



Measuring Vulnerability:

The Caribbean Development Bank's Approach and its Application

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AGENDA

1

CDB's mandate

2

Measurement of Vulnerability

3

Application

4

Takeaways

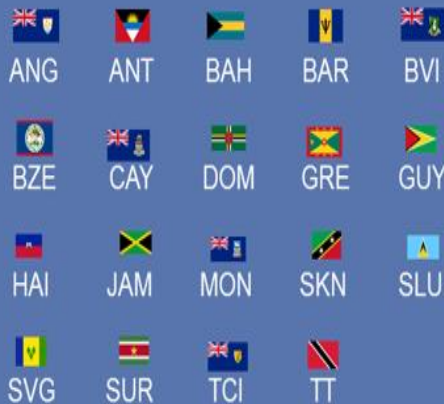




Purpose:

Reducing poverty and transforming lives through sustainable, resilient and inclusive development.

Borrowing Members Countries (BMCs)



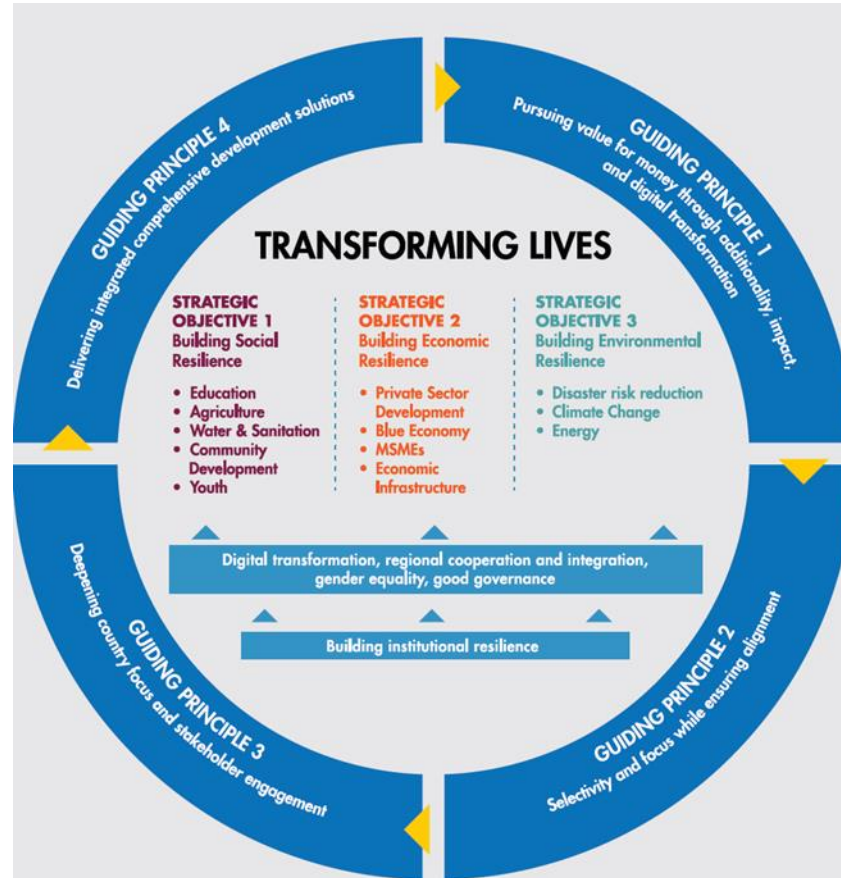
Non-borrowing Members Countries



CDB embraces the Sustainable Development Goals and is working to facilitate their attainment for the people living in BMCs.



Strategic Plan 2020-24





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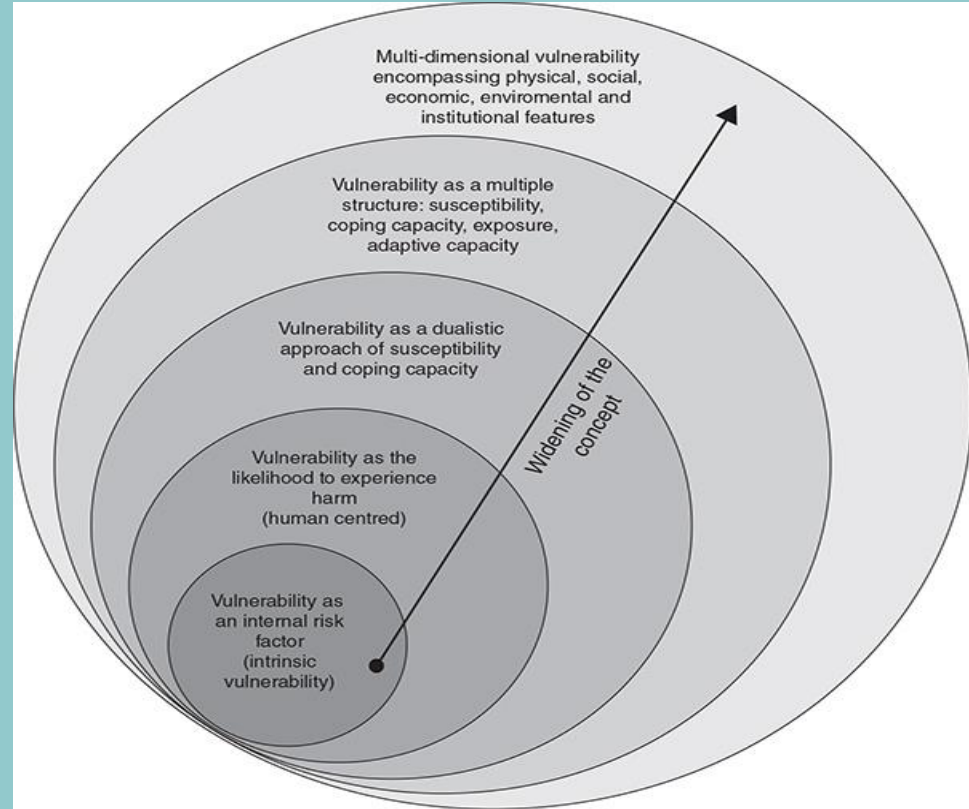
Takeaways





VULNERABILITY

the inherent, permanent or quasi-permanent features of a country which render that country **exposed to forces outside its control.**

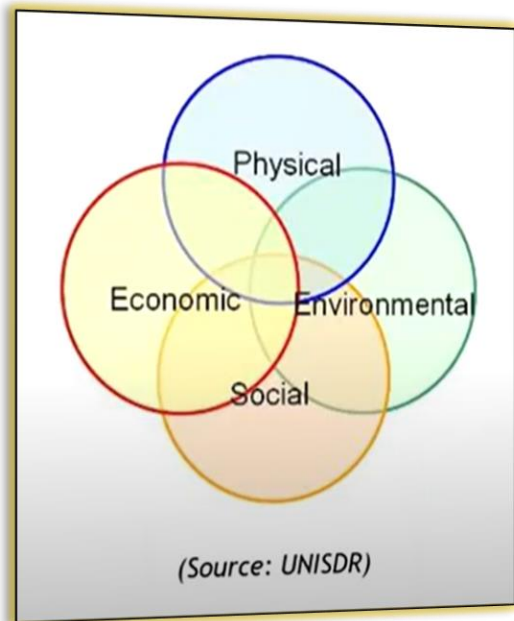


Birkmann, 2005

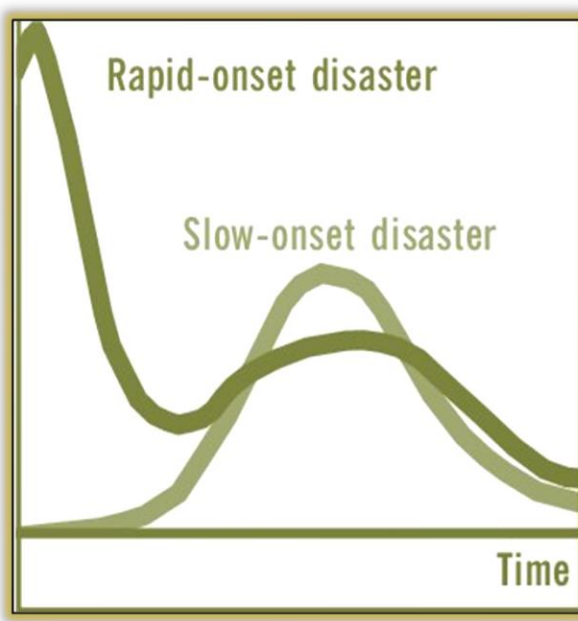


Multidimensional

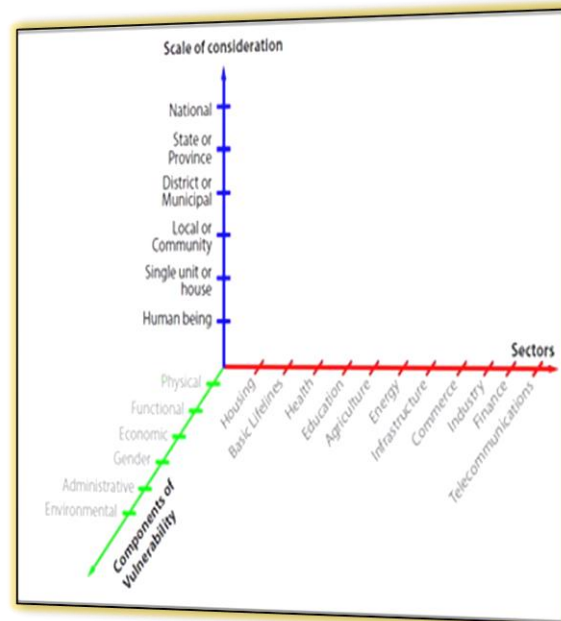
Sustainable Development



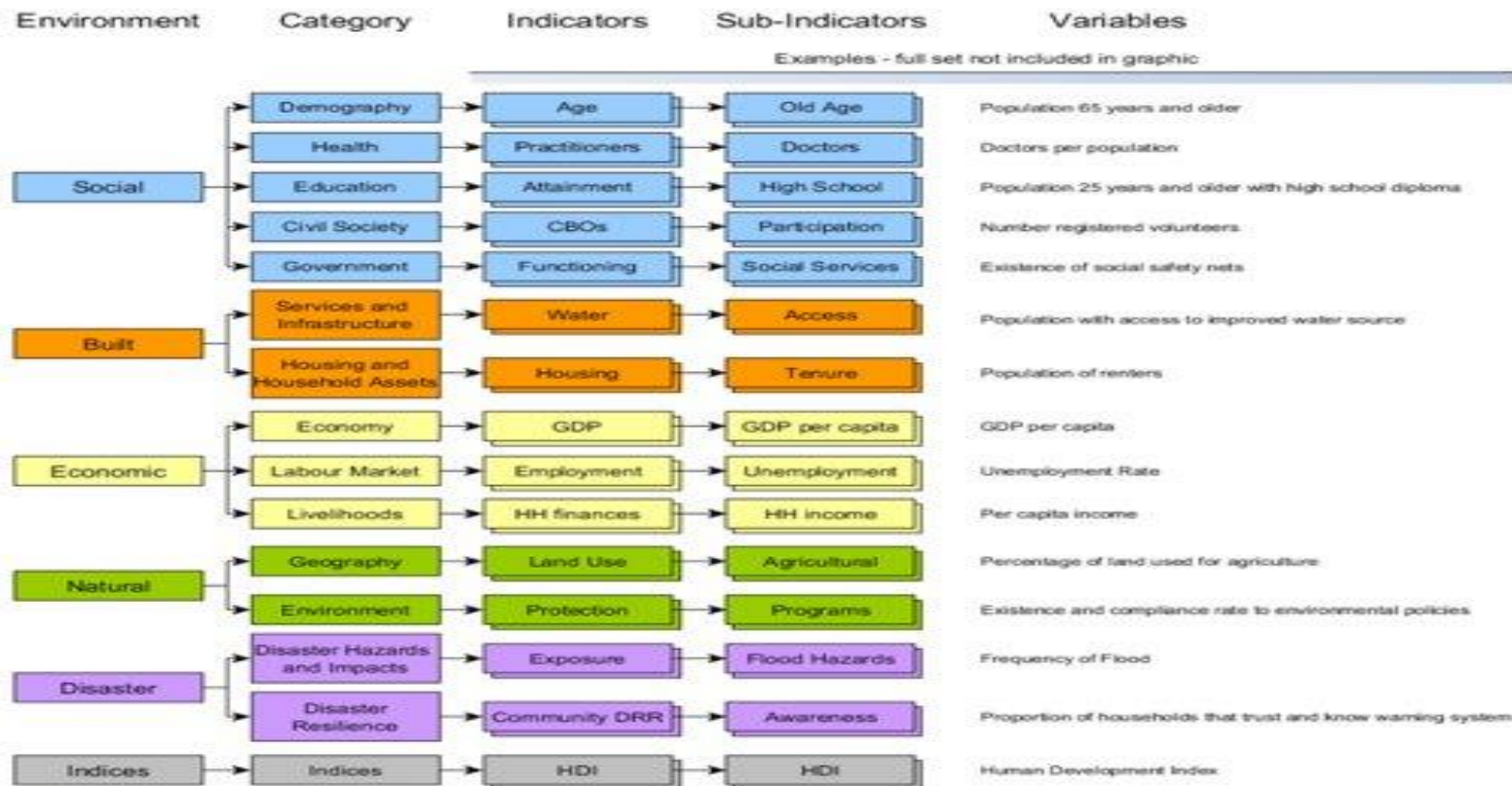
Speed of Disaster



Scale Dependent



Literature Review



Source: Beccari (2016)



Vulnerability Index

Previous Work

Economic Vulnerability Index

- **Crowards** (2000)
- **Hartman** (2011)

Recent Work

Multidimensional Vulnerability Index

Working paper published in 2019



Economic



Social



Environmental

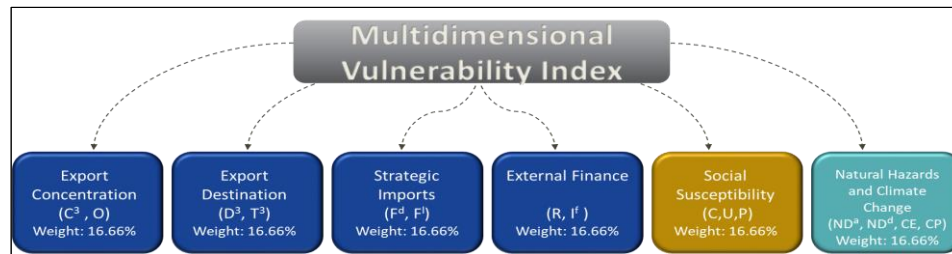
Basic Criteria

Simple

Comprehensive

Comparable





The proxy indicators in the Vulnerability Index are as follows:

Vulnerability = average (E^3 , O); (D^3 , T^3); (F^d , F); (R, I'); (C, U, P); (ND^a , ND^d ; CE, CP)

- E^3 = the proportion of total exports of goods and services represented by the top three export categories.
- O = total exports of goods and services¹ as a percentage of GDP.
- D^3 = the proportion of total exports of goods converging on the top three export destinations.
- T^3 = the proportion of total tourists from the top three source countries.
- F^d = Food imports as a percentage of total imports.
- F = Fuel imports as a percentage of total imports.
- R = the ratio of annual remittances to GDP.
- I' = the ratio of the annual flow of FDI to GDP.
- C = the number of intentional homicides per 100,000 population.
- U = the rate of unemployed persons in the labour force.
- P = the rate of persons living in poverty.
- ND^a = the number of persons affected by natural disasters, as a proportion of total population.
- ND^d = the number of deaths resulting from natural disasters, as a proportion of total population.
- CE = the economic losses or gains of climate change (Dara Climate Index).
- CP = the economic losses or gains of carbon (Dara Climate Index).



RESEARCH OBJECTIVES?



To assist BMCs' assess vulnerabilities.



To support evidence-based policy formulation within CDB.



Update vulnerability component of formula for financial resource allocation.



Explore innovative financing mechanisms.

OBJECTIVE

To quantify BMCs' vulnerability to external shocks.



Vulnerability Index Construction

01

Determine the risk factors

02

Compile proxy indicators

03

Data normalization methodology

$$X_{ij} = (X_{ij} - \text{Min } X_j) / (\text{Max } X_j - \text{Min } X_j)$$

04

Compute sub-indices

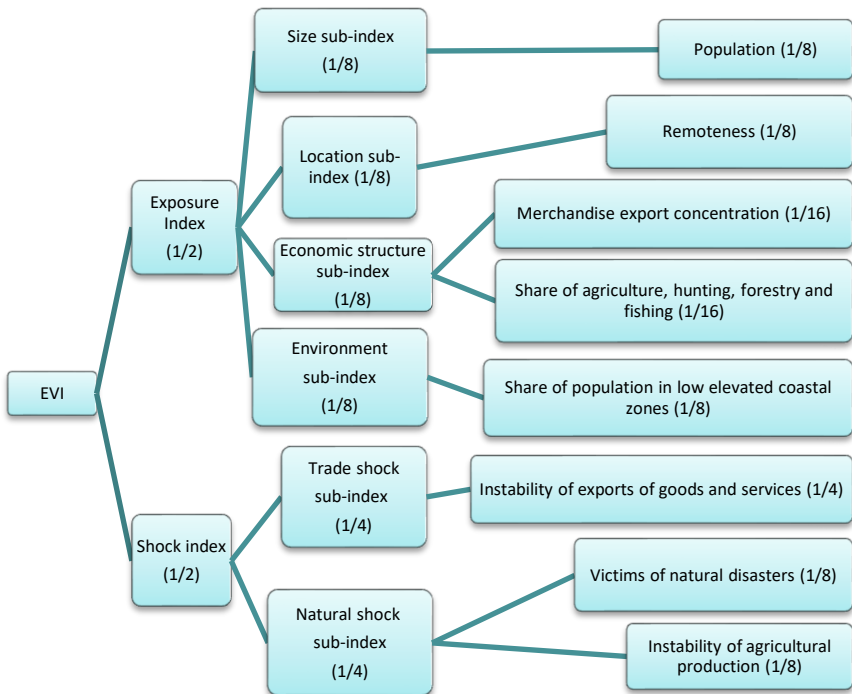
In combining the indicators, a number of studies have recommended and embraced the assignment of equal weight to the different items (Briguglio, 1995; Crowards and Coulter, 1999; Morris, 1979; UNDP, 1991; Commonwealth (2014); St. Bernard (2007) and and Ogwang, 1994).



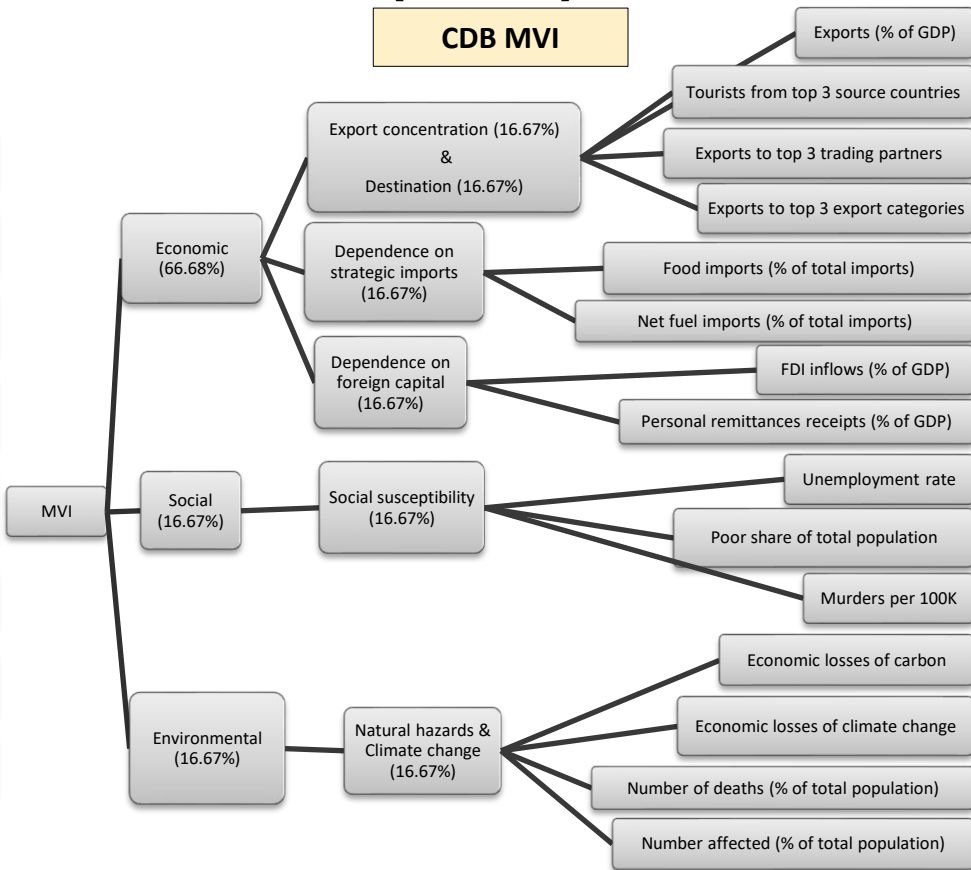


Framework: EVI and MVI (2019)

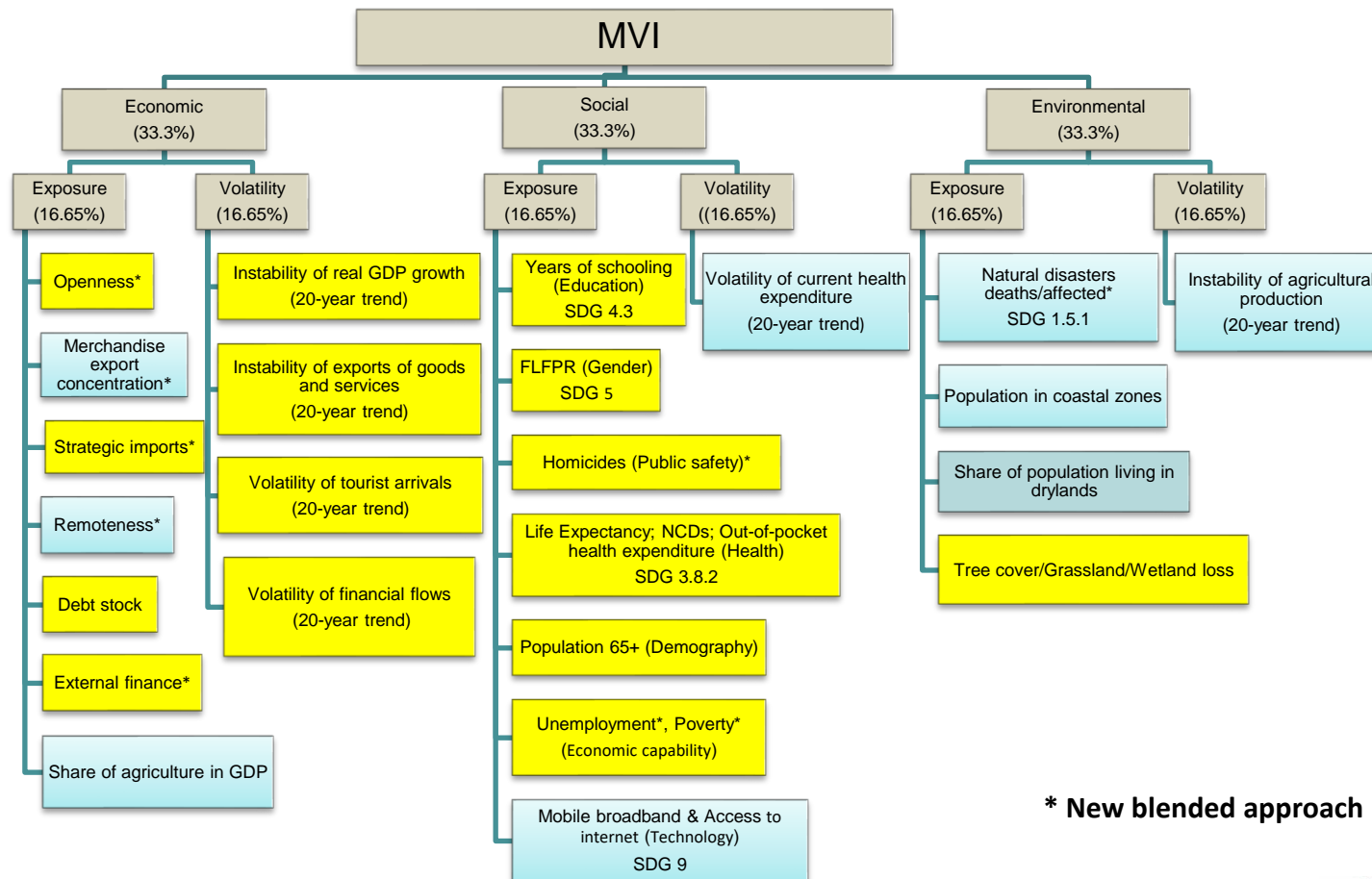
UN EVI



CDB MVI



Preliminary Framework: Revised MVI (2021)*



What's New?

Proxy Indicators

	Social	Economic	Environmental	Total
2019 MVI	3	8	4	15
2021 MVI	12	13	7	32

Social Dimension

	Education	Public Order/Safety	Health	Demography	Economic Capability	Technology	Gender
2019 MVI		x			x		
2021 MVI	x	x	x	x	x	x	x

Environmental Dimension

	Natural Hazard	Climate Change	Biodiversity and Habitat
2019 MVI	x	x	
2021 MVI	x	x	x





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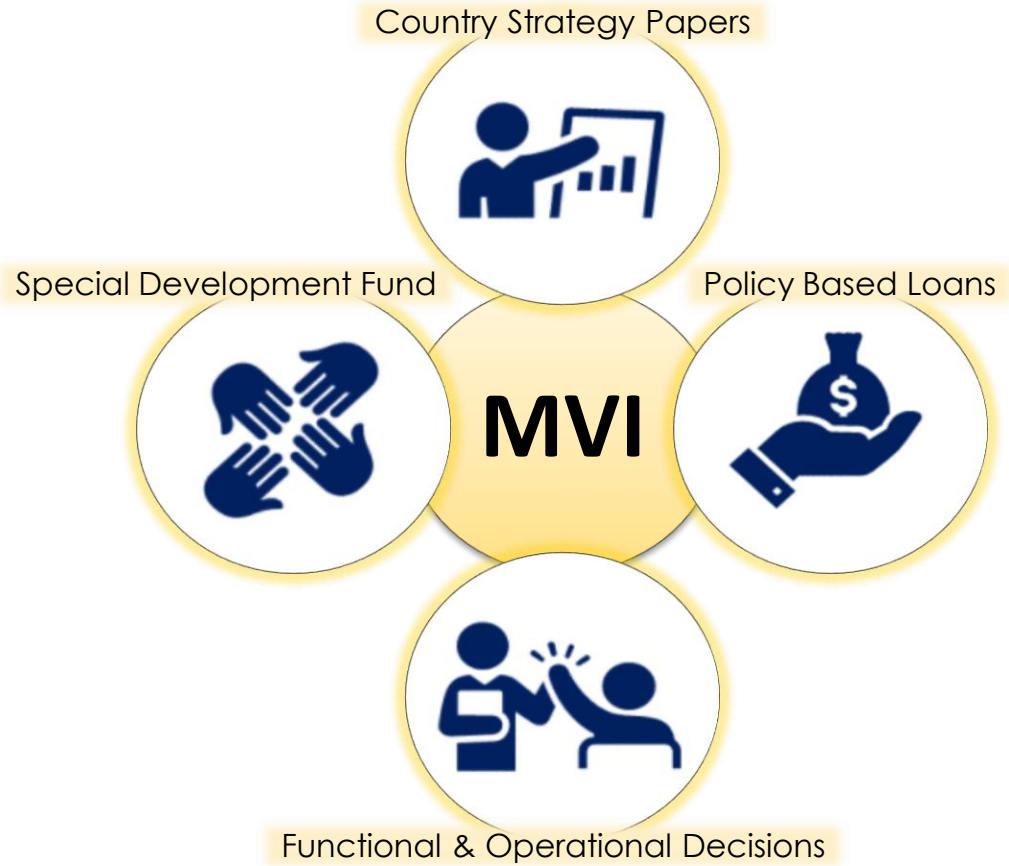
Application

The practice:

EVI

- Access to Special Development Fund is based solely on per capita income. Only then, are concessional resources allocated using a number of metrics, including the vulnerability index score.
- The vulnerability index score is one of several criteria that is used to determine the size of the allocation of each country that has access to Special Development Fund.

The possibilities:



Takeaways

1

MVI provides a holistic perspective on exposure to risk.

CDB's approach seeks to consolidate the diverse vulnerability literature into a composite index well suited to the mandate of the bank, relevant to our BMCs and diverse in its application.

2

MVI supports evidence-based policy formulation

CDB and BMCs can utilize the MVI alongside other available information to support evidence-based policy formulation.

3

MVI has potential role in CDB's Financial resource allocation framework

Pending the completion of this research consideration will be given to how the MVI can be used to improve the allocation of financial resources.

