

# Development of the Tool to Measure the Greenness of Recovery Measures



Green Recovery Assessment in Developing and Emerging Economies  
01 December 2021, 10:00 -11:00 a.m. GMT  
Green Economy Coalition (GEC) Global Meeting 2021



# Outline of presentation

1. GGGI's green recovery assessment tools
2. Vivid Economics' Greenness of Stimulus Index (GSI)
3. GGGI's Green Recovery Index (GRI)
  - ❑ Building database of recovery measures (investments and incentives)
  - ❑ Tagging recovery measures
  - ❑ Measuring green growth performance (Green Growth Index)
  - ❑ Assessing greenness of green investments and incentives
4. Illustration of GRI assessment results





Global  
Green Growth  
Institute

# 1. GGGI's green recovery assessment tools

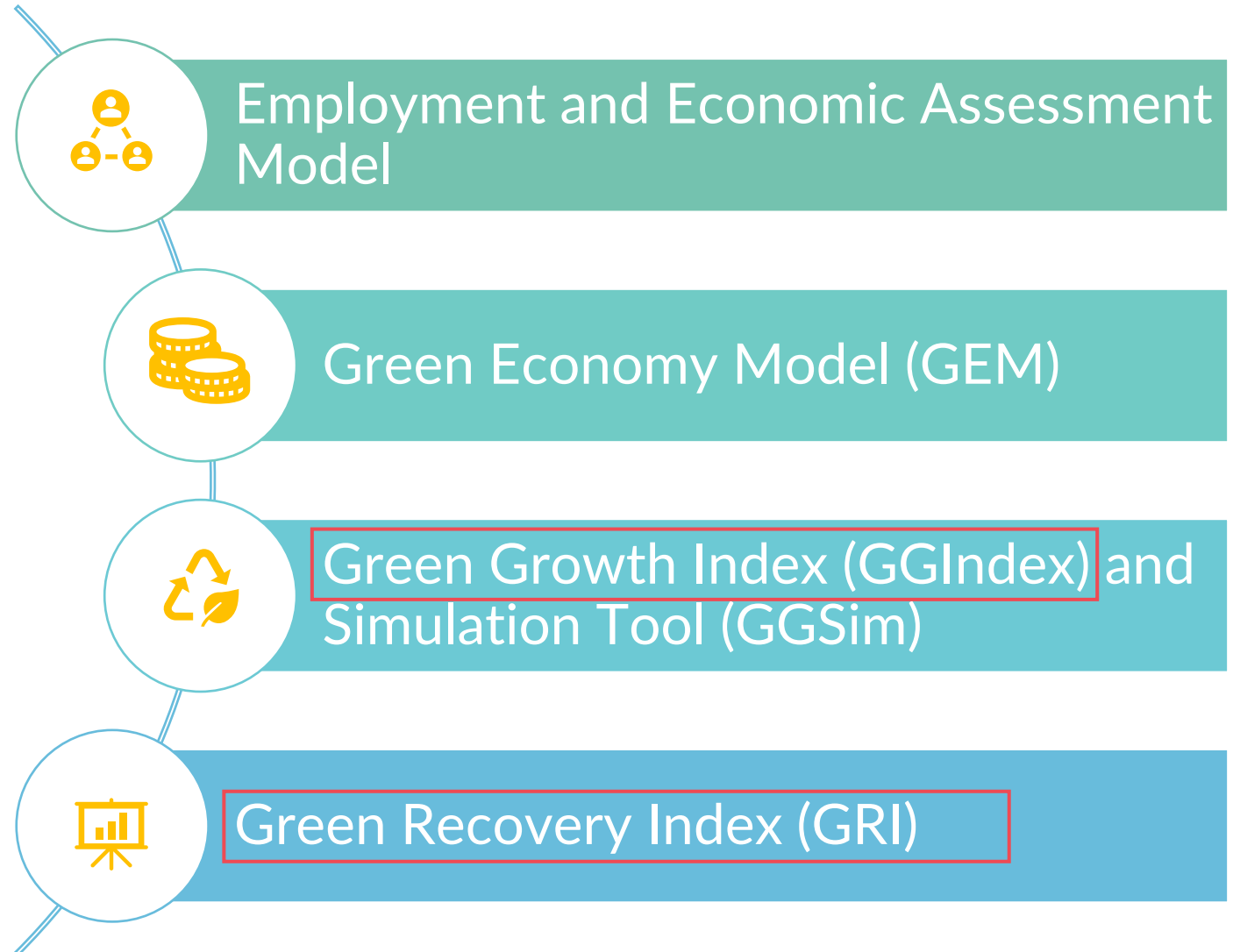
# CAID tools and methods for Green Recovery



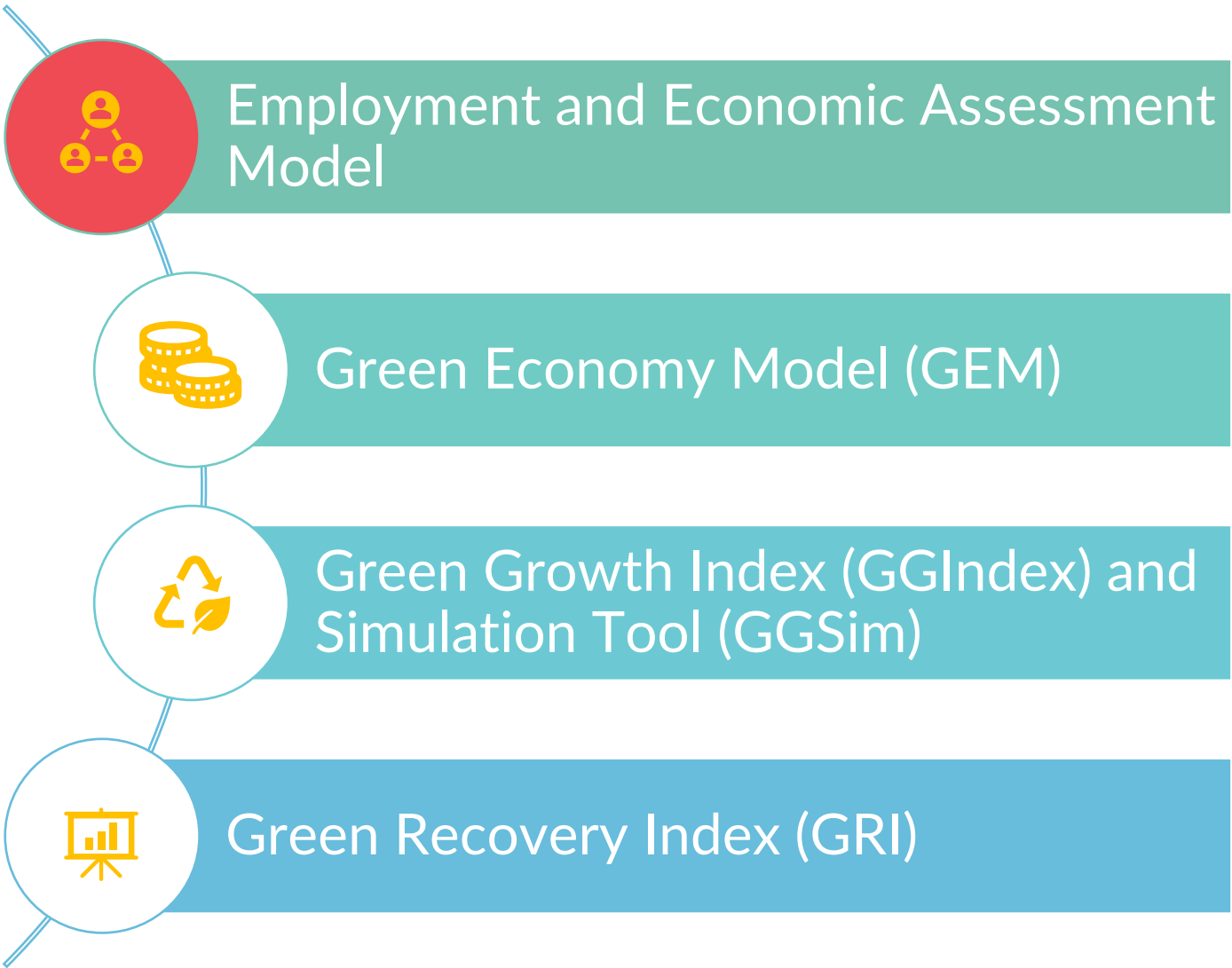
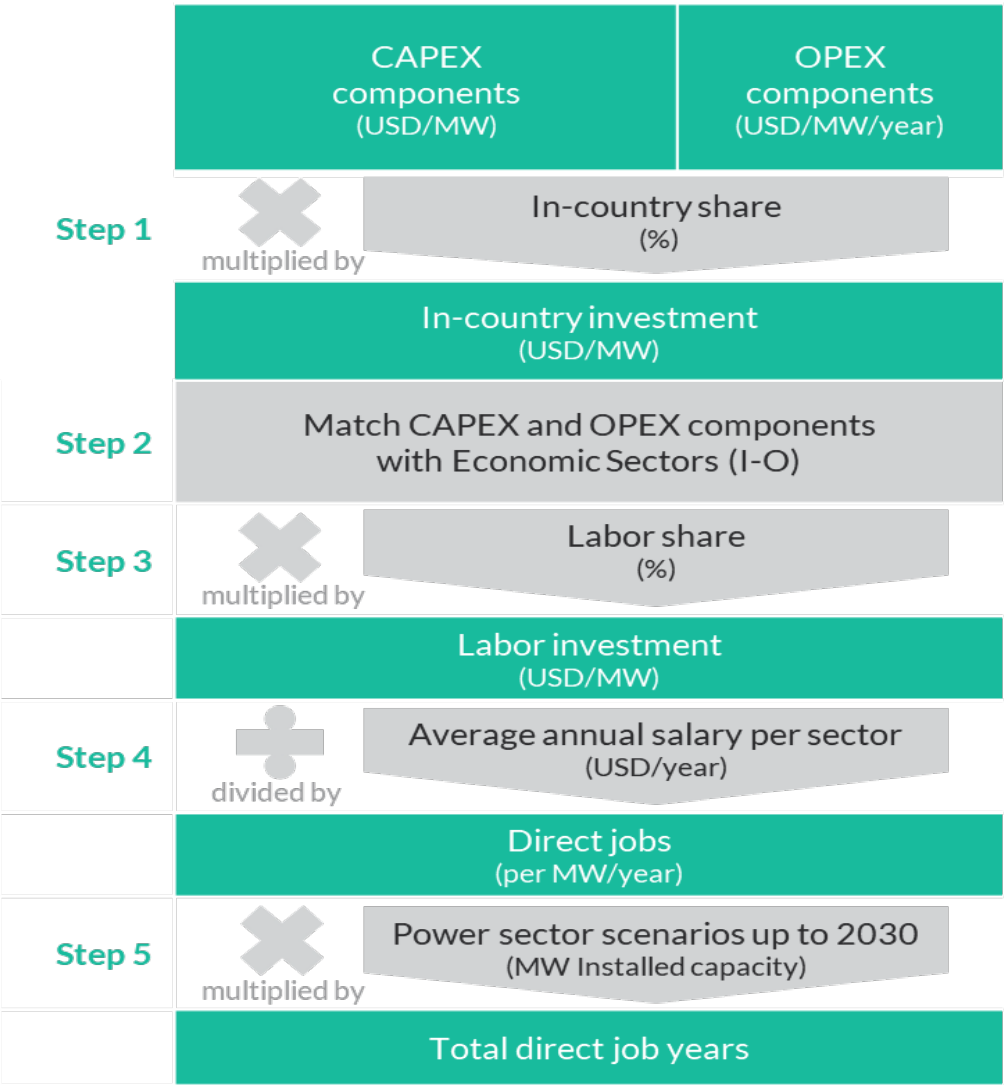
## Climate Action and Inclusive Development



## CAID Toolbox



# CAID tools and methods for Green Recovery



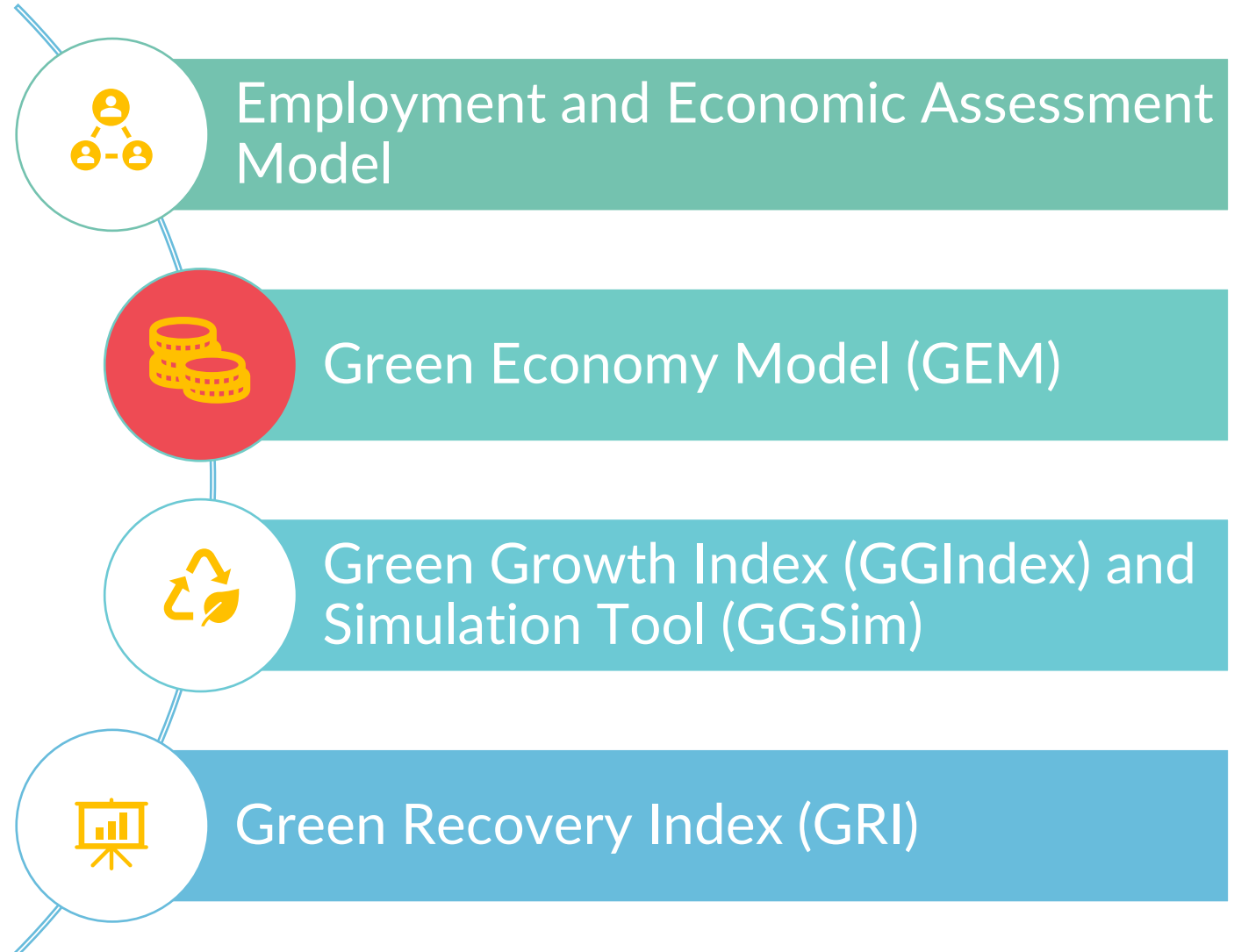


# CAID tools and methods for Green Recovery



The following macro **indicators** are presented to illustrate scenario results:

- Population
- GDP and GDP growth rate
- Employment and unemployment rate
- Government revenues and expenditure
- Public debt and debt to GDP ratio
- Private consumption and savings
- Investment (total, and as share of GDP)
- Energy demand and electricity supply
- Emissions



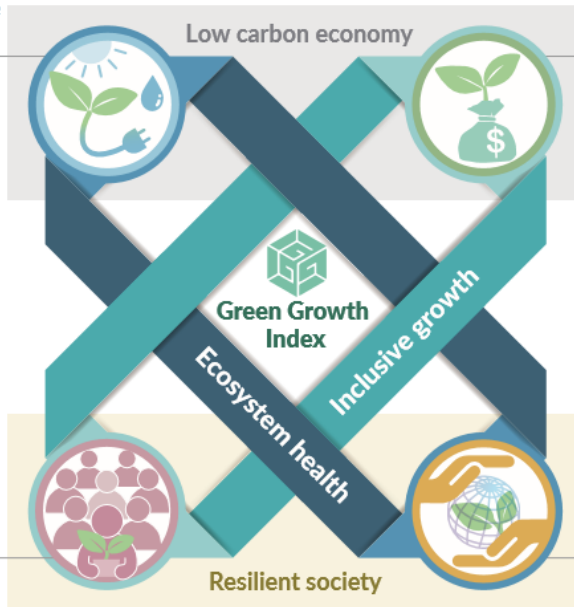
# CAID tools and methods for Green Recovery



- ❑ Over 70% of the indicators are SDGs
- ❑ Indicators are benchmarked against SDG targets

## Efficient and sustainable resource use

- Efficient and sustainable energy
- Efficient and sustainable water use
- Sustainable land use
- Material use efficiency



## Social inclusion

- Access to basic services and resources
- Gender balance
- Social equity
- Social protection

## Green economic opportunities

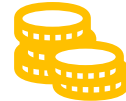
- Green investment
- Green trade
- Green employment
- Green innovation

## Natural capital protection

- Environmental quality
- GHG emission reductions
- Biodiversity and ecosystem protection
- Cultural and social value



Employment and Economic Assessment Model



Green Economy Model (GEM)



Green Growth Index (GGIndex) and Simulation Tool (GGSim)



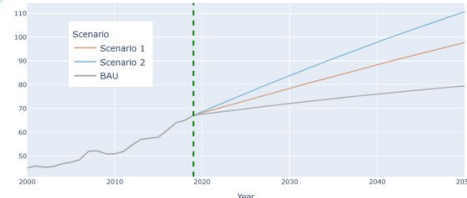
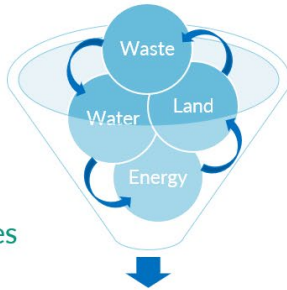
Green Recovery Index (GRI)

# CAID tools and methods for Green Recovery

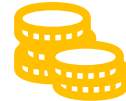


In the GGsim, **systems** include energy (transport, building, industry), land, water, and waste. These systems are interlinked.

**Dynamics** in a system represent feedback effects from interlinkages and time element (until 2050).



Employment and Economic Assessment Model



Green Economy Model (GEM)



Green Growth Index (GGIndex) and Simulation Tool (GGSim)



Green Recovery Index (GRI)

## MODEL INPUTS

Sector Scenarios

Policy measures

Green investments

## SYSTEM DYNAMICS MODELS

Equation(s)

Parameters

Variables

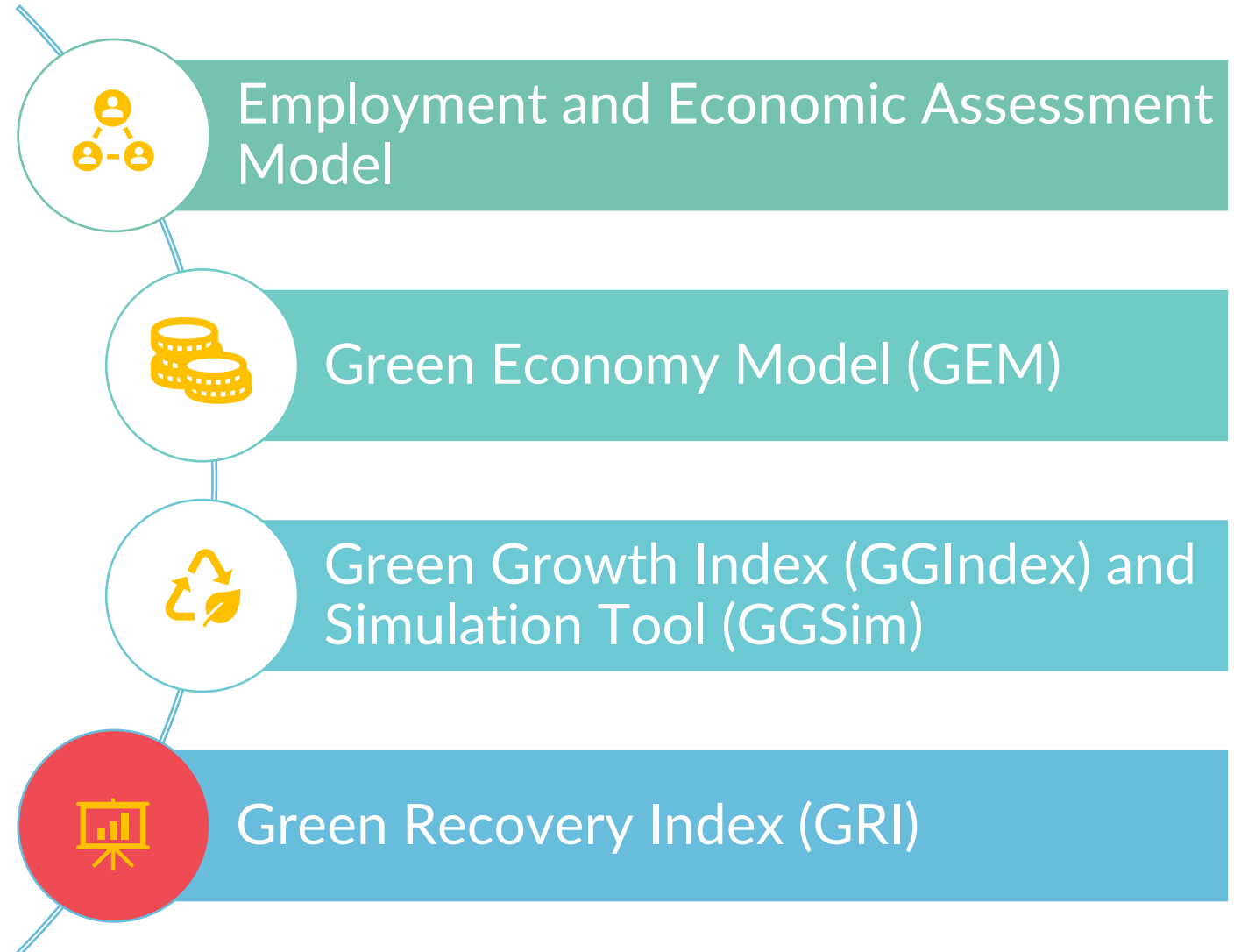
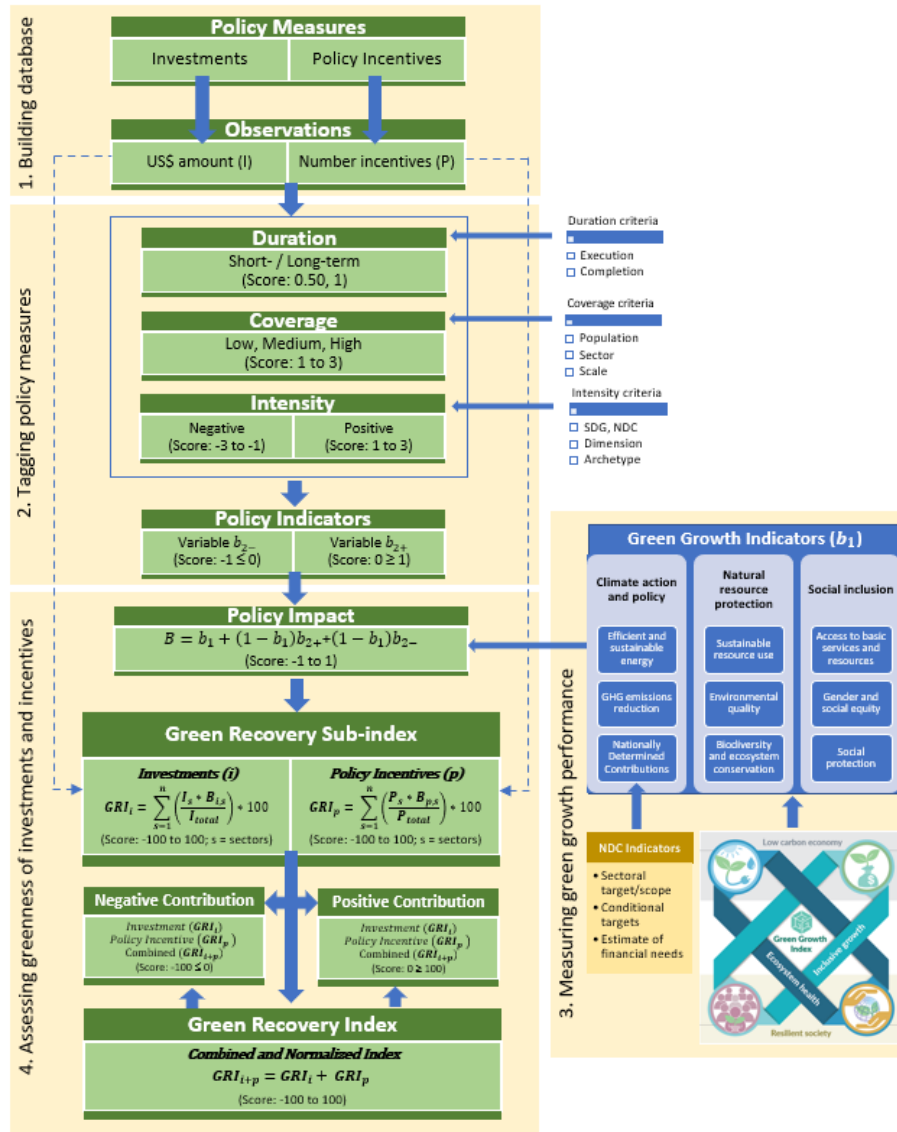
## MODEL OUTPUTS

Co-benefits on SDGs





# CAID tools and methods for Green Recovery

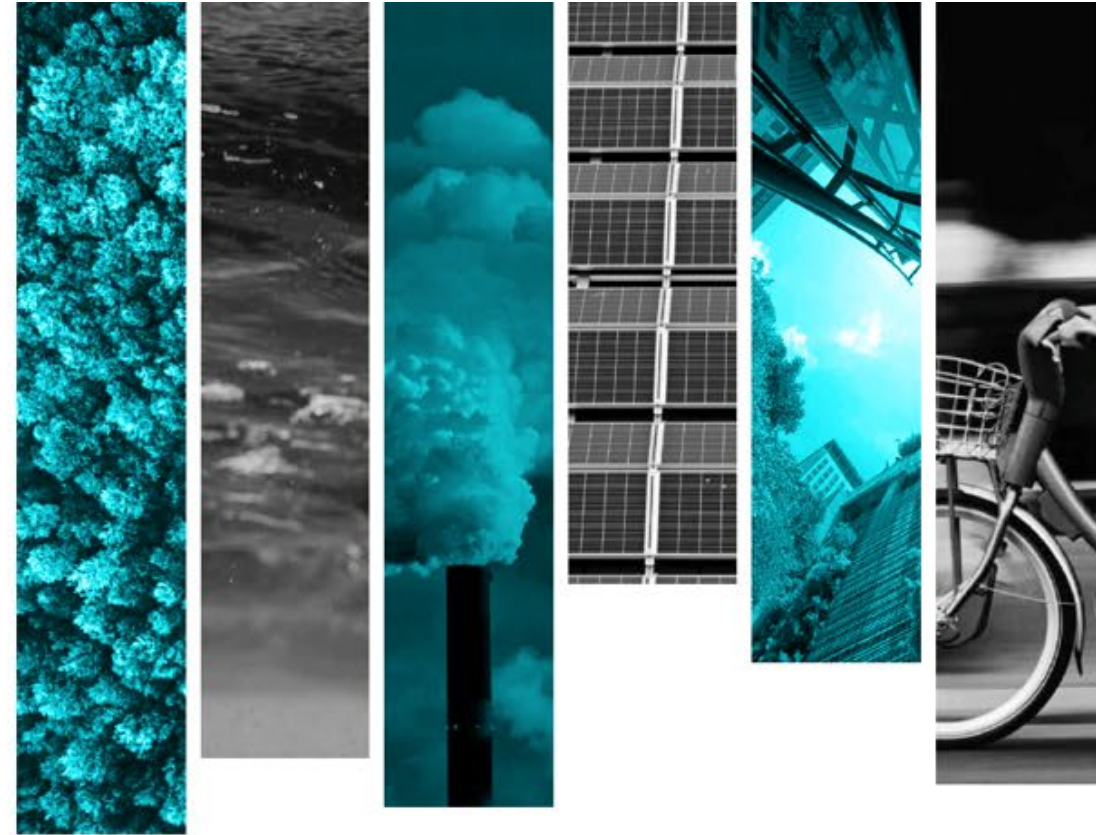




## 2. Vivid Economics' Greenness of Stimulus Index (GSI)

# Greenness of Stimulus Index

An assessment of COVID-19 stimulus by  
G20 countries and other major economies in relation  
to climate action and biodiversity goals



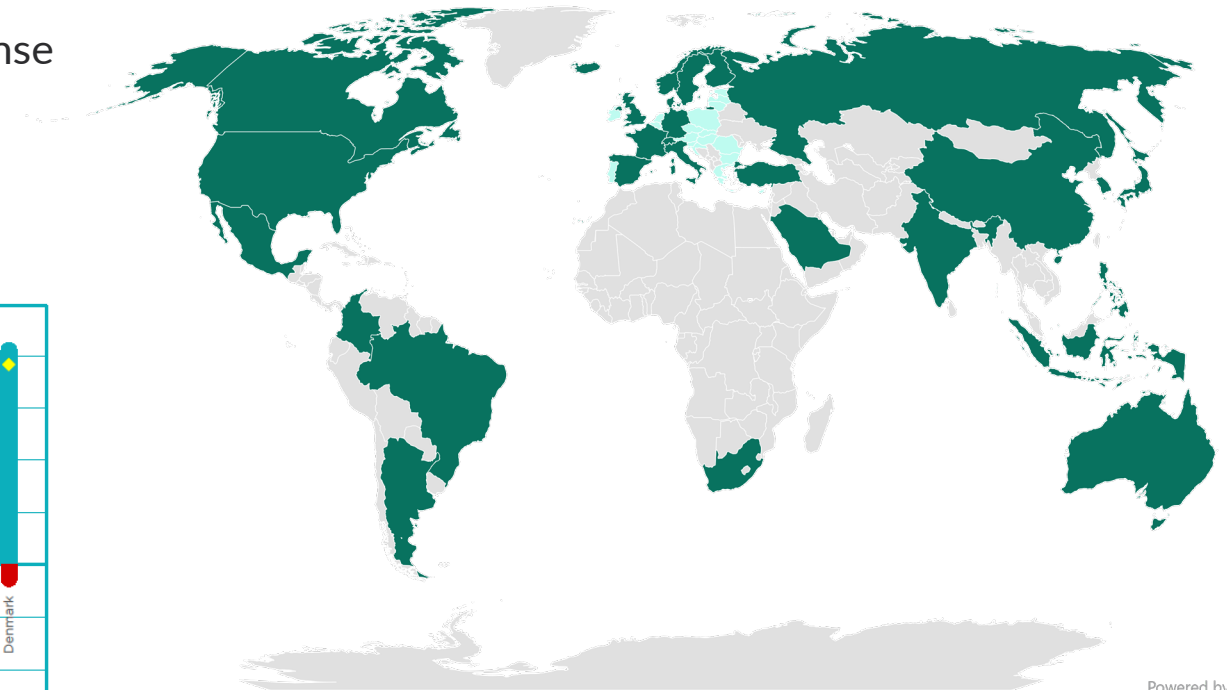
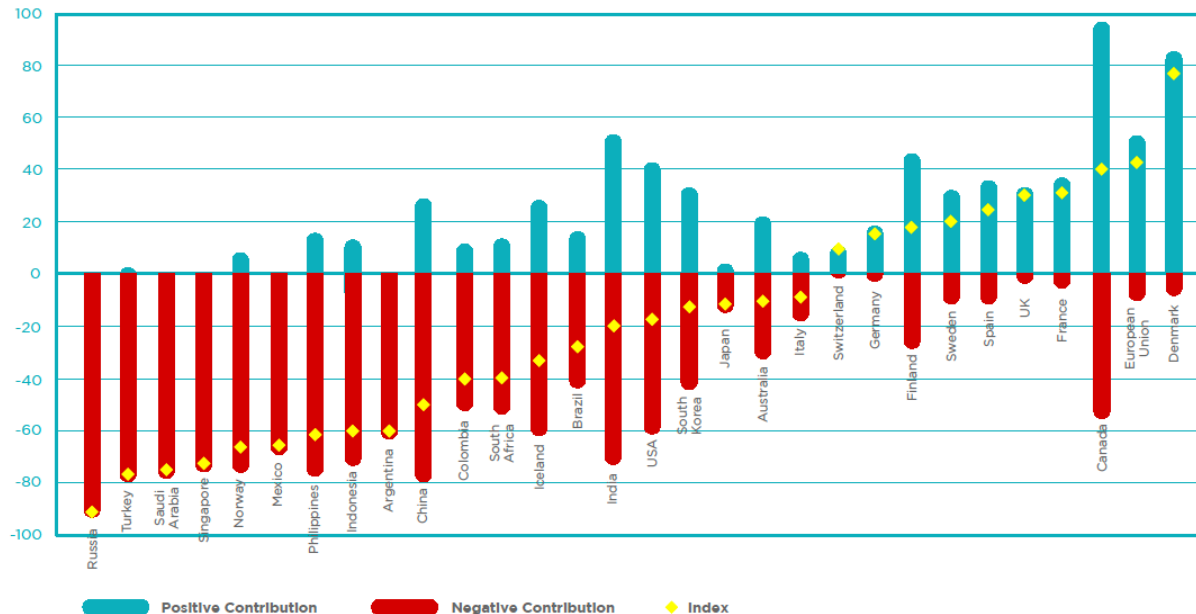
# The Greenness of Stimulus Index (GSI) assesses the effectiveness of the COVID-19 stimulus efforts

## GSI's purpose is to:

- Inspire and influence decision-makers to align stimulus spending with environmental objectives
- Inform policy makers on how to improve policy
- Raise the profile of climate and nature in COVID-19 response
- Enables a cross-comparable index to raise transparency and support civil society

GSI currently covers the G20, the EU and 10 other countries

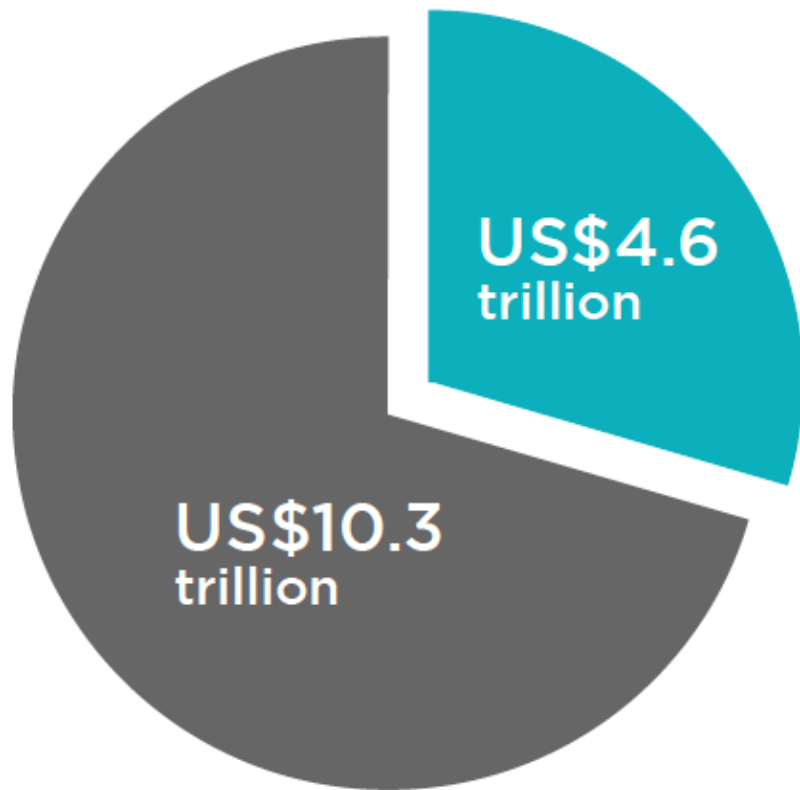
**Figure 1 | Greenness of Stimulus Index**



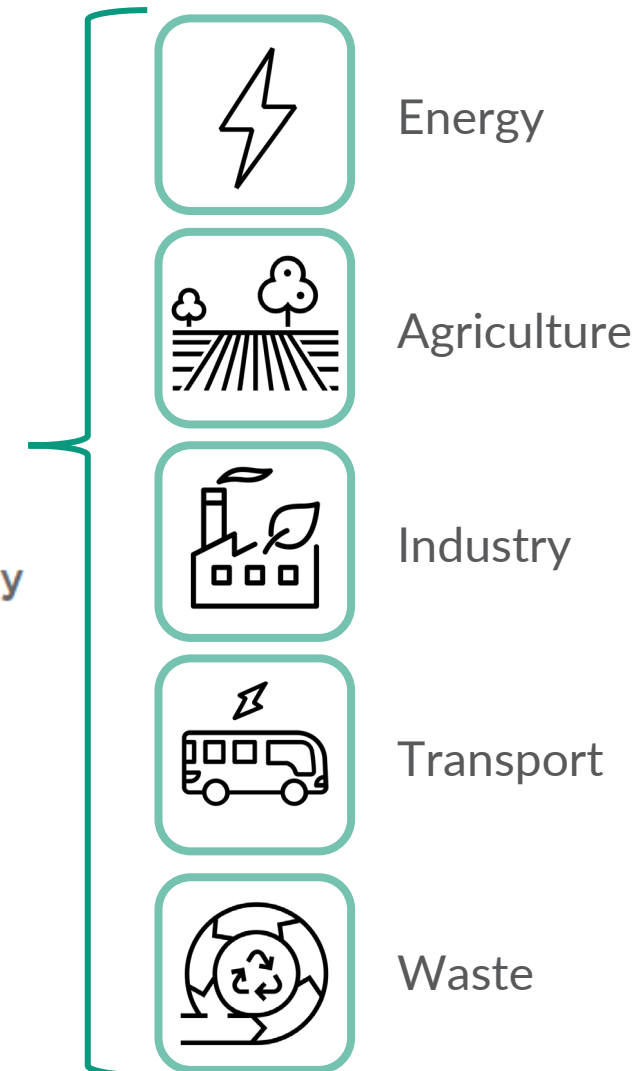
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National GSI  
Covered under the EU

US\$ 4.6 trillion (31%) of a total US\$14.9 trillion COVID-19 stimulus is flowing into environmentally relevant sectors that most impact climate and nature



- Environmentally relevant stimulus
- Non-environmentally relevant stimulus

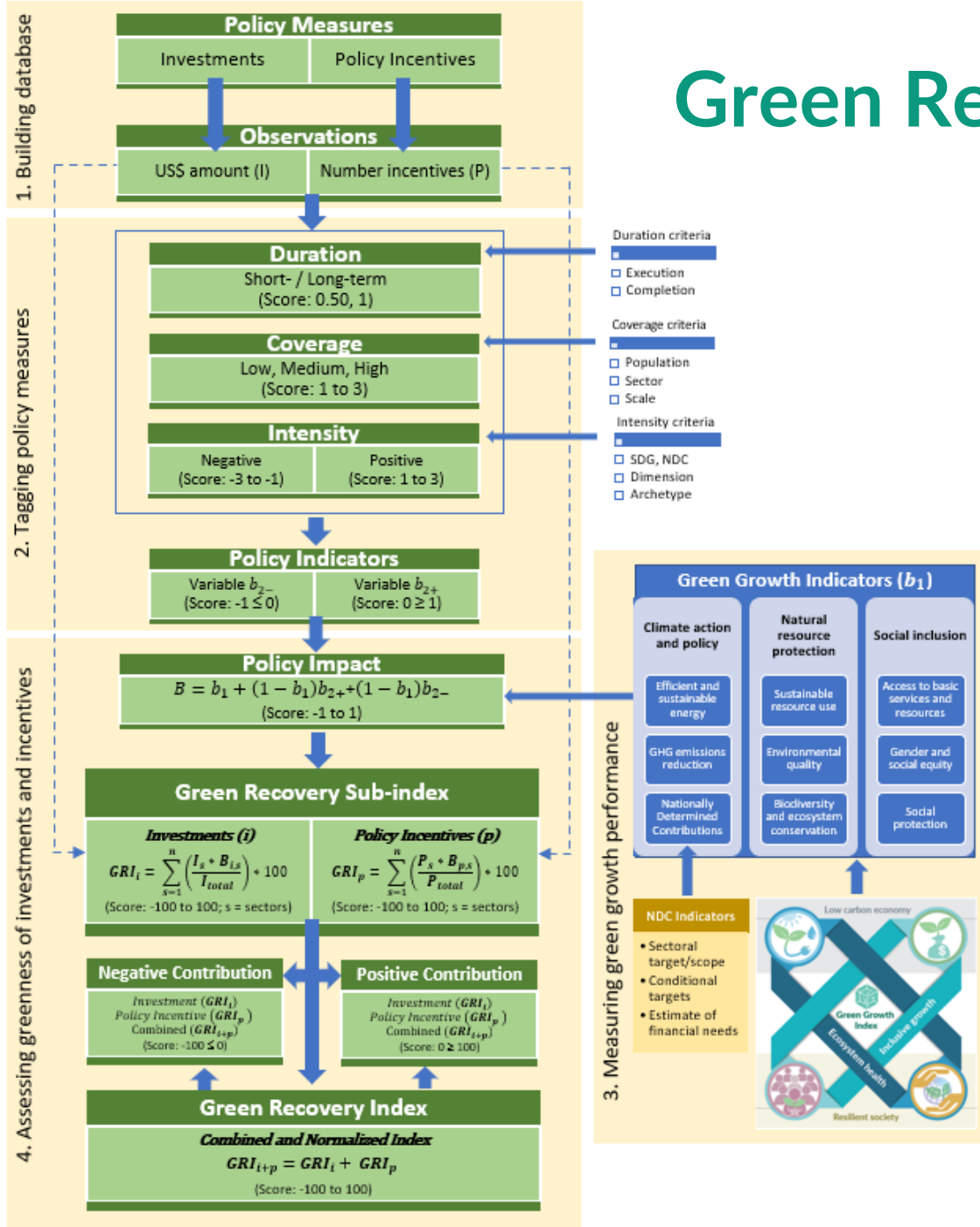




### 3. GGGI's Green Recovery Index (GRI)



# Green Recovery Index (GRI)



Additional aspects to consider when assessing Green Recovery in Developing Countries

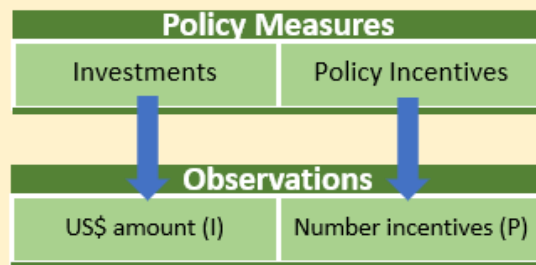
1. Investments versus policy incentives
2. Short-term relief support versus long-term recovery measures
3. Scoring intensity based on SDGs and NDC targets
4. Climate adaptation versus mitigation
5. Green growth performance with social inclusion

- ❑ Short-term relief support – food, livelihood, and employment, and health security
- ❑ Create enabling environment for long-term recovery measures

# 3.1 Building database



1. Building database



ISO	Countries
IND	India
MNG	Mongolia
PHL	Philippines
FJI	Fiji
RWA	Rwanda
CIV	Cote d'Ivoire
BFA	Burkina Faso
VNM	Vietnam
LAO	Laos
THA	Thailand
MEX	Mexico
COL	Colombia
PER	Peru
AIA	Anguilla
ATG	Antigua and Barbuda
DMA	Dominica
GRD	Grenada
KNA	St. Kitts and Nevis
LCA	St. Lucia
MSR	Montserrat
VCT	St. Vincent and the Grenadines
OECS	OECS

Details/Breakdown

	Quantity	Policy amount	d?
Tax cuts for small-scale payers: The GST (Goods and Services Tax - a comprehensive Indian consumption tax) Council provided	Uncosted		
Extension of Pradhan Mantri Vaya Vandana Yojana (social security scheme for senior citizens) for three additional years until	41	548,4098	
Indian Government will waive "interest on interest" charges for loans of up to INR20 million during its six-month repayment	Uncosted		
State Bank of India (public sector bank with the Government as its biggest shareholder) offers an interest concession of 0.25%	Uncosted		
Similar measures to ease tax compliance burden (GST reduction, etc. - see above) during the months of April and May 2021 w	Uncosted		
Free food grains provided to 800 million individuals	276	3.699	
Providing interest-free loans to states for capital expenditure for FY21	150	2.010	
Waiver of transmission charges (ISTS charges) allowed for trading of renewables extended until 2025	Uncosted		
NHPC (National Hydroelectric Power Corporation) and JKSPDC (Jammu and Kashmir State Power Development Corporation) (	65	864,563	
Indian Oil Corporation begins supply of used cooking oil-based Biodiesel	Uncosted		
Cabinet approves exclusive subsidy policy for Urea produced through coal gasification by Talcher Fertilizers Limited (TFL)	133	1.779	
Extension of deadline for coal-fired utilities to adopt new emission norms	Uncosted		
Lower House of the Indian Parliament passes bill to amend Minerals and Mines (Development and Regulation) Act	Uncosted		
Bihar: introduces Ethanol Production Promotion Policy	Uncosted		
Government scheme promotes exchange of incandescent bulbs for LED lamps	40	536	
India and Israel form joint venture to manufacture Aluminum-Air systems	Uncosted		
Government Approves Use of Ethanol-Gasoline Blend as Automotive Fuel	Uncosted		
Delhi: Mandatory reserving of 5 percent parking space for EV charging points at malls, hotels and others	Uncosted		
Coal India Limited Approves 32 Mining Projects Worth USD 6.4 Billion	473	6.339	
India-France Memorandum of Understanding on Renewable Energy Cooperation	Uncosted		
Indian Oil Corporation to invest USD 4.4 billion to expand refinery capacity	325	4.355	
Coal India signs a USD 400 million pact for procurement of dumpers	29	388,66	
Indian Union Budget 2021/22: USD 2 billion for augmentation of public transport services in cities	180	2.412	
Indian Union Budget 2021/22: Capital infusion to Solar Energy Corporation of India and Indian Renewable energy Developme	25	335,05	
Indian Union Budget 2021/22: Ujjwala Scheme to be extended to benefit 10 million more beneficiaries	16	214	
Indian Union Budget 2021/22: Raising duty on solar invertors and on solar lanterns	Uncosted		
Indian Union Budget 2021/22: Power distribution reform to increase efficiency: revamped reforms-based result-linked powe	3.060	41.008	
Maharashtra: energy department spends 15 bn INR on agricultural pumps	15	201	
Maharashtra: energy department spends 10 bn INR on improving infrastructure in industrial and urban areas, including streng	10	134	
Kerala: State budget: Kerala Budget installs rooftop solar	4	50	

R1. Stimulus Inventory

R9. GGI Dimension

Matches and lists

WORKSHEETS >>>>>

W1c. GGI Dimension

W1. B1 values

W2. Stimulus invent ...



## 3.2 Tagging policy measures

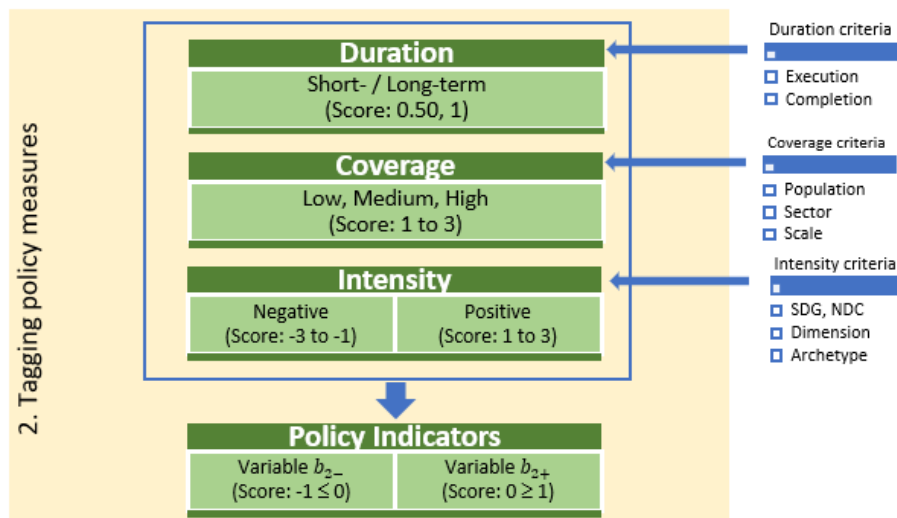


Table 1 Criteria for scoring both investments and policy incentives based on duration

Score	Criteria
1.0	Long-term policy measures are executed to trigger a change to the system or extends completion for a longer time period.
0.5	Short-term policy measures are executed as a "one-off" measure or completed in short period of time, i.e., less than 3 years.

Table 2 Criteria for scoring policy incentives based on coverage

Score	Criteria
3	High impact covering many sectors or entire economy as well as large part of the population
2	Moderate impact covering (i) only one sector but large part of the population; or (ii) several sectors although only small or specific part of population
1	Small impact covering (i) only one sector and small part of the population; or (ii) implemented at project level

Table 3 Criteria for scoring both investments and policy incentives based on intensity

Score	Criteria
3	Policy measures (i) have direct positive impact on either climate and/or nature; dimensions, which can be clearly linked to the SDG or NDC; (ii) measures that target social aspect but with clear impact on climate and/or green dimensions.
2	Policy measures with direct social impact contributes to more than one SDG indicators and/or aligned with NDC commitments.
1	Policy measures (i) with direct social impact contributes to only 1 SDG indicator; (ii) have both positive and negative impact on climate and/or nature; (iii) have only indirect impact on climate and nature, and no specific link can be made to SDG and/or NDC.
0	No clear climate, nature, and/or social impacts can be identified. These are excluded from the assessment.
-1	Policy measures have both positive and negative impacts on different dimensions, but with the negative impact more significant than positive, specifically, if the impacts negate one SDG indicator
-2	Policy measures have (i) negative impacts on social dimension, negating several SDG indicators; (ii) negative impact on climate or nature, clearly negating at least 1 SDG indicators
-3	Policy measures have clear negative impact on both climate and nature.



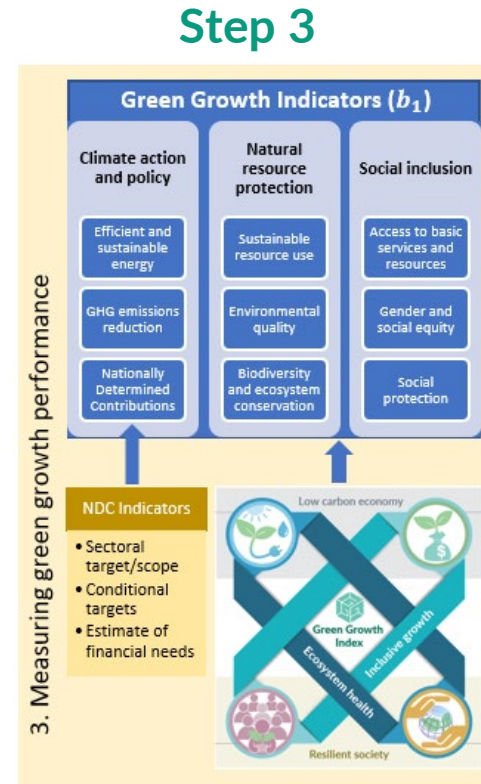
# 3.3 Measuring green growth performance



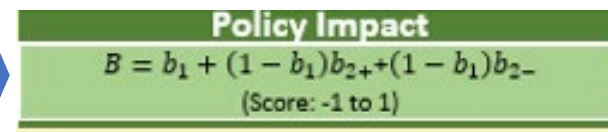
Vivid's methods used indicators from Environmental Performance Index (EPI), Climate Change Performance Index (CCPI), and Climate Change Tracker (CAT) as baseline for green performance.

GGGI's methods used indicators from the Green Growth Index for several reasons:

- It covers large number of countries. In contrast, there are no data available for CCPI and CAT for most countries included in this study.
- It includes indicators for social inclusion, which are lacking in the EPI.
- It uses SDG indicators and benchmarks against SDG targets, which are compatible with the tagging of intensity score.
- It represents the sectors which are covered by the policy measures of countries in this study.



**Step 2**



**Step 4**

Table 4 Green growth indicators used as baseline of green growth performance

Dimensions	Indicator categories	Indicators
Climate policy and action	NDC commitments	<ul style="list-style-type: none"> <li>NDC indicates economy-wide or sectoral emissions reduction targets as well as sectoral scope</li> <li>NDC indicates conditional targets and expresses target in tCO<sub>2</sub>e</li> <li>NDC includes estimates on financial needs for the mitigation and adaptation</li> </ul>
	Efficient and sustainable energy	<ul style="list-style-type: none"> <li>Ratio of total primary energy supply to GDP*</li> <li>Share of renewable to total final energy consumption*</li> <li>Efficiency in sustainable transport</li> </ul>
	GHG emissions reductions	<ul style="list-style-type: none"> <li>Ratio of CO<sub>2</sub> emissions to population, including AFOLU</li> <li>Ratio of non-CO<sub>2</sub> emissions to population, excluding AFOLU</li> <li>Ratio of non-CO<sub>2</sub> emissions in agriculture to population</li> </ul>
Resource and nature protection	Sustainable resource use	<ul style="list-style-type: none"> <li>Share of freshwater withdrawal to available freshwater resources*</li> <li>Soil nutrient budget</li> <li>Total domestic material consumption per unit of GDP*</li> </ul>
	Environmental quality	<ul style="list-style-type: none"> <li>PM<sub>2.5</sub> air pollution, mean annual population-weighted exposure*</li> <li>DALY rate due to unsafe water sources*</li> <li>Municipal solid waste*</li> </ul>
	Biodiversity and ecosystem conservation	<ul style="list-style-type: none"> <li>Average proportion of key biodiversity areas covered by protected areas*</li> <li>Red list index*</li> <li>Share of terrestrial and marine protected areas to total territorial areas*</li> </ul>
Social inclusion	Access to basic services and resources	<ul style="list-style-type: none"> <li>Population with access to safely managed water, sanitation, electricity, and clean fuels/technology*</li> <li>Population in severe food insecurity (Percent of total population) *</li> <li>Universal access - sustainable transport</li> </ul>
	Gender and social equity	<ul style="list-style-type: none"> <li>Gender ratio of account at a financial institution or mobile-money-service provider*</li> <li>Ratio of urban-rural access to basic services, i.e., electricity*</li> <li>Share of youth (aged 15–24 years) not in education, employment, or training*</li> </ul>
	Social protection	<ul style="list-style-type: none"> <li>Proportion of population above statutory pensionable age receiving pension*</li> <li>Universal health coverage (UHC) service coverage index*</li> <li>Proportion of urban population living in slums*</li> </ul>

\*SDG indicators

# 3.4 Assessing greenness of policy measures



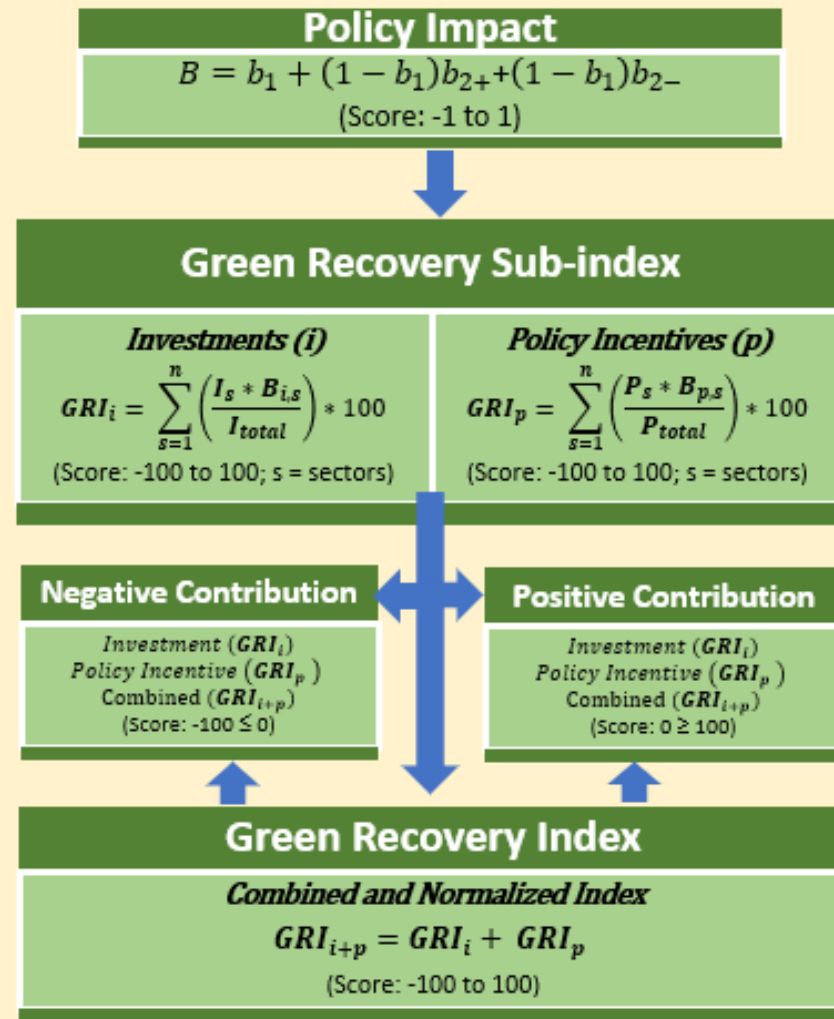
:vivid**economics**

## General Theory

- The index is constructed by combining the flow of stimulus into key sectors with an indicator of each sector's environmental impact.
- The impact indicator assigns a greenness value (positive or negative) to each sector for every country
  - This is the 'B' value
- Each sector of a country's economy has an amount of stimulus going into it
  - Fiscal flows are reported as 'F' values
- The overall GSI score is calculated by multiplying F and B values for each sector (s) and scaling by total support for environmentally relevant sectors.

$$GSI = \frac{\sum_s (F_s B_s)}{\sum_s (F_s)}$$

4. Assessing greenness of investments and incentives



GGGI's Green Recovery Index (GRI)

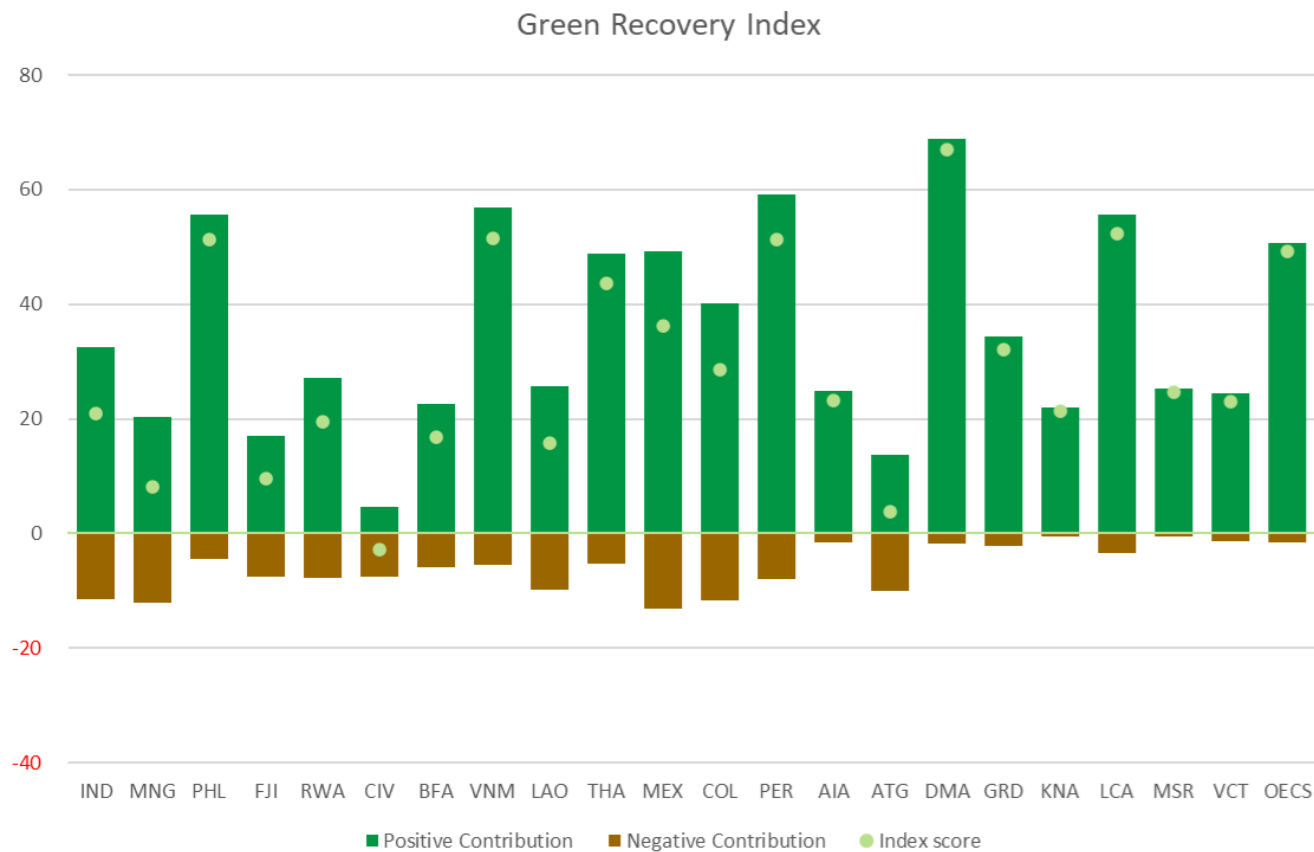
Vivid's Greenness of Stimulus Index (GSI)



## 4. Illustration of assessment results from GRI



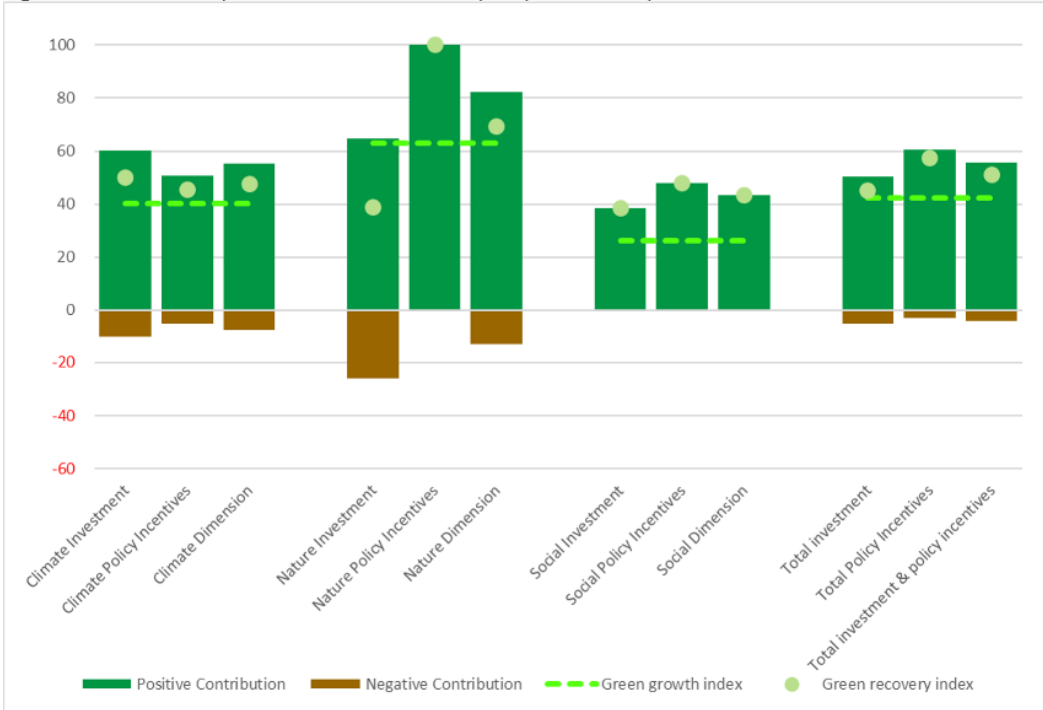
# Illustration of GRI assessment results



## Cross-country comparison

### Philippines (PHL)

Figure 1 Green recovery index and contribution of policy measures by dimension



Note: Investments are policy measures with and policy incentives without USD amount. Dimension considers the combined impacts of investment and policy incentives.

# Illustration of GRI assessment results



## Philippines (PHL)

Figure 2 Allocation of policy measures according to its impacts by dimension

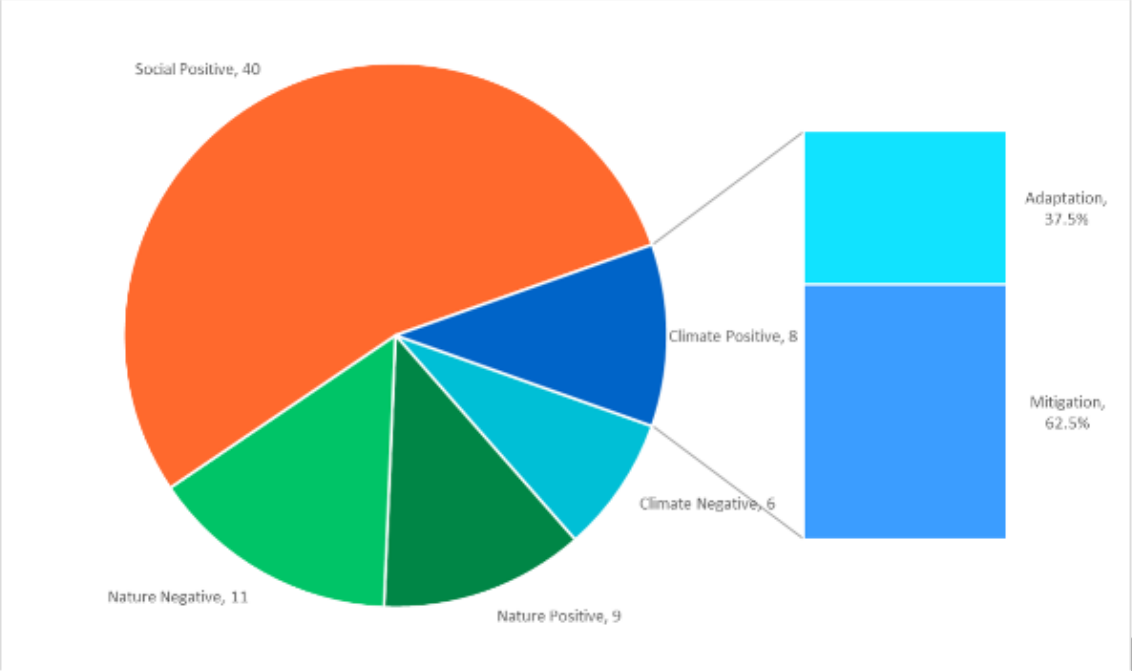


Table 1 Allocation of policy measures according to its impacts by dimension

Policy measures	Climate		Nature		Social		All dimensions	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Investments	4 (135.18)	1 (107.65)	7 (281.41)	11 (5414.44)	37 (18580.44)	0 (0)	48 (18997.03)	12 (5522.09)
Policy incentives*	4	5	2	0	3	0	9	5

Note: \*Numbers in parenthesis are the million USD amount of the investments. Policy incentives are measures without USD amount.

Table 2 Green recovery index and contribution of policy measures by sector\*

Sectors	Investment			Policy incentives			Combined policy measures		
	Contribution		Green recovery index	Contribution		Green recovery index	Contribution		Green recovery index
	Positive	Negative		Positive	Negative		Positive	Negative	
AFOLU	3.86	-0.62	3.25	5.77	-	5.77	4.82	-0.31	4.51
Energy	0.02	-	0.0	8.80	-	8.80	4.41	-	4.41
Transport	0.34	-0.10	0.24	20.90	-3.39	17.51	10.62	-1.75	8.87
Industry	0.29	-	0.29	-	-	-	0.15	-	0.15
Waste and Water	-	-	-	14.29	-	14.29	7.14	-	7.14
Health	8.54	-	8.54	3.48	-	3.48	6.01	-	6.01
Tourism	0.54	-0.32	0.22	-	-	-	0.27	-0.16	0.11
Others**	36.93	-4.29	32.64	7.42	-	7.42	22.18	-2.14	20.03
Total	50.52	-5.33	45.19	60.66	-3.39	57.27	55.59	-4.36	51.23

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## Thank You

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Ruben Sabado Jr.