading no. 5309 and 5310, woven fabrics of paper yarn
560721	Twine; binder or baler twine, of sisal or other textile fibres of the genus agave
560729	Twine, cordage, ropes, cables; of sisal or other textile fibres of the genus agave (excluding binder or baler twine), whether or not plaited, braided or rubber or plastic impregnated, coated, covered or sheathed
560750	Twine, cordage, ropes, cables; of synthetic fibres other than polyethylene or polypropylene, whether or not plaited, braided or impregnated, coated, covered or sheathed with rubber or plastics
560890	Twine, cordage or rope; knotted netting, of other than man-made textiles
570110	Carpets and other textile floor coverings; knotted, of wool or fine animal hair, whether or not made up
570220	Carpets and other textile floor coverings; woven, (not tufted or flocked), whether or not made up, of coconut fibres (coir)
570231	Carpets and other textile floor coverings; woven, (not tufted or flocked), of wool or fine animal hair, of pile construction, not made up, n.e.c. in item no. 5702.10 or 5702.20
570241	Carpets and other textile floor coverings; woven, (not tufted or flocked), of wool or fine animal hair, of pile construction, made up, n.e.c. in item no. 5702.10 or 5702.20
570291	Carpets and other textile floor coverings; woven, (not tufted or flocked), of wool or fine animal hair, (not of pile construction), made up, n.e.c. in item no. 5702.10 or 5702.20

570310	Carpets and other textile floor coverings; tufted, of wool or fine animal hair, whether or not made up
580110	Fabrics; woven pile, of wool or fine animal hair, other than fabrics of heading no. 5802 or 5806
581099	Embroidery; with visible ground, of textile materials (other than cotton and man-made fibres), in the piece, in strips or in motifs
600129	Fabrics; looped pile fabrics, of textile materials (other than cotton or man-made fibres), knitted or crocheted
600199	Fabrics; pile fabrics (excluding long pile and loop pile), of textile materials (other than cotton or man-made fibres), knitted or crocheted
630120	Blankets (other than electric blankets) and travelling rugs; of wool or fine animal hair
630510	Sacks and bags; of a kind used for the packing of goods, of jute or of other textile bast fibres of heading no. 5303
670100	Skins and other parts of birds with their feathers or down; feathers, parts of feathers, down and articles thereof (other than goods of heading no. 0505 and worked quills and scapes)
680800	Panels, boards, tiles, blocks and the like; of vegetable fibre, of straw, shavings, chips, particles, sawdust or other waste, of wood, agglomerated with cement, plaster or other mineral binders
850780	Electric accumulators; other than lead-acid, nickel-cadmium, nickel-iron, nickel-metal hydride and lithium-ion, including separators, whether or not rectangular (including square)
960310	Brooms and brushes; consisting of twigs or other vegetable materials bound together, with or without handles

Source : Authors from WITS http://wits.worldbank.org/. Classification is H5 (2017).

ANNEX 2: An Environmental Performance Index for the SIDS

This annex presents the "modified" Environmental Performance Index for the SIDS (EPISI) developed for this report. The objective is to modify the EPI index developed for all countries to one that focuses more closely to the environmental priorities and environmental policies of the SIDS than the EPI. As example take fisheries and CO2 emissions. Fisheries is an important concern for SIDS individually and as a group while the consequences of their own CO2 emissions are negligible in terms of their impact on their environmental degradation. Any effort at mitigation on the part of the SIDS will have little effect on sea level rise or on rising temperatures in their habitat.

In the realm of climate change, the incentive for SIDS is on adaptation rather than on mitigation since almost all the benefits from mitigation will go to other countries. 48The EPISI presented here modifies the EPI to align better the performance of SIDS to reflect more closely the environmental concerns and priorities for the SIDS. The EPISI excludes GHG Emissions growth from the EPI and proposes new weights for a more appropriate index of environmental protection suited to their characteristics.

The changes introduced here are simple and transparent to ease discussion. One could argue that other changes should be incorporated to the EPISI to better reflect the environmental challenges and performance of the African SIDS (ASIDS), for example increasing further the weights for fisheries or biodiversity.

Three observations justify these modifications. First, SIDS are mostly geographically remote with small land surface relative to their large Exclusive Economic zones (EEZs). Their remoteness limits the importance of trans-border externalities. For SIDS, spillovers are negligible as they bear fully any environmental damages incurred by their activities. The low availability of land makes it important to preserve forests so as to insure adequate rainfall since deforestation leads to less rainfall as observed by Pierre Poivre in his Règlement Economique of 1769 inspired by his observations of deforestation in Mauritius.49 Third, geographic vulnerabilities to the effects of climate change due to low elevation, susceptibility of extreme weather events, were instrumental in the SIDS separate UN category obtained in the International climate negotiation. 50

Section A2.1 presents the EPI. Section A.2.2 details the two changes brought to the EPI resulting in the EPSI. Section A2.3 compares the rankings and scores for the EPI and EPISI indexes across all SIDS.. Section A2.4 discusses data availability for the ASIDS.

[48] In the case of global warming (and of the associated sea level rise), the benefit derived per unit of effort at mitigating, b_i, is less than the cost per unit, c_i, and all benefits are equally shared among all (i.e. consumption is non-rival), no country will contribute to mitigation. As discussed in annex 3, some benefits are appropriable by those who contribute, and not all countries are symmetric, so one observes voluntary mitigation efforts as reflected in the Paris Agreement of 2015.

[49] See Techera (2019) on Poivre's conservationist approach to the environment enshrined in his legal Ordinance of 1769 protecting trees and hedges.

[50] The Paris Climate Agreement underlines the specific situation of SIDS and has set in stone both the acknowledgment of specific loss and damage due to climate change as well as a lower commitment on CO2 emissions reduction. The alliance of Small Islands (AOSIS) was created ahead of the formal Paris negotiations to represent the common interests of the SIDS.

A2.1 The Environmental Performance Index (EPI)[51]

The EPI is a composite of 32 sub indicators. Figure A2.1 shows the two policy objectives, environment health (HLT) and ecosystem vitality index (ECO), 11 issue categories associated with each objective, and the proxy indices with associated weights in the outer-circle. The resulting country-level 'EPI score' is a geometric aggregation the weights shown in figure A2.1. 52

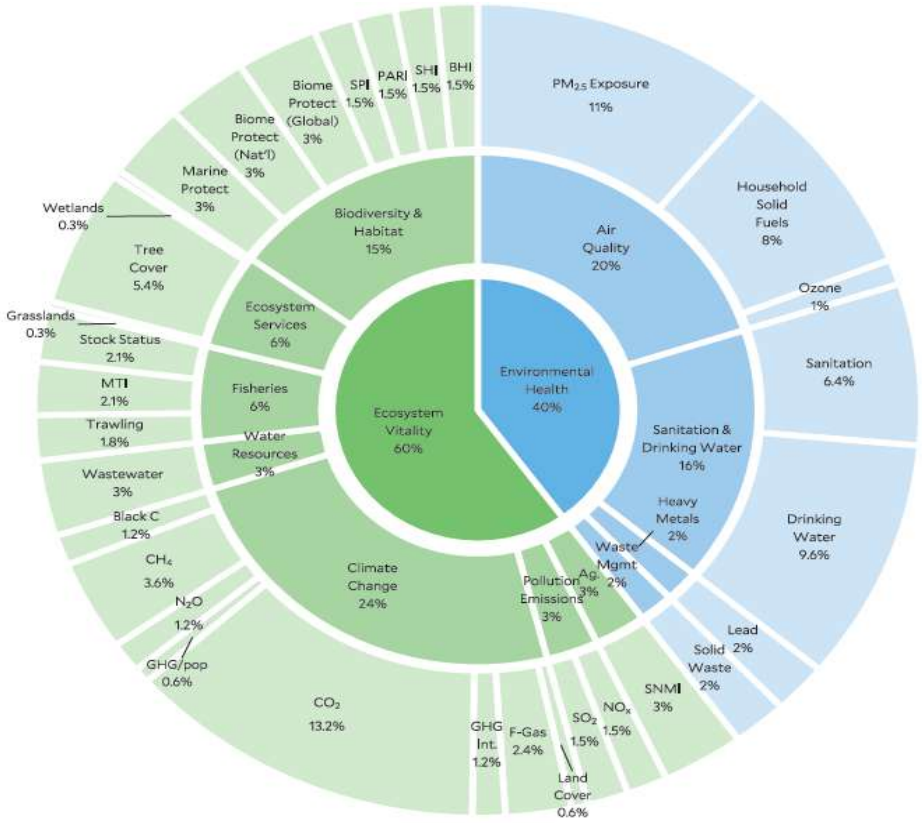
- The Environmental Health (HLT) weighs 40% in the EPI score. HLT measures the global health of the environment relying on indicators that focus on exposure to pollutant for air, water, etc… The ranking are determined according to the threat to the health of the population using the DALY rate which is the age-standardized Disability-Adjusted Life-Years lost per 100,000 persons.
- The Ecosystem Vitality index (ECO) weighs 60% in the EPI score. ECO captures the national level of response to the main environmental pressures that threaten human societies, namely biodiversity loss and climate change as well the overall decrease in the health of ecosystems. The choice of weights is not as clear cut as for HLT.[53]

[51] Refer to EPI 2020 technical appendix for a detailed explanation of the EPI.

[52] The choice of a geometric rather than arithmetic is appropriate here as all factors affecting environment performance are important so that one cannot compensate for a missing element in overall performance as one would if the index were based on arithmetic weights. This choice of weights would also follow from a view that environment quality is produced with a Cobb-Douglas production function where the weights reflect the marginal product of each index. Then the EPI would be the corresponding cost function, common to all countries.

[53] The authors write: "the selection of weights in Ecosystem Vitality is more subjective. We attempt to strike a balance between the relative gravity of each issue category and the quality of the underlying data".

Figure A2-1 : From Policy objectives to the Environmental Performance Index (EPI)



The 2020 EPI Framework. The framework organizes 32 indicators into 11 issue categories and two policy objectives, with weights shown at each level as a percentage of the total score.

Sources: *EPI 2020 Report p.11*

The weights for each of the 11 issue categories with corresponding proxies are shown in table A2.1. Air quality accounts for 50% of the HLT index that, in turn, is captured by the three indicators, $PM_{2.5}$, household solid fuels, and ozone exposure. In table A2.1, the indicators for each issue category add up to 100 %, whereas in figure A2.1, it is the weights in each concentric circle that add up to 100%.

Table A2-1 : Proxy indicators for the EPI: From issues to policy objectives

Environmental Performance Index						
Policy objective	**Issue Category**	**TLA [a]**	**P-Weight[b]**	**Indicator**	**TLA[a]**	**Weight**
Environmental Health HLT (40%)	Air quality	AIR	50%	$PM_{2.5}$ Exposure	PMD	55%
				Household Solid Fuels	HAD	40%
				Ozone Exposure	OZD	5%
	Sanitation & Drinking Water	H2O	40%	Unsafe sanitation	USD	40%
				Unsafe Drinking Water	UWD	60%
	Heavy Metals	HMT	5%	Lead Exposure	PBD	100%
	Waste Management	WMG	5%	Controlled Solid Waste	MSW	100%
Ecosystem Vitality ECO (60%)	Biodiversity & Habitat	BDH	25%	Terrestrial Biome Protection (national)	TBN	20%
				Terrestrial Biome Protection (global)	TBG	20%
				Marine Protected Areas	MPA	20%
				Protected Areas Representativeness Index	PAR	10%
				Species Habitat Index	SHI	10%
				Species Protection Index	SPI	10%
				Biodiversity Habitat Index	BHV	10%
	Ecosystem Services	ECS	10%	Tree Cover Loss	TCL	90%
				Grassland Loss	GRL	5%
				Wetland Loss	WTL	5%
	Fisheries	FSH	10%	Fish Stock Status	FSS	35%
				Marine Trophic Index	RMS	35%
				Fish Caught by Trawling	FGT	30%
	Climate Change	CCH	40%	CO_2 Growth Rate	CDA	55%
				CH_4 Growth Rate	CHA	15%
				F-Gas Growth Rate	FGA	10%
				N_2O Growth Rate	NDA	5%
				Black Carbon Growth Rate	BCA	5%
				CO_2 from Land Cover	LCB	2,5%
				GHG Intensity Trend	GIB	5%
				GHG per Capita	GHP	2,5%
	Pollution Emissions	APE	5%	SO2 Growth Rate	SDA	50%
				Nox Growth Rate	NXA	50%
	Agriculture	AGR	5%	Sustainable Nitrogen Management Index	SNM	100%
	Water Resources	WRS	5%	Wastewater Treatment	WWT	100%

Source: EPI technical appendix 2020

Notes: [a] TLA = Three Letter Abbreviation; [b] weight is displayed within each of the corresponding two-level aggregation Final EPI score is the sum of 40% of the HLT index and 60% of the ECO index.

A.2.2 An environmental Protection index for the SIDS (EPISI)

The EPISI used in the main text of the report makes two changes to the EPI.

First, it excludes GHG emissions from the index. This exclusion is justified by the comments in the introduction and the decision from the Paris Agreement stating that the SIDS should not be expected to make as much effort at mitigation since they are both the main victims and the least contributors to climate change. Thus, the climate change policy objective with 40% weight disappears from the ECO index (see P-weight column in table A.2.1). The other weights in the ECO policy objectives (P-weight column) are scaled up proportionally to add up again to 100%. The weights in the sub-indicators (S-weight column) are scaled proportionately so that their relative weight among the remaining indices in the ECO vitality index remains unchanged.

In the absence of better information, elimination of the indicators of climate change performance altogether without changing the relative importance of the other indicators is the simplest, and arguably most transparent way to reflect the view that SIDS should monitor most closely their efforts at adaptation rather than at mitigation.

Second, the EPISI gives equal weight to the two components, HLT and ECO. Equal weights to ECO and HLT eases interpretation of the scores in each index. Furthermore, for SIDS arguably waste management and exposure heavy metal (lead exposure) could be a particularly important objective in the SIDS with small land areas. Giving equal weight to the HLT and ECO components results in a proportional scaling up of all weights in the ECO components (See last column of table A.1.2).

Table A2-2: Construction of the Environment Performance Index for Small Islands (EPISI)

	EPISI				EPI-EPISI comparison	
					Indicator weights in the final EPI/EPISI score	
Policy objective	**TLA[a]**	**P-Weight[b]**	**TLA**	**S-Weight**	**EPI**	**EPISI[d]**
Environmental Health HLT (50%)	AIR	50%	PMD	55%	11.0%	13.8%
			HAD	40%	8.0%	10.0%
			OZD	5%	1.0%	1.3%
	H2O	40%	USD	40%	6.4%	8.0%
			UWD	60%	9.6%	12.0%
	HMT	5%	PBD	100%	2.0%	2.5%
	WMG	5%	MSW	100%	2.0%	2.5%
Ecosystem Vitality ECO (50%)	BDH	42% (25%)	TBN	20%	3.0%	4.2%
			TBG	20%	3.0%	4.2%
			MPA	20%	3.0%	4.2%
			PAR	10%	1.5%	2.1%
			SHI	10%	1.5%	2.1%
			SPI	10%	1.5%	2.1%
			BHV	10%	1.5%	2.1%
	ECS	17% (10%)	TCL	90%	5.4%	7.7%
			GRL	5%	0.3%	0.4%
			WTL	5%	0.3%	0.4%
	FSH	17% (10%)	FSS	35%	2.1%	3.0%
			RMS	35%	2.1%	3.0%
			FGT	30%	1.8%	2.6%
	CCH	0% (40%)	CDA	0%	13.2%	0.0%
			CHA	0%	3.6%	0.0%
			FGA	0%	2.4%	0.0%
			NDA	0%	1.2%	0.0%
			BCA	0%	1.2%	0.0%
			LCB	0.0%	0.6%	0.0%
			GIB	0%	1.2%	0.0%
			GHP	0.0%	0.6%	0.0%
	APE	8% (5%)	SDA	50%	1.5%	2.0%
			NXA	50%	1.5%	2.0%
	AGR	8% (5%)	SNM	100%	3.0%	4.0%
	WRS	8% (5%)	WWT	100%	3.0%	4.0%

Source: Author's calculation from EPI 2020 data

Notes:

TLA = Three letter Abbreviation of the specified indicator.

[a]. See table A1 for the full description of the corresponding indicator for the three letters abbreviation

[b] Corresponding weight in EPI in parenthesis

*[c]. Weights correspond to those in final score index. In EPI PMD: 11%=55%*50%*40%. In EPISI PMD:13.8%=55%*50%*50%*

[d] Values rounded to first decimal.

A2.3. Comparing EPI and EPISI

Table A2.3 compares the EPISI and EPI indices across all SIDS with African SIDS highlighted. Countries like Singapore (SGP) have a higher score when climate change is omitted while Seychelles (SYC) has a lower score. This reflects the importance of growth in CO2 emissions which has a 55 percent weight in CCH.54 Countries with an urban/industrial development path often associated with a high growth rate, and hence a high growth in CO2 emissions, will tend to have an EPISI score higher than with the EPI which includes the growth in CO2 emissions. On the other hand, SIDS with growth led by tourism (or with low growth like Haiti) are in the opposite situation (EPI higher than EPISI). Except for Sao Tome and Principe, all African SIDS have an EPISI score lower than EPI. Overall, the rankings among the SIDS are not much affected by the exclusion of Climate change from the index (Spearman rank correlation coefficient of 0.91). Seychelles is the star performer under both versions of the index with Mauritius only in the middle of the middle of the fray while the other ASIDS are in the bottom tier.

Table A2-3: Comparing EPISI and EPI for SIDS

rank [a]	Small Islands Developing States	EPI	EPISI		rank [a]	Small Islands Developing States	EPI	EPISI
1	**Seychelles**	**58.2**	**54.4**		**20**	**Sao Tome and Principe**	**37.6**	**39.0**
2	Singapore	58.1	62.6		21	Samoa	37.3	36.5
3	Bahrain	51.0	45.8		22	Guyana	35.9	35.2
4	Antigua and Barbuda	48.5	44.8		23	Maldives	35.6	37.6
5	Cuba	48.4	43.0		24	Timor-Leste	35.3	39.6
6	Saint Vincent and the Grenadines	48.4	41.3		25	Fiji	34.4	33.6
7	Jamaica	48.2	42.5		26	Micronesia (FS of)	33.0	31.2
8	Trinidad and Tobago	47.5	49.0		**27**	**Cabo Verde**	**32.8**	**30.7**
9	Dominican Republic	46.3	43.6		28	Papua New Guinea	32.4	27.6
10	Barbados	45.6	40.4		**29**	**Comoros**	**32.1**	**29.2**
11	Suriname	45.2	43.1		30	Marshall Islands	30.8	26.3
12	**Mauritius**	**45.1**	**42.4**		**31**	**Guinea-Bissau**	**29.1**	**28.4**
13	Tonga	45.1	39.2		32	Vanuatu	28.9	28.0
14	Dominica	44.6	40.9		33	Haiti	27.0	24.0
15	Bahamas	43.5	47.8		34	Solomon Islands	26.7	20.9
16	Saint Lucia	43.1	39.0					
17	Grenada	43.1	37.6					
18	Belize	41.9	43.4					
19	Kiribati	37.7	39.1					

Source: Author's calculation from EPI 2020 data

[a] Ranking from EPI score.

[54] Seychelles succeeded in reducing CO2 emissions by 3% over a ten year period while Singapore saw an increase of 22% of CO2 emissions over the same period (2007-2017).

A2.4 Data Availability for African SIDS

Only a handful of indicators have missing data for the ASIDS. Table A2.4 shows that these are proxy indicators for Ecosystem services (ECS). Since fisheries are important for all ASIDS, we describe briefly each indicator in the fisheries component.

Fish stock status (FSH) 35% of Fisheries Index

This index measures the percentage of a country's total catch that comes from overexploited or collapsed fish stocks. It is based on an assessment of all fish caught within a country's EEZ regardless of the flag flown by the fishing vessel.

Marine Trophic Index (MTI) 35% of Fisheries Index

This index describes the health of a country's fishing stock based on expected catch and changes over time. A lower score indicates that species higher in the food chain have been nearly or fully fished out, and the fishing sector has shifted to target fish at lower trophic levels.

Fish Caught by Trawling (FGT) 30% of Fisheries Index

This Index measures the share of a country's fish caught by bottom or pelagic trawling, a method that is considered harmful to ecosystems has it does not differentiate the species caught and that can alter or destroy habitat on marine floor. The data is only available for about half the coastal countries; for 72 coastal countries, including the six African SIDS, this index is not known.

Table A2-4: Missing data for EPI and Sub indexes (African SIDS only)

Policy objective	Issue Category	P-Weight	TLA	Number of Missing values in African SIDS	Country with missing value
Environmental Health HLT	Air quality	50%	PMD	0	
			HAD	0	
			OZD	0	
	Sanitation & Drinking Water	40%	USD	0	
			UWD	0	
	Heavy Metals	5%	PBD	0	
	Waste Management	5%	MSW	0	
Ecosystem Vitality ECO	Biodiversity & Habitat	25%	TBN	0	
			TBG	0	
			MPA	0	
			PAR	0	
			SHI	4	
			SPI	5	
			BHV	0	
	Ecosystem Services	10%	TCL	1	Cabo Verde
			GRL	1	Sao Tome
			WTL	2	Seychelles, Comoros
	Fisheries	10%	FSS	0	
			RMS	0	
			FGT	6	all
	Climate Change	40%	CDA		
			CHA		
			FGA		
			NDA		
			BCA	0	
			LCB	2	Sao Tome, Seychelles
			GIB		
			GHP		
	Pollution Emissions	5%	SDA	0	
			NXA	0	
	Agriculture	5%	SNM	0	
	Water Ressources	5%	WWT	0	

Source: Author's from data available in EPI 2020 report

Annex 3: Regional Public Goods in the AU2063 Agenda

A public good is a good that is both non excludable (it is not possible to exclude one agent from using it) and non-rivalrous (usage by one agent does not prevent another one to use it). In practice, most public goods are considered "impure public goods" as they fall short on at least one condition. The economic literature on pure and impure public goods is abundant, and the links with environment and regional integration issues have been explored extensively.

This annex aims to use this theoretical prism to assess the AU 2063 Agenda that African countries have agreed on, gathered in 15 flagships initiatives.

A3. 1 Public goods and regional integration

Regional integration has always been about more than market access. Cooperation has always been important, if only because of the need for rail, road and other means of communication. Cooperation is now attracting more attention because increasing physical linkages across the African continent have spread environmental externalities beyond national jurisdictions. Indeed, regional integration arrangements are now referred to in terms of "Regional Cooperation and Integration" (RCI) (see World Bank, 2019). In Africa, this growing interdependence is shaped by two factors (see Alesina, Easterly and Matuszeski (2011):

- the fragmented political landscape in Africa of many small countries with strong ethnic partitioning (mean share of an average country's population that comes from partitioned ethnicities is 47 percent while for non-African countries it is 18.2 percent) that mechanically increase spillovers and interdependencies[55];
- A fragmented geography: artificial borders (80 per cent, the highest for any continent) of borders are straight lines and the largest number of countries per continent"

The fragmented geography intensifies transborder externalities/spillovers. Often, these externalities do not correspond to the geography of REC membership, a justification for a continental AU agenda as reflected in the AU2063 flagships. All these projects involve the supply of Regional Public Goods (RPGs), many at the continental level (see list in table A3.2).[56]

In this setting, the benefits of common policies are high because of widespread cross-border physical spillovers (i.e. hard infrastructure like highways, cables for internet connections), because of policy spillovers (air transport, corridors, movement of people, protection of biodiversity, of maritime environments), but also because of accelerated degradation their environments (biodiversity, forests, marine management). The costs are also high because policy preference differences across member

[55] Michalopoulos and Papaiaonnou (2016) estimate that conflict intensity is approximately 40% higher, the conflict duration 50%-60% higher, and the likelihood of conflict 8% higher in the homelands of partitioned groups

[56] An RPG is any good, service, system of rules, or policy regime that is public in nature (in the sense that it would be under-provided and often over-used if governed by the market alone). RPGs are transnational public goods that are the result of collective action generate shared benefits for the participating countries. National Public Goods (NPGs) are provided by the State that is invested with the coercive powers to raise taxes to finance their provision. For AFSIDS, terrestrial management is an NPG since transborder externalities are negligible. Coastal management is also a NPG.

countries are important. Common decision-making internalizes the spillovers but moves the common policy away from its preferred national policy (i.e. a loss of national sovereignty).

The distinctive feature of RPGs is that, unlike national Public Goods, no single body with the authority of a State exists to ensure the supply of the good (like the police or national defense). In other words, the constraint of sovereignty implies that RPGs must be self-enforcing.

Provision of RPGs requires collective action and some subsidiarity.

Collective action by AU members is necessary to internalize fully the spillover effects across the region. These benefits are greater than those that individual governments acting alone could generate.[57] This calls for regional governance, in which a regional body pools sovereignty over member states to deliver RPGs. This would require that States are willing to cede significant amount of authority to the body which has only occurred to a significant extent in the European Union. This is why most regional cooperation is intergovernmental.

In Africa, each state retains veto power and the regional organizations (ROs) like those listed in tables 3.1 and 5.2 function as secretariats that coordinate and/or harmonize policies, sets standards, or provides services. As noted in section 3, these organizations have no authority. This creates problems for the self-enforcement of AfCFTA since a functioning dispute mechanism like the one at the WTO is necessary (though not necessarily sufficient) for punishing non-compliant members.

Subsidiarity. The principle of subsidiarity calls for addressing these externalities at the regional level. Subsidiarity is about deciding which level of governance or what size of region are best suited to provide the Regional Public Good (RPG).[58] From an economic perspective, the scope of the established regional institutions should match the region benefitting from the spillover and the number of countries should be as small as possible to reduce transaction costs.

In practice, it is difficult to apply the principle of subsidiarity because the design of the institution's jurisdiction should take into account the supporting and detracting factors (fragmented geographical and political landscape).

[57] As for all public goods, the under-provision of RPGs is related to the fact that non-payers cannot be excluded from benefitting from the provision of RPGs. In addition, when they are non-rival (meaning that usage by any party does not exclude usage by another as in the case of infrastructure so long as it is not congested), then efficiency calls for extending usage to all. If, in addition, they are non-exclusive (i.e. they are pure RPGs), countries will not supply them. This is why 'club goods' like telecommunications have a good prognosis of adequate supply.

[58] Governance (implementing shared standards and policy regimes) is the intermediate public good necessary to generate the desired RPGs. RPGs across RECs include: knowledge (education and scientific research); Construction and operation of cross-border infrastructure; environment; health, peace and security.

Table A3-1 Supporting and Detracting Factors for Regional Subsidiarity

Supporting factors	Detracting Factors
Raises efficiency by	**Economies of**
matching marginal gains with marginal provision costs. curtailing tax spillovers to non-beneficiaries.	scale favor larger jurisdictions than RPG's spillover range. Scope support providing two or more RPGs whose spillover range do not coincide learning may require oversized jurisdictions to augment RPG provision
Few participants	**Costs**
Limited number of participants favorable to building trust necessary for institution building. Limited number makes punishments more credible as they are less severe for punishers. Foster repeated interactions that limit transaction costs by reducing information asymmetries	Accommodating strong heterogeneity of interests across Africa increases costs of tailoring jurisdictions to each RPG owing to proliferation of jurisdictions. Provisioning (known as 'aggregator technologies') may favor pooling efforts (e.g. threshold for malaria elimination) or reaching beyond the range of benefits to obtain support (e.g. weakest link)

Source: Adapted from Sandler (2006), table 4.

The left-hand side of table A3.1 lists supporting factors for applying this principle while the right-hand column warns of detracting factors. Deciding on the appropriate institutional arrangement further extends beyond the factors listed in table A3.1. First, it is difficult to estimate the range of benefits (if benefits are small why bother?). Second, factors like the number of participants and proximities in culture and geography can facilitate the supply of RPGs while partitioned ethnic groups across border will detract supply.

The following aspects jointly determine the adequacy of the supply of the flagship projects listed in table A3.2:

- non-rivalry of benefits (low rivalry raises the prognosis that supply will be adequate);
- Excludability of non-payers (e.g. 'club goods' like tolls on highways) raise the prognosis of the supply;
- Provisioning (referred to as 'aggregation technology') determine how individual contributions translate into an overall provision level).
- Small group of participants and/or availability of a hegemon who will take the lead (and internalize most benefits)
- External (beyond country-level) financial support (regional and multilateral financial institutions)

In environments with weak governance, provisions of RPGs fall short of levels that would maximize the aggregate payoffs of the continent. Moreover, provisioning levels will be low for a pure PG since free-riders cannot be excluded.[59]

[59] Most flagships are impure public goods,

A3.2 Assessing AU2063 Flagships

Many flagships in table A3.2 are club goods so non-providers can, in principle, be excluded from benefits, albeit at a cost. This raises the prognosis for their supply. Note, however, that for all PGs, efficiency calls for all beneficiaries to be included in usage. In a situation of uncertainty about the magnitude of gains with many participants, there is an added issue of trust. With many participants cash-strapped, financing will have to be either by regional or multilateral institutions unless hegemons become providers.

For many projects on the flagship list, the RPG sits between two stools: the provision of NPGs where prognosis is promising if governance is good because benefits are excludable, and GPGs where prognosis for supply is very weak.[60]

Table A3-2 RPG aspects of AU2063 Flagships

Agenda 2063 Item		**Type of Public Good**	**Aggregation Technology**	**Comments**
Column		**1**	**2**	**3**
1	Integrated High Speed Train Network	club good	Weighted sum	Overall benefits depends on the number and size of participating countries. Possibilty of excluding non-payers increases prognosis of adequate supply. Operation of network is weaker link
2	African Commodity strategy	Rivalry	Better shot	Development strategy exists but prospects for success are low because of differing interests (rivalry over benefits—e.g. how to split gains on cocoa trade policy between CIV and Ghana).
3	Continental Free Trade Area (AfCFTA)	Club good	Weighted sum	Non-participants are excluded. A (or a handful) of leaders can set an ambitious agenda to realize greater benefits. Incentives to supply low because many benefits are not excludable. Enforcement requires a functioning dispute settlement mechanism which is weakest link.
4	African Passport and free movement of people	Club good	Summation	Benefits proportional to number and size of participants. Good prognosis since easy to exclude non-participants.
5	Silencing the guns	Pure PG	Better shot	The Africa Standing Force (ASF) is organized around regions, following the principle of subsidiarity.
6	Grand Inga Dam Project	Club good	Best shot	Supply is best shot, but commercial viability is a threshold good, requiring a sufficient market for the foreseen energy. Subsequent water management etc is weakest link. Dredging and bank management are summation.
7	Single Air-Transport Network	Club good	Weighted sum	Benefits proportional to number and size of participants. Weaker link constraints in regulatory harmonisation

[60] In some cases, like a vaccine, rich nations have incentives to supply the GPG. The prognosis for success in arresting and reverting ozone depletion was helped by rich countries being most severely affected, and much more favorable 'simple' benefit-cost ratio estimates than for global warming. See Barrett (1999).

8	Annual African Economic Forum	Pure PG	Better shot	Limited actual cooperation required to set this up, though accrued benefits will depend on attendance.
9	Continental Financial Institutions	Pure PG	Better shot/ threshold	Ratification and set up by states make this a threshold RPG. Questions of actual use, funding etc may be less public than private goods since excludable and rivalrous.
10	Pan-African E-Network	Pure PG	Better shot	Better shot in terms of technologies and materials for online learning. Could be a Public/Private Partnership (private sector benefitting from human capital).
11	African Outer Space Programme	Science cooperation	Best shot	Both the programme to coordinate country efforts and the technology aspects envisaged are best shot like the Apollo moon project.
12	Pan-African Virtual University	Club good	Better shot	Better shot. Non-participants can be excluded.
13	Cyber-Security	Pure PG	Best shot/threshold	Strategy is best shot, but ratification process is a threshold RPG, while its impact is a weighted sum with more digitally connected countries being more necessary implementers than less-connected economies.
14	Great African Museum	Pure PG	Best shot	Sufficient to have one leader.
15	Encyclopedia Africana	Pure PG	Better shot	Success possible with a limited number of participants.

Source: Adapted and extended from Byers et al. (2021, table 6)

Overall, the prognosis of adequate provision of the AU2063 flagships in table A3.2 is bleak. Uncertainty about expected benefits, the large number of countries, the difficulties in preventing free-riding (summation and weighted sum technologies in col. 3), and the financial constraints for many countries require financing beyond the country level.

Remarkably, and worryingly for the SIDS, except for the Inga dam project (project 6), the environment is entirely missing from the list. Arguably, only projects 4 and 7 have any direct interests to the concerns of the SIDS (as well as AfCFTA, on the reporting of NTMs in view of some harmonization or mutual recognition in standards).

Fisheries management is by far, the missing flagship on the AU2063. While AFSIDS all belong to regional fisheries organizations, there is a case to be made for collective action at the continental level to preserve fisheries across African EEZs. Using the AU platform, African countries could plead sustainable management of fisheries.

Annex 4 Statistical complement

Table A4-1 Environmental Dashboard Extended

ENVIRONMENTAL DASHBOARD extended version part 1													
Category of indexes		**Vulnerability to Climate Change induced effect**							**Health of the ecosystems by estimating the risk of extinction for species and the risk to human life**				
Sub-indexes		Physical Vulnerability to Climate Change Index (PVCCI)		Flooding due to sea level rising	Increased aridity	Rainfall	Temperature	Storms	Red List Index			Health of the ecosystem (HLT)	
		score	rank	score	score	score	score	score	score	rank	10 yr average	score	rank
Column		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Guinea-Bissau		51.2	88	7.9	50.4	59.0	83.8	3.1	96.0	38	0.0	15.1	174
Comoros		52.6	109	17.7	41.0	79.9	73.8	0.6	75.9	155	-0.1	27.3	131
Sao Tome and Principe		46.9	49	1.0	38.8	62.0	75.3	0.0	78.5	147	0.0	28.7	124
Cabo Verde		52.6	108	11.7	34.9	65.1	78.2	46.3	89.1	80	0.0	30.4	119
Mauritius		63.8	176	10.2	50.3	60.1	75.2	91.8	38.9	192	-0.2	60.0	41
Seychelles		55.3	119	43.8	38.8	64.5	82.2	30.4	66.2	186	0.0	50.8	59
Unweighted Averages	African SIDS	57.22		21.90	41.33	63.23	78.53	56.17	74.10		-0.03	47.07	
	All SIDS	56.42		26.15	39.04	62.59	79.79	42.12	70.71		-0.05	40.56	
	SSA	54.68		2.48	55.28	70.76	78.28	7.39	73.56		-0.05	22.73	
	Africa	55.49		2.41	58.59	72.20	77.40	6.64	87.14		-0.01	24.18	

ENVIRONMENTAL DASHBOARD extended version part 2

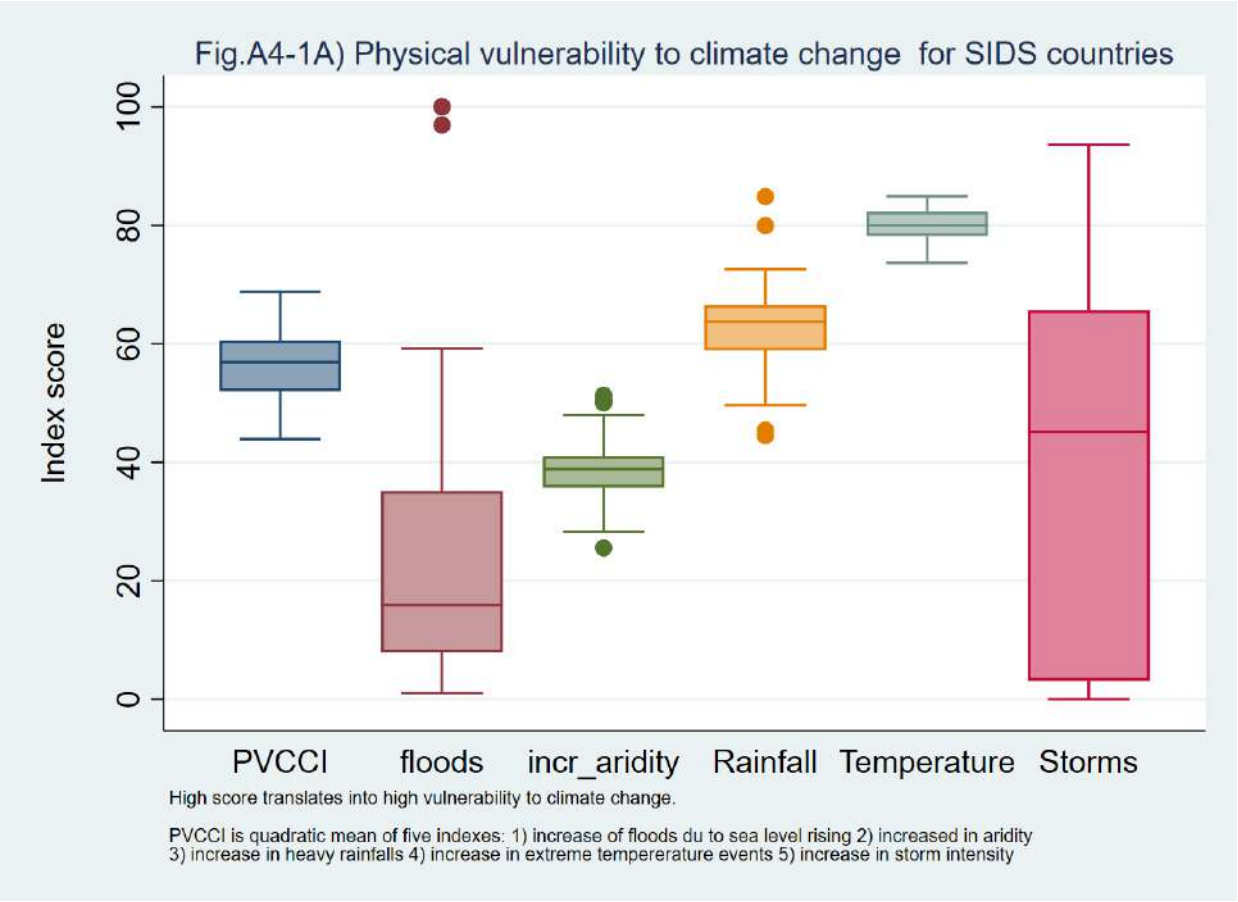
Category of indexes		Preparedness to selected environmental issues								Overall environmental performance				
Sub-indexes		Ecosystem Vitality (ECO)		Climate Change index (CCI)	GHG emissions per capita	Biodiversity and Habitat (BDH)	Ecosystem services (ECS)		Fisheries (FSH)	Environmental Performance Index (EPI)			EPI for Small Islands (EPISI)	
		score	rank	score	$teqCO_2$/cap	score	score	rank	score	score	rank	rank in Africa	score	rank
Column		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Guinea-Bissau		38.4	133	33.6	2.1	72.2	22.1	152	5.2	29.1	161.0	14.0	28.4	29
Comoros		35.3	149	41.7	0.8	36.3	35.7	83	18.6	32.1	148.0	28.0	29.2	28
Sao Tome and Principe		43.6	100	35.0	0.9	58.4	100.0	1	17.2	37.6	119.0	4.0	39.0	19
Cabo Verde		34.5	155	39.5	1.3	14.3	93.7	14	20.7	32.8	144.0	39.0	30.7	27
Mauritius		35.3	147	51.0	5.2	19.3	49.5	43	15.0	45.1	82.0	27.0	42.4	12
Seychelles		63.1	24	70.7	7.4	78.9	84.3	19	18.1	58.2	38.0	1.0	54.4	2
Unweighted Averages	**African SIDS**	44.30		53.73	2.70	37.50	64.22		17.93	45.37			42,51	
	All SIDS	40.54		25.16	5.05	43.25	47.10		46.26	40.54			38,46	
	SSA	40.19		12.29	4.09	58.59	40.83		33.09	33.20				
	Africa	40.72		12.37	4.07	57.56	40.94		39.40	34.10				

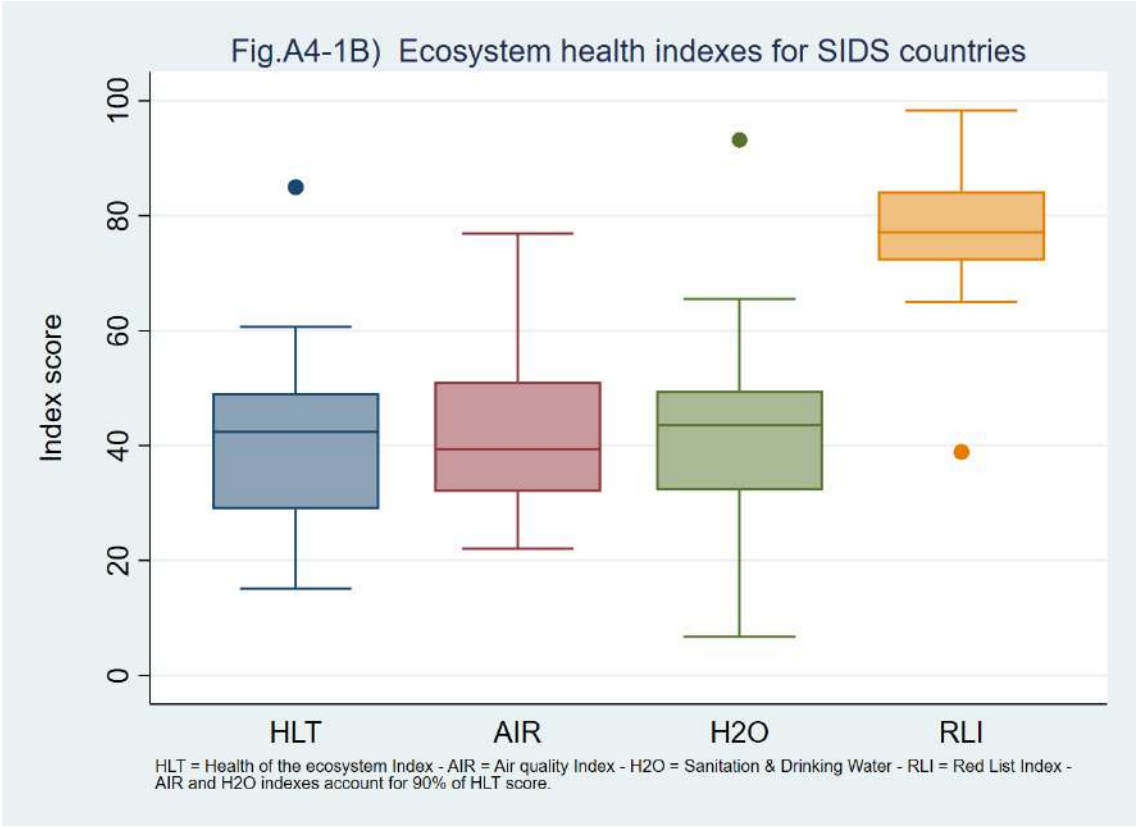
Sources: Authors Calculations Sources: cols. (1)-(7), (11)-(12) technical Appendix for EPI2020 report, The Physical Vulnerability to Climate Change Index: Feindouno, Guillaumont, Simonet (2020), IUCN 2020. The IUCN Red List of Threatened Species (Version 2020).

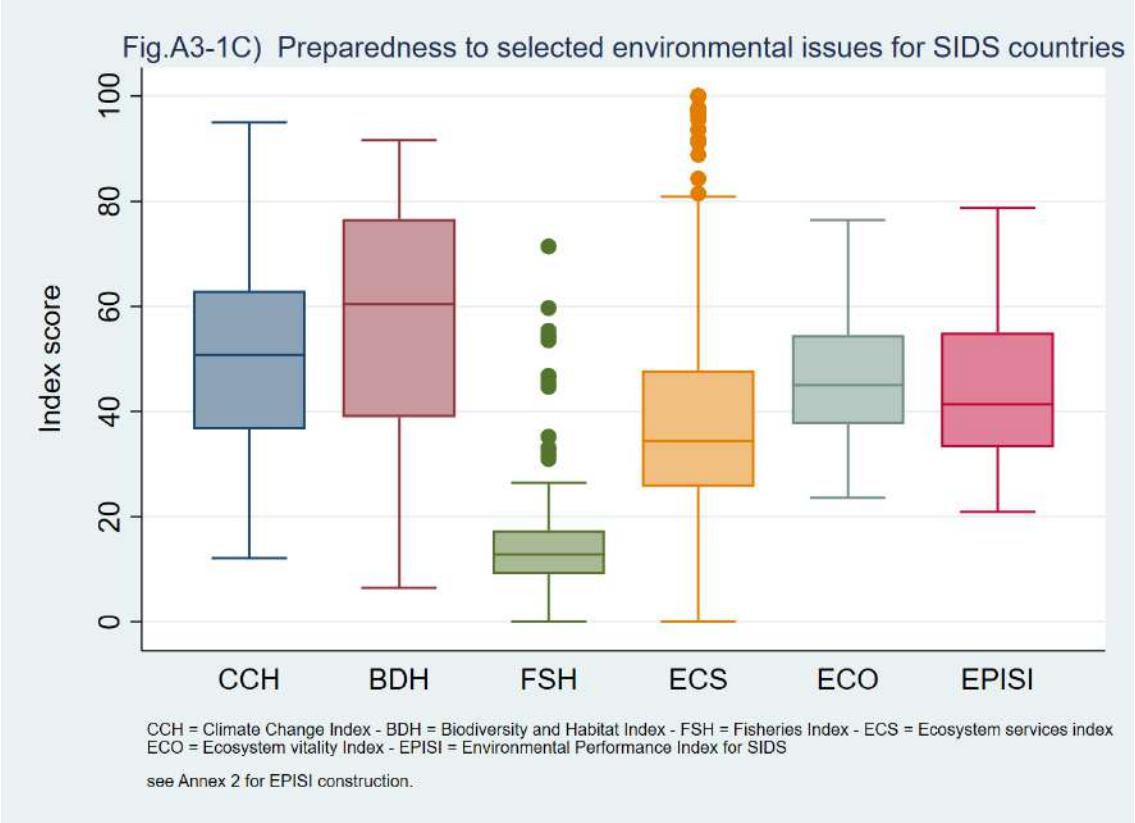
Average :	46 countries for SUB-AF for EPI
	47 countries for SUB-AF for PVCCI
	built in for SIDS and SSA for RLI
	34 countries for SIDS for EPISI
	33 countries for SIDS for PVCCI
ranking	180 countries for EPI and all indexes - except FSH where 135
	191 countries for PVCCI
	192 countries for RLI

See section 2.3 and Annex A2 for details about EPI and EPI sub-indexes

Figure A4-1 A, B, C Boxplots of Physical vulnerability to climate change, ecosystems health indexes and preparedness to selected environmental issues for SIDS countries.

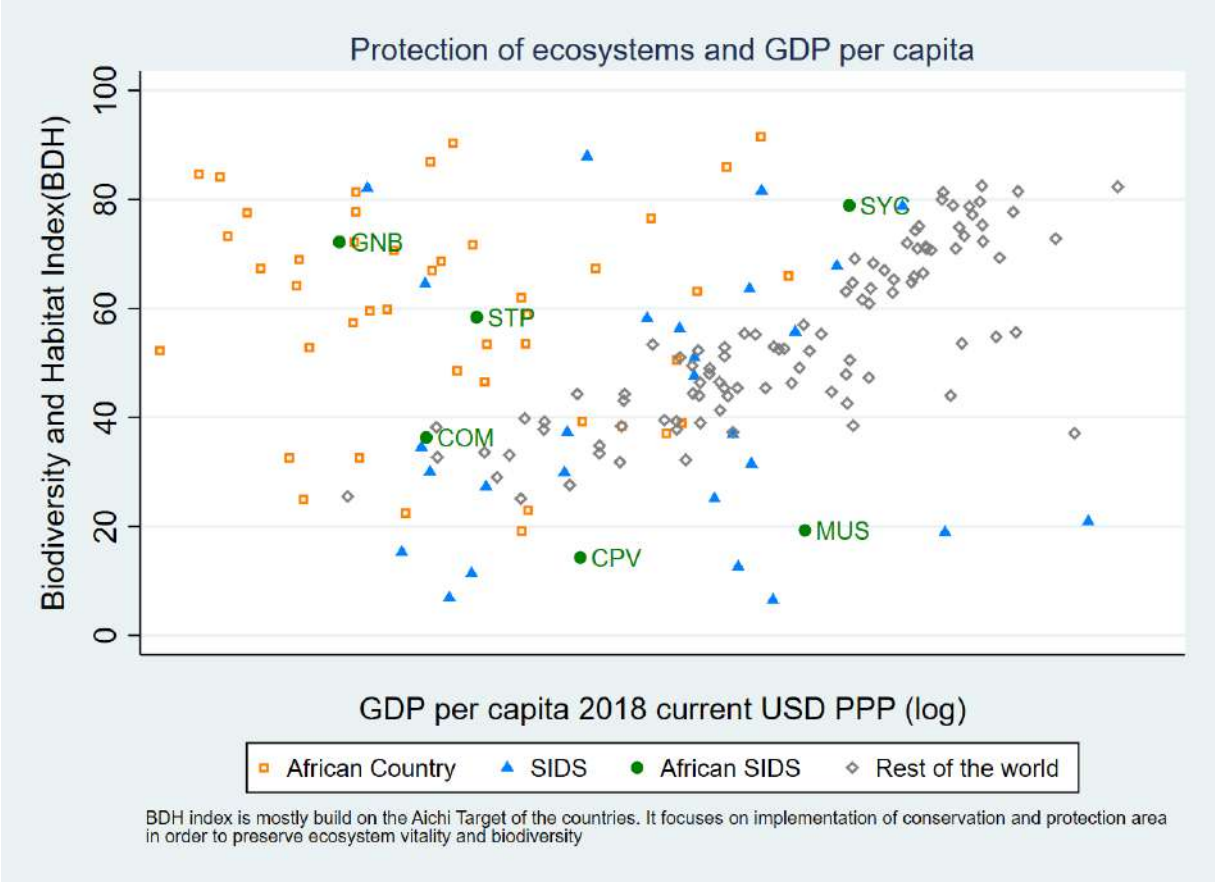






Sources: Authors Calculations: Feindouno, Guillaumont, Simonet (2020); The IUCN Red List of Threatened Species; EPI 2020 report.

Figure A4-2 BDH vs gdpcap.



Sources: Authors' calculations from EPI Index. A high score in BDH Index means a high level of biodiversity conservation.

Table A4-2 Average applied MFN Tariffs: All Goods vs. Environmental Goods (APEC and EPP lists)

African SIDS			
	MFN Tariff Average for All Goods	MFN Tariff Average for Environmental Goods (APEC list)	MFN Tariff Average for Environmental Goods (EPP list)
Cabo Verde	10.3%	0.4%	9.9%
Comoros	15.4%	19.6%	16.1%
Guinea-Bissau	12.0%	5.6%	11.8%
Mauritius	1.1%	0.0%	0.2%
Sao Tome and Principe	10.2%	9.5%	11.4%
Seychelles	3.2%	0.0%	1.6%
Simple average by group (# of countries in group in parenthesis)			
African SIDS (6)	8.7%	5.8%	8.5%
All SIDS (34)	10.3%	6.7%	8.7%
All African countries (54)	12.5%	5.7%	11.7%
All SSA	12.3%	5.8%	11.8%
CARICOM (9)	12.4%	8.0%	9.7%

Sources: Author's calculation from WITS database.

Notes: Averages are simple arithmetic means from HS6 level (5408 tariff lines)

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"Sur quoi la fondera-t-il l'économie du monde qu'il veut gouverner? Sera-ce sur le caprice de chaque particulier? Quelle confusion! Sera-ce sur la justice? Il l'ignore."

Pascal

FERDI

Created in 2003 , the **Fondation pour les études et recherches sur le développement international** aims to promote a fuller understanding of international economic development and the factors that influence it.

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