

WP/21/62

IMF Working Paper

Meeting the Sustainable Development Goals in Small Developing States with Climate Vulnerabilities: Cost and Financing

by Johanna Tiedemann, Veronica Piatkov, Dinar Prihardini, Juan Carlos Benitez,
and Aleksandra Zdzienicka

IMF Working Papers describe research in progress by the author(s) and are published to elicit comments and to encourage debate. The views expressed in IMF Working Papers are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

I N T E R N A T I O N A L M O N E T A R Y F U N D

IMF Working Paper

Fiscal Affairs Department

Meeting the Sustainable Development Goals in Small Developing States with Climate Vulnerabilities: Cost and Financing

Prepared by Johanna Tiedemann, Veronica Piatkov, Dinar Prihardini,
Juan Carlos Benitez, and Aleksandra Zdzienicka¹

Authorized for distribution by James Daniel

March 2021

IMF Working Papers describe research in progress by the author(s) and are published to elicit comments and to encourage debate. The views expressed in IMF Working Papers are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

Abstract

Small Developing States (SDS) face substantial challenges in achieving sustainable development. Many of these challenges relate to the small size and limited diversification of their economies. SDS are also among the most vulnerable countries to the impact of climate change and natural disasters. Meeting SDS sustainable development goals goes hand-in-hand with building their climate resilience. But the additional costs to meet development and resilience objectives are substantial and difficult to finance. This work adapts the IMF SDG Costing methodology to capture the unique characteristics and challenges of climate-vulnerable SDS. It also zooms into financing options, estimating domestic tax potential and discussing the possibility of accessing 'climate funds.'

JEL Classification Numbers: F63, I15, I25, O18, O23.

Keywords: Sustainable Development, Climate Resilience, Small Developing States.

Author's E-Mail Address: j.tiedemann.1@research.gla.ac.uk, VPiatkov@imf.org, DPrihardni@imf.org, JBenitez@imf.org, AZdzienicka@imf.org,

¹ This work benefited greatly from discussions with experts and economists from various institutions and academia acknowledged in Section VII. Johanna Tiedemann conducted this work during the IMF Fund Internship Program.

LIST OF ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
AEs	Advanced Economies
AfDB	African Development Bank
AR5	the IPCC 5th Assessment Report
CAT-DDO	Catastrophe Deferred Drawdown Option
CCPA	Climate Change Policy Assessment
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CERC	Contingent Emergency Response
CIF	Climate Investment Funds
COVID-19	Coronavirus disease
CTF	Clean Technology Fund
CRI	Global Climate Risk
DFID	United Kingdom Department for International Development
EMs	Emerging Markets
EU	European Union
ESR	Institute of Environmental Science and Research Limited
FAD	Fiscal Affairs Department
FSM	Federated States of Micronesia
GCCA+	Global Climate Change Alliance
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFDRR	Global Facility for Disaster Risk Reduction and Recovery
GHG	Greenhouse Gas
HDI	Human Development Index
HIV	Human Immunodeficiency virus
IADB	Inter-American Development Bank
IFC	International Finance Corporation
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
kW (h)	Kilowatt (-hour)
LIDCs	Low-Income Developing Countries
ln	Natural logarithm
MDB	Multilateral Development Bank
MENA	Middle East North Africa
NDC	Nationally Determined Contribution
ND-GAIN	Notre Dame, Global Adaptation Initiative
OECD	Organisation for Economic Co-operation and Development
PCRIC	Pacific Catastrophe Insurance Company
PCRAFI	Pacific Catastrophe Insurance Company
%	percent
ppt	percentage point

PFM	Public Financial Management
RAI	Rural Access Index
RAT	Revenue Administration Tool
RCP	Representative Concentration Pathways
RE	Renewable Energy
SDG	Sustainable Development Goals
SDS	Small Developing States
SISRI	Small Island States Resilience Initiative
SFA	Stochastic Frontier Analysis
SLR	Sea-level rise
SROCC	Special Report on the Ocean and Cryosphere in a Changing Climate
SSA	Sub-Saharan Africa
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNSTAT	United Nations Statistics Division
US\$	United States Dollar
VNR	Voluntary National Review
WASH	Water Sanitation and Hygiene
WDI	World Development Indicators
WEO	World Economic Outlook
WHO	World Health Organization

TABLE OF CONTENTS	PAGE
I. INTRODUCTION	7
II. SDS GROWTH-CLIMATE NEXUS AND PROGRESS TOWARD SUSTAINABLE DEVELOPMENT	13
III. COSTING SDGS IN CLIMATE VULNERABLE SDS: APPROACH	16
A. Physical Infrastructure (Roads, Energy/Electricity and WASH)	16
B. Social Development Sectors (Health, Education)	21
IV. COST OF MEETING DEVELOPMENT AND CLIMATE GOALS	23
A. Aggregate Results	23
B. Spending Composition	27
V. FINANCING FOR CLIMATE AND DEVELOPMENT	31
VI. CONCLUSIONS	38
VII. ACKNOWLEDGEMENTS	40
BOXES	
1: COVID-19 Crisis and Progress toward Sustainable Development in SDS	10
2: Estimating Future Climate Change Impacts	18
3: Small but Important Role of Energy Taxation	33
FIGURES	
1. Climate Vulnerabilities and Policy and Institutional Readiness	13
2. SDS: Progress in Meeting Selected SDG Targets	15
3. SDS with Climate Vulnerabilities: Additional Cost to Meet Five SDGs in 2030	24
4. SDS with Climate Vulnerabilities: Additional Cost to Meet SDGs in 2030	25
5. SDS with Climate Vulnerabilities: Additional Cost to Meet SDGs in 2030	26
6. SDS: Cost of Climate Resilience to Meet SDGs in Road Infrastructure	29
7. Current and Potential Tax Revenue for SDS	32
8. SDS: Impact of the COVID-19 Crisis on General Government Debt	38
TABLES	
1. SDS 'A': Additional Cost to Meet Energy Targets in 2030	20
2. SDS 'B': Change in Health Inputs to Reach SDG Health Outcomes by 2030	23
3. SDS: Change in Health Inputs to Reach Health Outcomes of Peers	30
4. SDS: Change in Education Inputs to Reach Education Outcome of Peers	31

ANNEXES

1. Country Sample _____	41
2. An indication of National Hazard Categories and Intensities in SDS _____	42
3. Selected Data Sources _____	43
4. Summary Statistics _____	44
5. Tax Capacity Estimates using Stochastic Frontier Analysis (SFA) _____	45
6. Examples of 'Climate Funds' _____	49

APPENDIX TABLES

1. Summary Statistics _____	46
2. Stochastic Frontier Analysis Coefficients _____	47

REFERENCES _____	50
-------------------------	---------------------------