



United Nations
Economic Commission for Africa



Expert Group Meeting

The Blue Economy valuation approaches: Towards a better Knowledge of the Blue Potential in Africa.

23 November 2020

www.uneca.org/ea-icsoe24



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#ICSOE2020



Burundi Comoros D.R Congo Djibouti Eritrea Ethiopia Kenya Madagascar Rwanda Seychelles Somalia South Sudan Tanzania Uganda

BLUE ECONOMY SATELLITE ACCOUNTS

A COMPARATIVE ANALYSIS OF THE BLUE ECONOMY IN **SEYCHELLES, SAINT LUCIA** AND **THE BAHAMAS**

RAQUEL FREDERICK, UNITED NATIONS ECONOMIC COMMISSION FOR AFRICA – OFFICE FOR EASTERN AFRICA
DINDIAL RAMRATTAN, CARIBBEAN DEVELOPMENT BANK

Presentation of draft working paper at the 24th Intergovernmental Committee of Senior Officials and Experts for UNECA Eastern Africa



Burundi Comoros D.R Congo Djibouti Eritrea Ethiopia Kenya Madagascar Rwanda Seychelles Somalia South Sudan Tanzania Uganda

PRESENTATION **OUTLINE**

Introduction to the Blue Economy and our work



*Introduction à l'économie
bleue et à notre travail*

Satellite Accounts



Comptes satellites

Blue Economy Trends



*Tendances de l'économie
bleue*

Next Steps



Prochaines étapes

Quick Question!

Go to the Poll tab now to answer | Allez au sondage maintenant pour répondre

What is the Blue Economy for you?

- A. Ocean-based industries only
- B. Marine-protected areas
- C. Beach tourism
- D. Transboundary water management
- E. SDG14: Life Below Water
- F. I think of the Blue Economy differently

Qu'est-ce que l'économie bleue pour vous?

- A. Industries océaniques seulement
- B. Aires marines protégées
- C. Tourisme de plage
- D. Gestion des eaux transfrontalières
- E. ODD14: Vie Aquatique
- F. Je pense différemment à l'économie bleue

Defining the Blue Economy

The **Blue Economy** refers to economic activity occurring in and around aquatic spaces, including oceans, seas, coasts, rivers, lakes, and underground water.

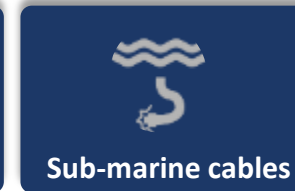
It promotes:

Economic Growth

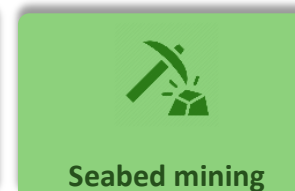
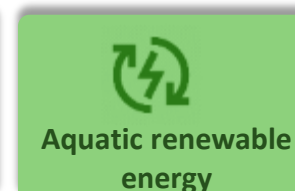
Social Inclusion

Environmental Sustainability

Established Industries



Emerging Industries



Cross-Cutting Initiatives



Source: UNECA, CDB

Quick Question!

Go to the Poll tab now to answer | Allez au sondage maintenant pour répondre

How large do you think the global Blue Economy is annually?

- A. USD 500 billion
- B. Over USD 2.5 trillion
- C. Less than USD 250,000
- D. Over USD 600 trillion
- E. I have no idea

Quelle est selon vous la taille mondiale de l'économie bleue chaque année?

- A. 500 milliards USD
- B. Plus de 2,5 billions USD
- C. Moins de 250 000 USD
- D. Plus de 600 billions USD
- E. Je n'ai aucune idée

Measuring the Blue Economy: Some Approximations

In 2010, ocean-based industries contributed:

 USD **1.5 trillion**

 **31 million jobs**



In 2030, the expected size of the ocean economy:

 USD **3 trillion**

 **40 million jobs**

Source: OECD

Note: Excludes contribution from inland water bodies

In 2017, the estimated marine economic output of **Eastern Africa** coastal and island states was:

 USD **11 billion**

In 2012, the ocean economy of **Caribbean** island and mainland states and territories was:

 USD **406 billion**

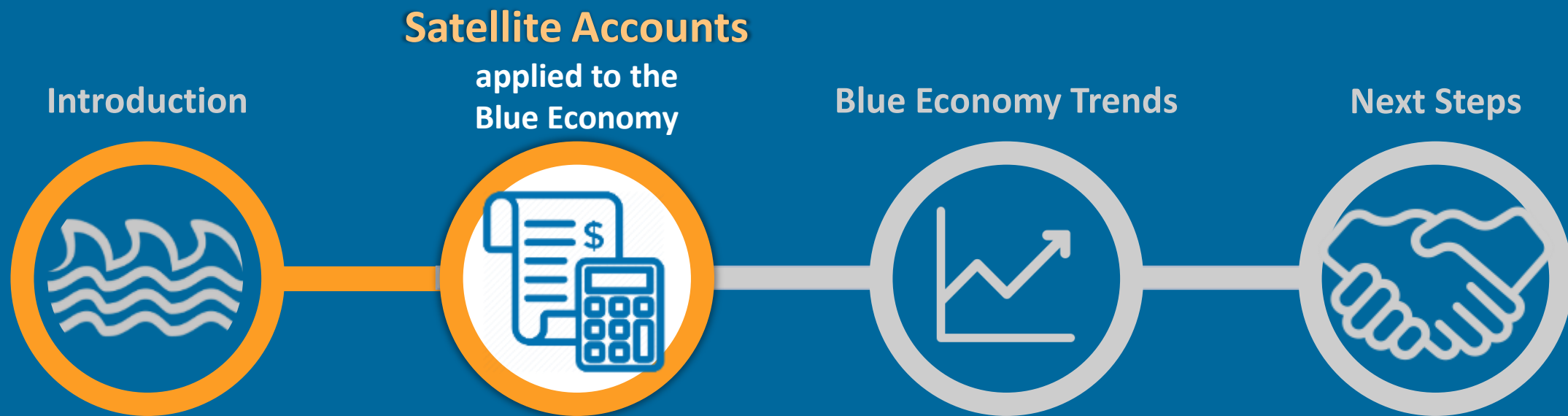
Source: WWF; ECA calculations; World Bank

CDB and UNECA efforts to mainstream and value the Blue Economy

Activities for **CDB**, **UNECA**, and **both organizations**



PRESENTATION **OUTLINE**

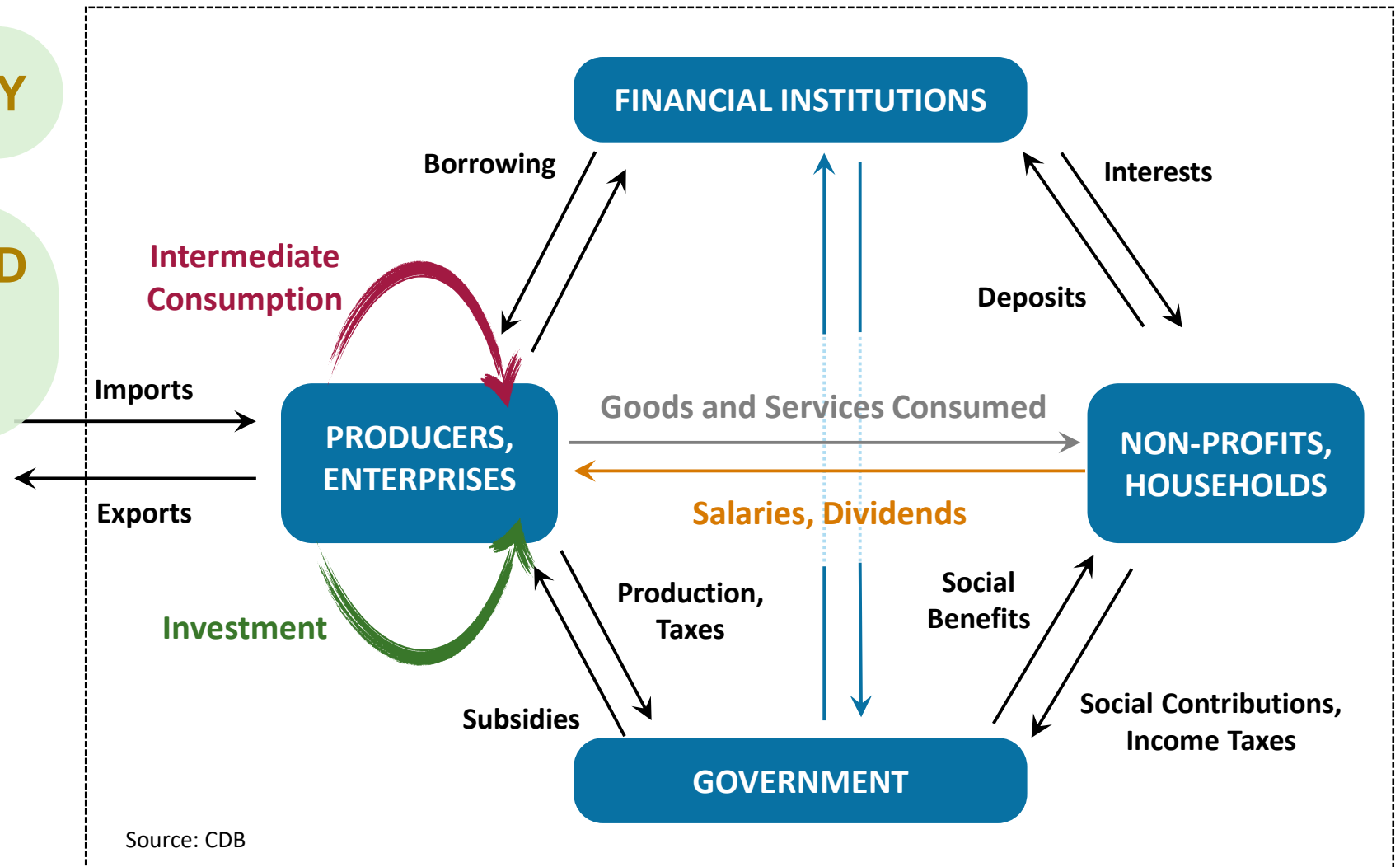


System of National Accounts

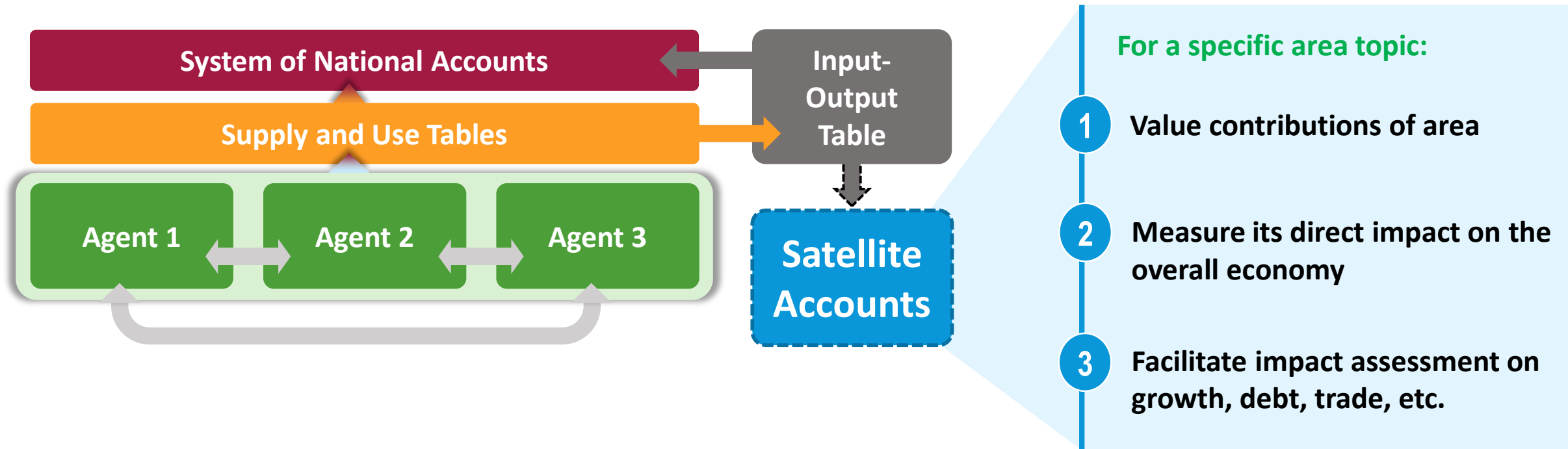
Economic Agents and Activity in the SNA

ADOPTED GLOBALLY

TRACKS SUPPLY AND USE OF ECONOMIC AGENTS



Purpose and value of the Satellite Accounts



Source: CDB, van de Ven (2019)

Steps to creating the BESA

STEP 1 Calculate $A = Z \div O$

Convert the input-output matrix (Z) to the industries matrix (A)

A is the share of industry output used as inputs in each of the **n** industries

An industry's output can be used as either:

Intermediate Inputs

Final Demand

Understanding the Z matrix:
Input-output by broad industry

There are **n** industries in the Blue Economy that use other industries' products as intermediate inputs

$$\begin{bmatrix} Z_{11} & \dots & Z_{1n} \\ \cdot & & \cdot \\ \cdot & & \cdot \\ \cdot & & \cdot \\ Z_{n1} & \dots & Z_{nn} \end{bmatrix}$$

The **total of this row** represents the total of outputs from all **n** industries used as inputs into the **first** industry

The **total of this column** represents the total of outputs from the **first** industry used as inputs into all **n** industries

Understanding the O matrix:
Industry and final demand consumption

This represents the total output for each of the **n** industries that are used as either for final demand or as inputs into all industries (not only Blue Economy)

$$\begin{bmatrix} O_1 \\ \cdot \\ \cdot \\ \cdot \\ O_n \end{bmatrix}$$

The **total of this row** represents the total output of all **n** industries

Steps to creating the BESA: Leontief model

STEP 1 Calculate $A = Z \div O$

Convert the input-output matrix (Z) to the industries matrix (A)

STEP 2 Calculate the (i-A) matrix
= $i - A$

STEP 3 Calculate the inverse of the (i-A) matrix = $(i-A)^{-1}$

Leontief Inverse Matrix

STEP 4 Calculate $x = (i-A)^{-1} + f$

Understanding the f matrix:
Final demand by industry

This represents the final demand in each of the n industries

$$\begin{pmatrix} f_1 \\ \cdot \\ \cdot \\ \cdot \\ f_n \end{pmatrix}$$

The **total of this column** represents the total final demand of all n industries

Understanding the i matrix:
Identity matrix

This $n \times n$ matrix, called the identity or unit matrix, is a standard feature of linear algebra

$$\begin{pmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

Provides coefficients or economic multipliers

Establishes relationship between intermediate and final demand

Source: CDB

Applying the methodology: Jamaica Case Study

STEP 1 Calculate $A = Z \div O$

Convert the input-output matrix (Z) to the industries matrix (A)

STEP 2 Calculate the $(i-A)$ matrix
 $= I - A$

STEP 3 Calculate the inverse of the $(i-A)$ matrix = $(i-A)^{-1}$

STEP 4 Calculate $X = (i-A)^{-1} + f$

Industry	Agriculture	Fishing	Manufacturing	Services	Transport	Hotels and restaurants
Agriculture	5,022	-	19,080	602	1	5,904
Fishing	-	166	127	156	-	887
Manufacturing						
Services						
Transport						
Hotels and restaurants						

Industry	Agriculture	Fishing	Manufacturing	Services	Transport	Hotels and restaurants
Agriculture						
Fishing						
Manufacturing						
Services						
Transport						
Hotels and restaurants						

Industry	Agriculture	Fishing	Manufacturing	Services	Transport	Hotels and restaurants
Agriculture						
Fishing						
Manufacturing						
Services						
Transport						
Hotels and restaurants						

Industry	Agriculture	Fishing	Manufacturing	Services	Transport	Hotels and restaurants
Agriculture						
Fishing						
Manufacturing						
Services						
Transport						
Hotels and restaurants						

Industry	Final demand
Agriculture	40,852
Fishing	4,267
Manufacturing	235,439
Services	665,843
Transport	62,684
Hotels and restaurants	102,117

Industry	Final demand (fi)	Total output (xi)	Demand for final use (%)	Intermediate demand (%)	Industry total
Agriculture	40,852	71,274	57	43	30,608
Fishing	4,267	5,593	76	24	1,336
Manufacturing	235,439	340,549	69	31	107,502
Services	665,843	947,029	67	33	326,107
Transport	62,684	123,365	50	50	62,565
Hotels and restaurants	102,117	108,078	94	6	6,193

Source: CDB

Using the BESA: Jamaica Case Study

STEP 1 Calculate $A = Z \div O$

Convert the input-output matrix (Z) to the industries matrix (A)


STEP 2 Calculate the (i-A) matrix
= $i - A$

STEP 3 Calculate the inverse of the (i-A) matrix = $(i-A)^{-1}$

STEP 4 Calculate $x = (i-A)^{-1} + f$

STEP 5 Run *What-If* analyses

If the final demand of **hotels and restaurants** **increases** by **10%**, this will lead to



J\$ Billion			
	Total output (f_{i-n})	Total output $f_6+0.1 \times 6$)	GDP % Change
Agriculture	71.3	72.0	1.0%
Fishing and Aquaculture	5.6	5.7	1.6%
Manufacturing	340.5	342.6	0.6%
Services	947.0	951.1	0.4%
Transport	123.4	123.7	0.3%
Hotel and Restaurants	108.1	118.3	9.5%
Total GDP impact	1,596	1,613	1.1%

Source: CDB

BESAs and the BEVTK

Similarities

Differences



Data Sources



Methodology



Goals



Frequency

PRESENTATION **OUTLINE**

Introduction



Satellite Accounts



Blue Economy Trends
in Seychelles, Saint Lucia
and Bahamas



Next Steps





Seychelles



The Bahamas



Saint Lucia



Economic and
Geographic
Similarities



Importance of
Blue Economy
Industries



Data Availability



Progress on the
Blue Economy

Why these countries?

Economic Overview – see paper

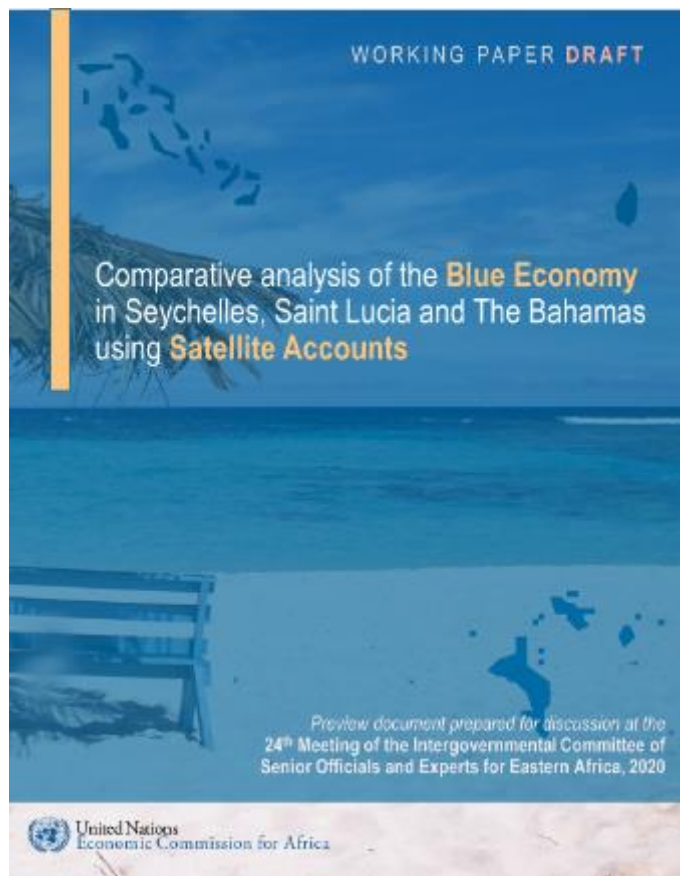
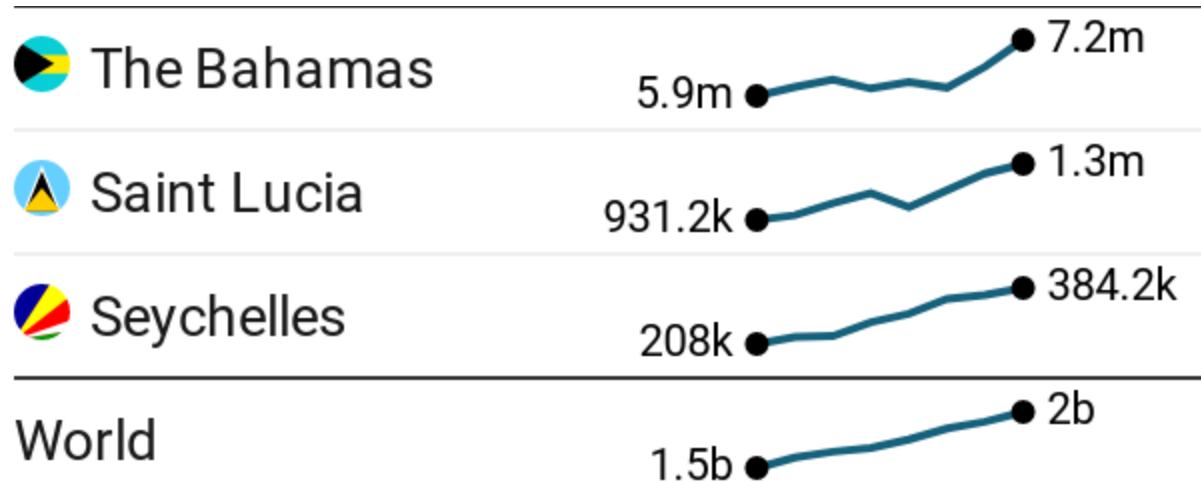


Table 2: Selected Economic and Social Indicators

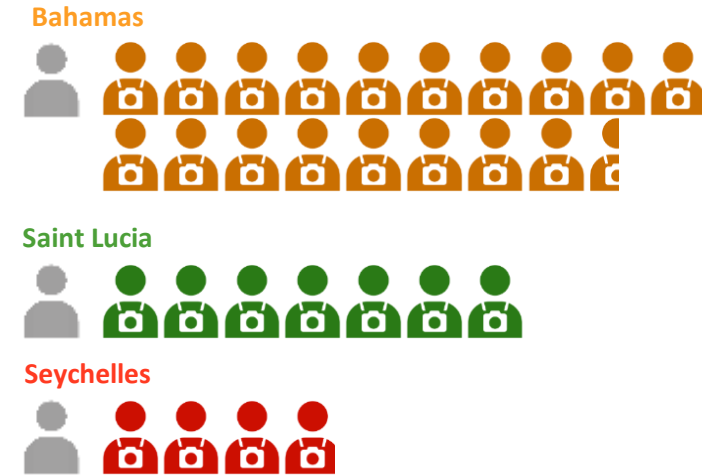
	Seychelles	Saint Lucia	The Bahamas
Macroeconomic Indicators			
GDP (current, US\$ bn)	1.6	2.1	12.8
GDP per capita (US\$)	16,434	11,611	32,933
GDP growth in 2019 (%)	3.9	1.7	1.2
GDP growth forecast for 2020 (%)	-13.8	-16.9	-14.8
Total public debt ¹¹	56.9	62.8	63.1
Fiscal balance	0.2	-6.9	-2.3
Annual average inflation rate (%)	1.8	0.5	1.8
Agriculture, value added in 2018	2.4	1.8	1.0
Industry, value added in 2018	13.4	11.6	14.8
Services, value added in 2018	84.2	86.6	84.2
Select Blue Economy Indicators			
Total tourists, stayover + cruise (people)	384,204	1,276,751	7,200,000+
Capture fisheries product in 2017 (tonnes)	136,200	2,097	11,400
Aquaculture fisheries product in 2017 (tonnes)	n/a	27	<10
Fisheries sector employment (people)	1,810	3,342	9,004
Container port throughput in 2018 (TEUs, 000s)	n/a	30	939
All port calls in 2018 (ships)	384	1,191	5,787
External Sector Indicators			
FDI inflow	7.5	1.6	5.0
Exports of goods in 2018	36	5	5
Imports of goods in 2018	36	5	5

Pre-COVID-19 Trends: Tourism

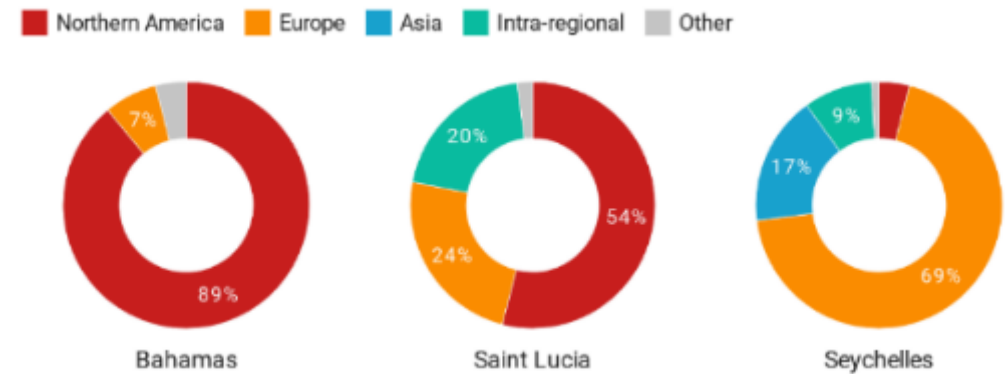
International Visitors, 2012 – 2019



Visitor-per-capita, 2019



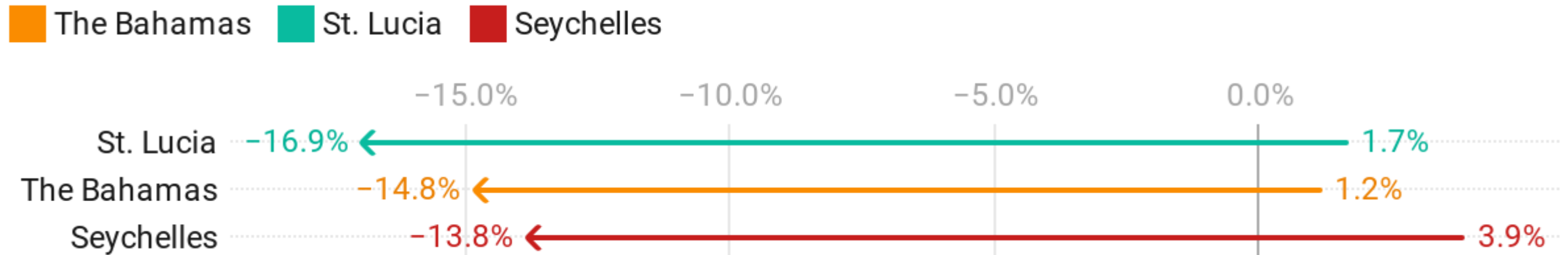
Visitor Distribution by Region of Origin, 2019



Source: National sources, WTTC (2020), UNWTO (2020)

Overall Economic Impact of COVID-19

Real GDP Growth Rate, 2019^e to 2020^f



Source: IMF WEO 2020

Quick Question!

Go to the Poll tab now to answer | Allez au sondage maintenant pour répondre

Which Blue Economy industry do you think has been most negatively impacted by COVID-19?

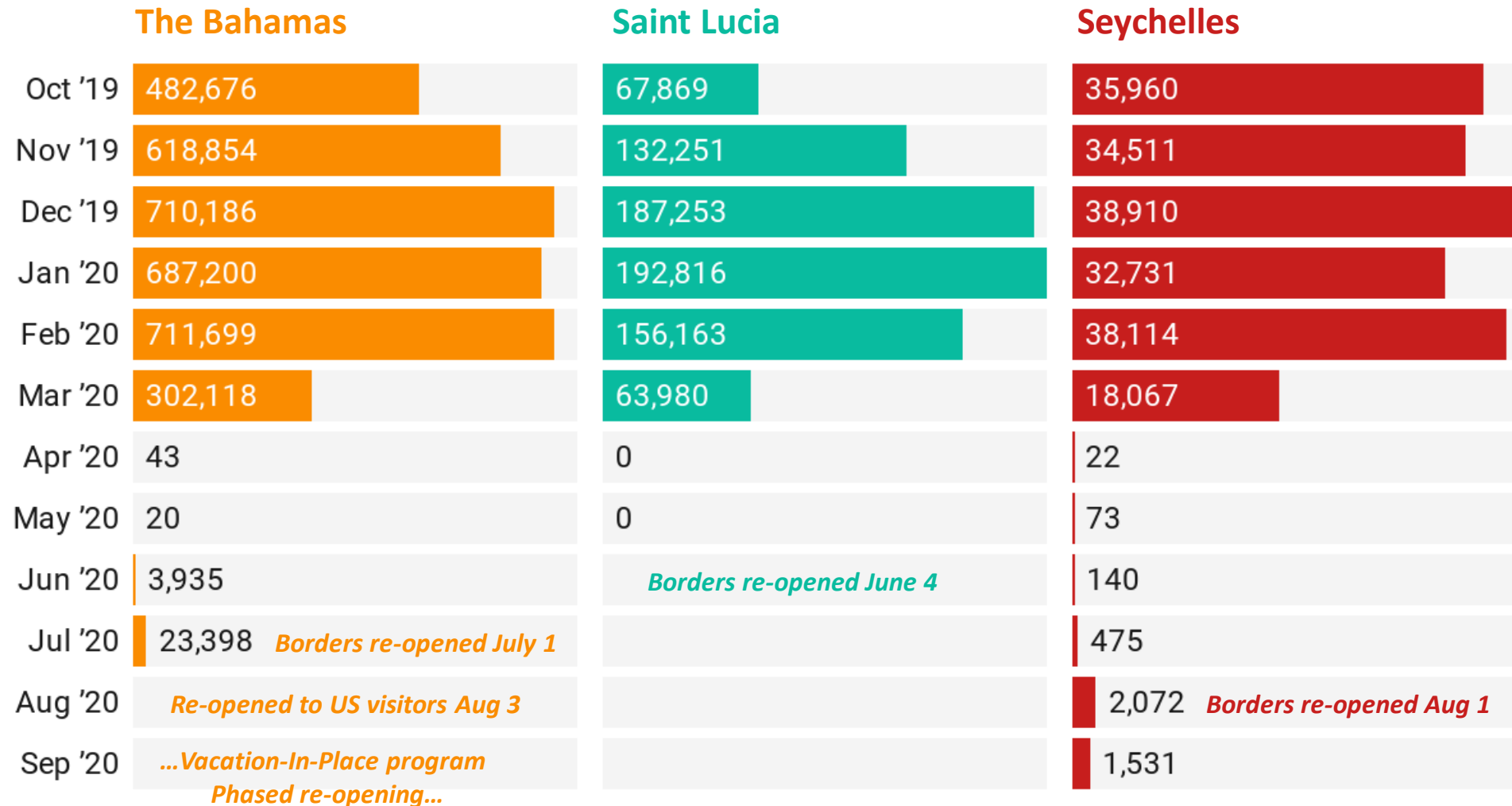
- A. Fisheries
- B. Offshore oil and gas
- C. Maritime transport
- D. Travel and Tourism

Selon vous, quelle industrie de l'économie bleue a été la plus touchée par la COVID-19?

- A. Pêche
- B. Pétrole et gaz offshore
- C. Transport maritime
- D. Voyage et tourisme

Early indicators of impact: **Tourism**


Monthly Visitor Arrivals, October 2019 – September 2020



Source: Data from Bahamas Research & Statistics Department, Ministry of Tourism; Saint Lucia Tourist Board, Port Authority, and Ministry of Finance; and Seychelles National Bureau of Statistics

Using BESA to measure COVID-19 impact: Jamaica Case Study

If the final demand of **hotels and restaurants** **decreases** by **70%**, this will lead to



	GDP % Change
Agriculture	-4.0%
Fishing and Aquaculture	-6.2%
Manufacturing	-2.4%
Services	-1.7%
Transport	-1.2%
Hotel and Restaurants	-34.7%
Total GDP impact	-4.4%

Source: CDB

PRESENTATION **OUTLINE**

Introduction



Satellite Accounts



Blue Economy Trends



Next Steps



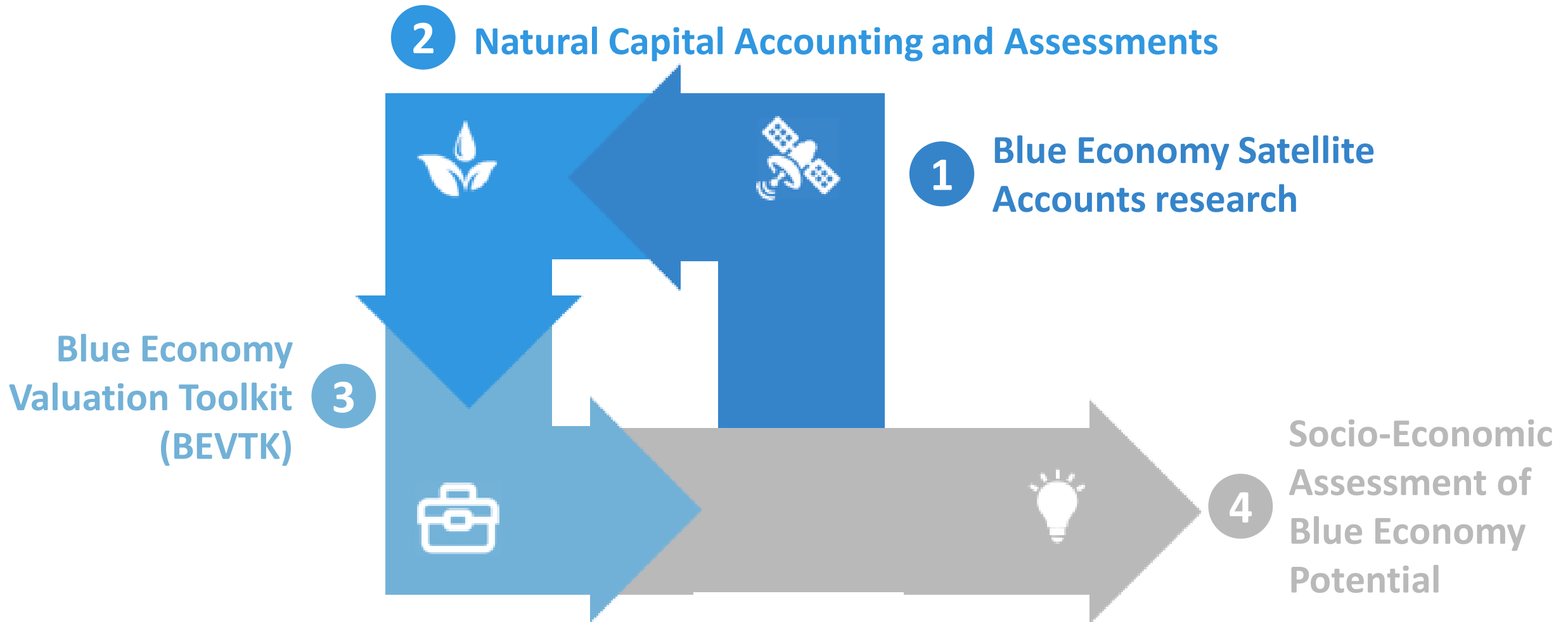
Next Steps

- 1 Develop/Finalize:** Complete the BESAs for the three countries
- 2 Validate:** Work with local NSOs and other relevant authorities
- 3 Collaborate:** Continue work with other regional entities
- 4 Revise:** Update paper based on BESAs, collaborations and COVID-19 insights



On-going and Future Work

Building Blocks towards Informed Decision-Making in the Blue Economy





United Nations
Economic Commission for Africa



Raquel Frederick
Associate Economic Affairs Officer

UNECA Sub-Regional Office for Eastern Africa
Kigali, Rwanda
www.uneca.org

Dindial Ramrattan
Statistician

Caribbean Development Bank
Willey, Barbados
www.caribank.org

Ideas
to
Action