The Partnership for Action on Green Economy (PAGE) seeks to put sustainability at the heart of economic policymaking to advance **2030 Agenda for Sustainable Development** and the **Paris Agreement.**

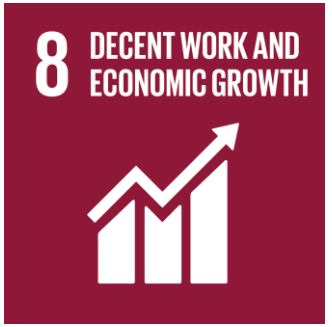
UN Environment :
United Nations Environment Programme

ILO:
International Labour Organization

UNIDO: United Nations Industrial Development Organization

UNITAR: United Nations Institute for Training and Research

UNDP: United Nations Development Programme



MODELLING GREEN ECONOMY POLICIES

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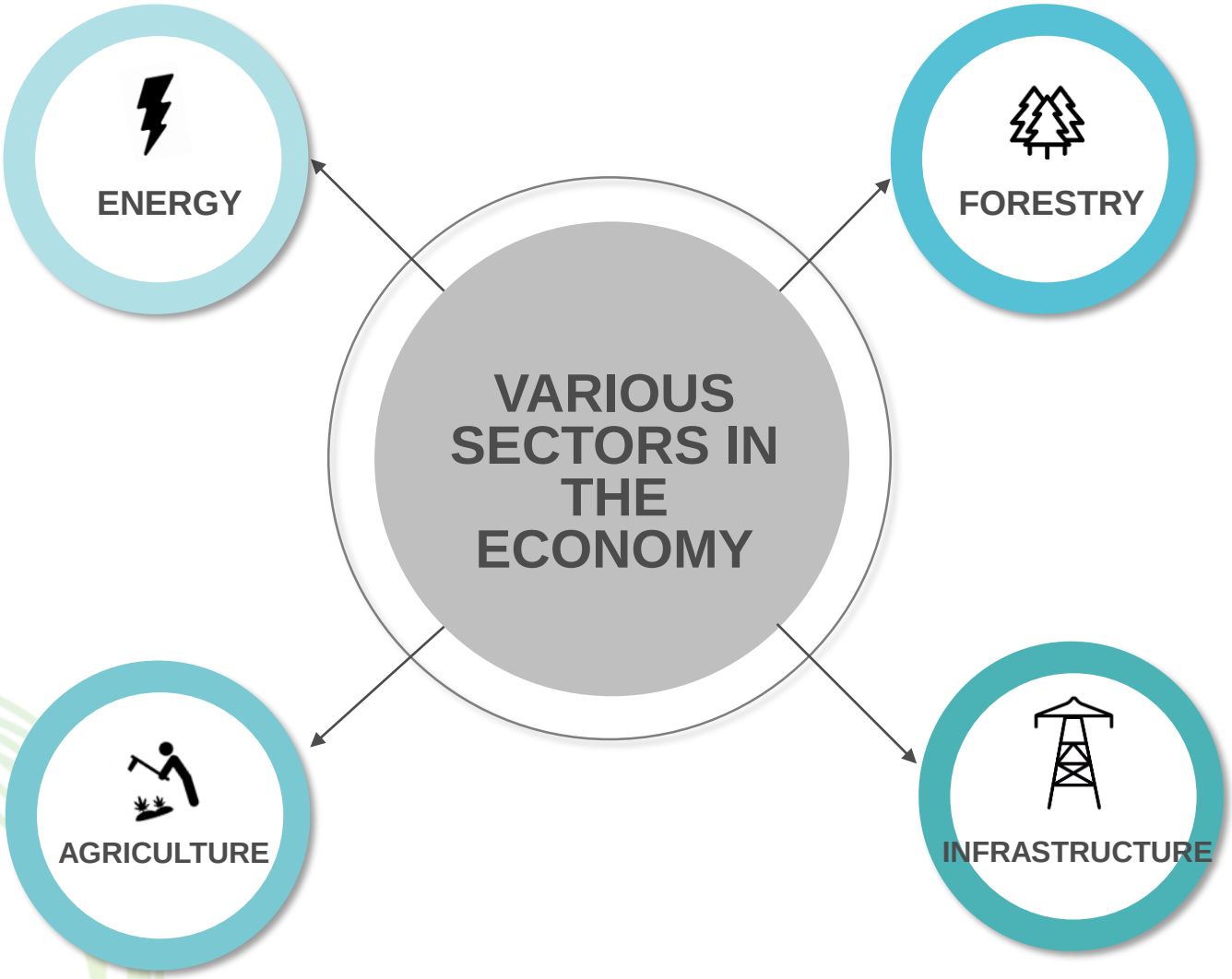
OUTLINE

- **PART 1)** Defining Quantitative Policy Objectives: Guyana
- **PART 2)** System Dynamics Models for assessing Nationally Determined Contributions: Peru
- **PART 3)** An Integrated Modelling Framework for assessing Green and Climate Policies: Mexico

PART 1

DEFINING QUANTITATIVE POLICY OBJECTIVES: GUYANA

GUYANA:
SUSTAINABLE DEVELOPMENT PRIORITIES



GUYANA:
GREEN STATE DEVELOPMENT STRATEGY
(UNDER DEVELOPMENT)

Defining
Quantitative
Policy Objectives

GUYANA: AGRICULTURE
POLICY OBJECTIVES - SDG ALIGNMENT

- ✓ Sustainable food production systems, Resilient agricultural practices

- ✓ Improve water quality by avoiding pollution, dumping hazardous chemicals and materials

- ✓ Conservation, Restoration, Sustainable use of terrestrial and inland freshwater ecosystems

GUYANA: AGRICULTURE
POLICY OBJECTIVES - NDC ALIGNMENT

Adaptation to adverse effects of climate change : e.g. floods, droughts, sea level rise.

GUYANA: AGRICULTURE – POLICY OBJECTIVES
GREEN STATE DEVELOPMENT STRATEGY

Objective:

- **To move into a sustainable, productive and diversified agriculture**

Challenges:

(1) Land use & Social Inclusion
(2) Non-compliance, Lack of sustainability certification
(3) The adequacy of institutional, infrastructure and personnel capacity

GUYANA: AGRICULTURE – SETTING POLICY OBJECTIVES

Business as Usual Scenario
(No additional policy intervention)

From (2016) 1,680,000 hectares.

Green Scenario
(Policy Intervention)

Policy objective :

To achieve 500,000 hectares under sustainable management by 2030.

GUYANA: OTHER SECTORS – SETTING POLICY OBJECTIVES

Promote renewable energy and energy security with the aim of reducing country dependence to fossil fuels and combat climate change.

Increase the diversification of the economy by adding value to timber production

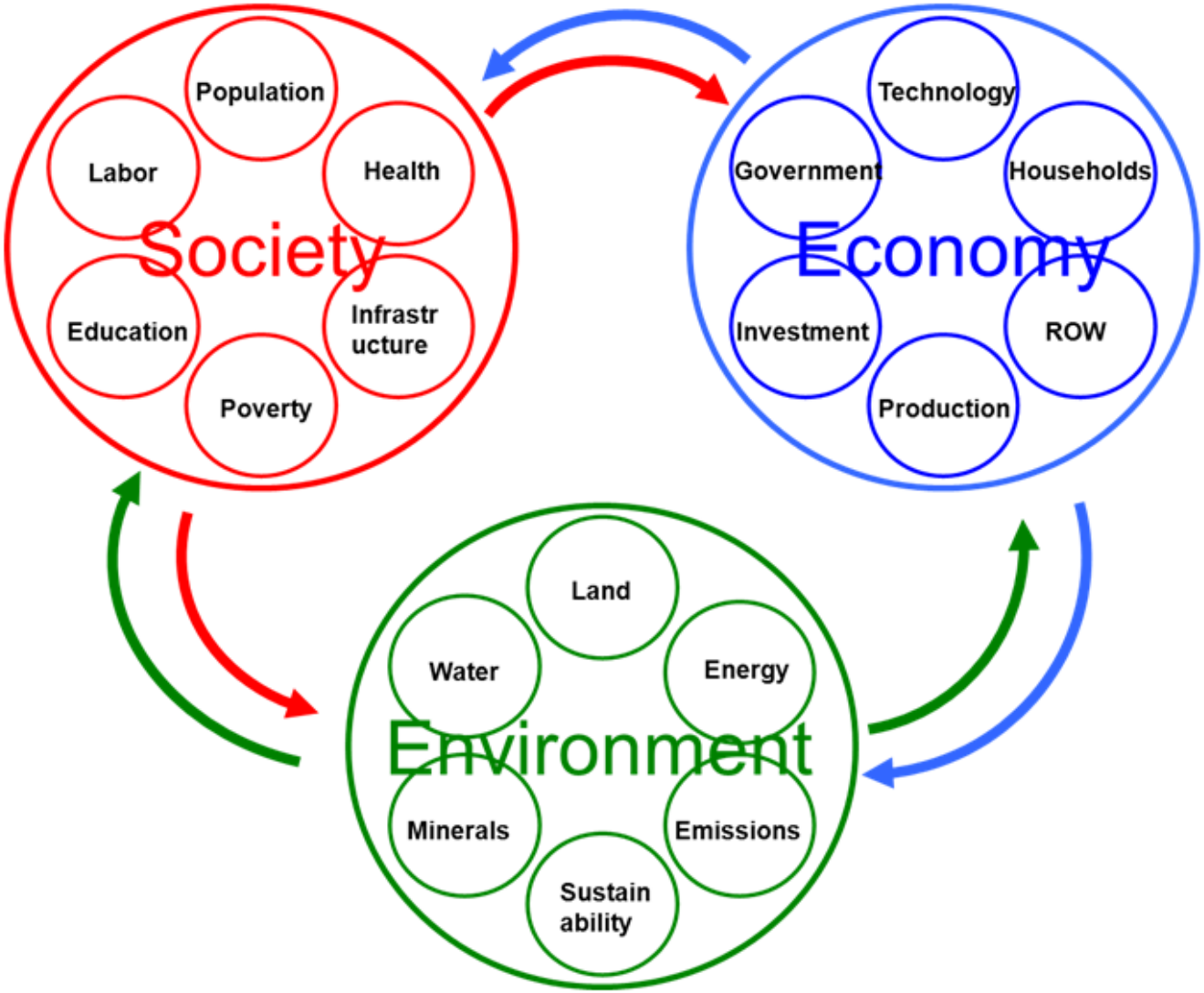
Improve livelihoods of rural communities and the sustainable development of the inland rural areas by building a more efficient network to the main urban areas

PART 2

SYSTEM DYNAMICS MODELS FOR ASSESSING NATIONALLY DETERMINED CONTRIBUTIONS: PERU

17 COUNTRY GREEN ECONOMY POLICY ASSESSMENTS (2012 – 2017)

WHAT IS SYSTEM DYNAMICS (T21) MODEL?



T21 Spheres and Sectors

- endogenous links within and across the economic, social and environmental sectors through various **feedback loops.**

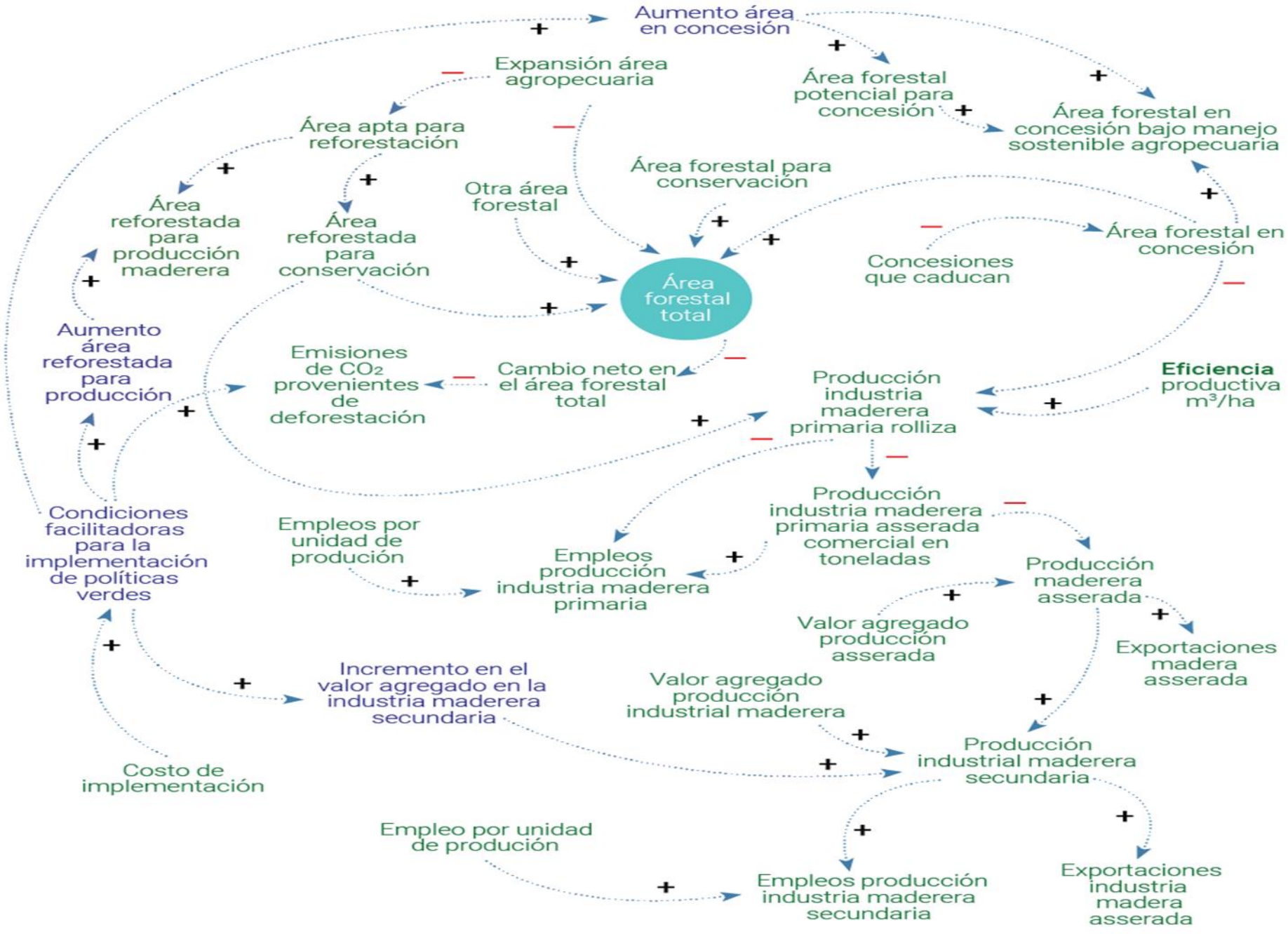
PERU: FORESTRY SECTOR – INFORMING NATIONALLY DETERMINED CONTRIBUTIONS

Policy Objectives:

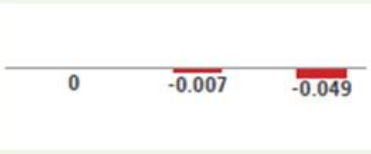
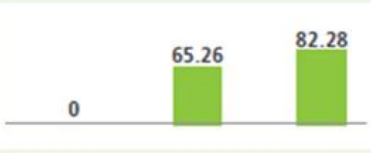
1. Increase area of timber concessions under sustainable management by 2.3 million hectares by 2030.

2. Increase reforestation area by 5,000 hectares per year until reaching 100,000 hectares in the year 2035.

3. Implementation of actions against deforestation - of enabling conditions of the INDC.

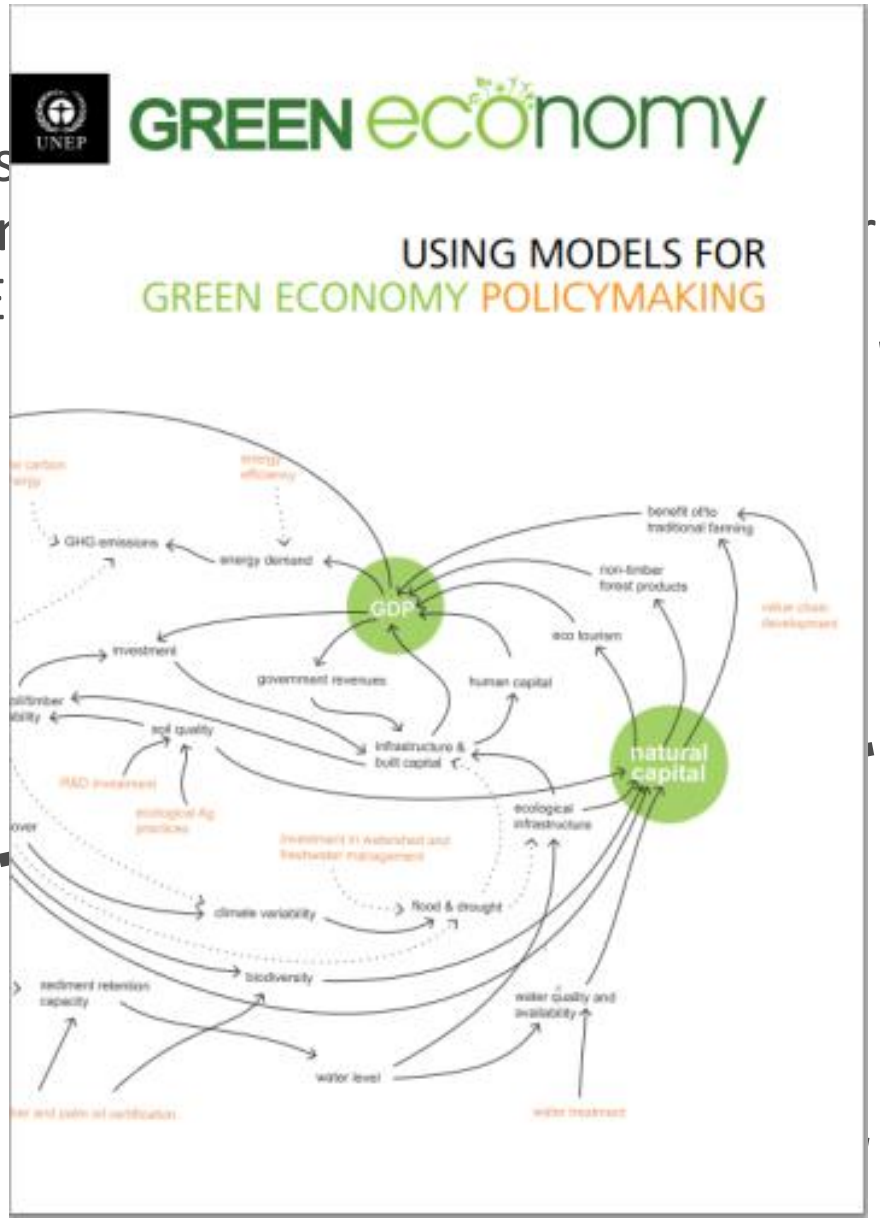

Aumento área en concesión
Expansión área agropecuaria
Área forestal potencial para concesión
Área forestal en concesión bajo manejo sostenible agropecuaria
Área apta para reforestación
Área forestal para conservación
Otra área forestal
Área reforestada para producción maderera
Área reforestada para conservación
Área forestal en concesión
Concesiones que caducan
Área forestal total
Aumento área reforestada para producción
Emisiones de CO_2 provenientes de deforestación
Cambio neto en el área forestal total
Producción industria maderera primaria rolliza
Eficiencia productiva m^3/ha
Producción industria maderera primaria asserada comercial en toneladas
Empleos por unidad de produción
Empleos producción industria maderera primaria
Condiciones facilitadoras para la implementación de políticas verdes
Producción maderera asserada
Valor agregado producción asserada
Exportaciones madera asserada
Incremento en el valor agregado en la industria maderera secundaria
Valor agregado producción industrial maderera
Producción industrial maderera secundaria
Costo de implementación
Empleo por unidad de produción
Empleos producción industria maderera secundaria
Exportaciones industria madera asserada

BOSQUES

Indicador	Tendencia Escenario Verde (EV) 2015-2035		Valor 2035	Diferencia porcentual entre escenarios (EV-BAU/EV)
Pérdida de bosques anuales		BAU	346	
Miles de Ha		EV	351	
Hectáreas forestadas total		BAU	1 119	
Ha por año		EV	18 806	
Hectáreas protegidas sector forestal		BAU	25,8	
Millones de Ha		EV	21,8	
PBI foresta primario		BAU	631,0	
(Millones PEN2007/año)		EV	2 091,3	
PBI forestal industrial maderera		BAU	991,4	
(Millones PEN2007/año)		EV	5 595,6	
Emisiones netas provenientes de deforestación		BAU	127,3	
Millones de Toneladas CO2 e		EV	118,3	
Exportaciones forestal industria maderera		BAU	831,8	
(Millones PEN2007/año)		EV	4 694,9	
	2015 2025 2035			2015 2025 2035

SHORTCOMINGS OF THE SYSTEM DYNAMICS (T21) MODEL

✓not good at s
✓ measuring ir r trade policies on IGE
✓....



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System Dynamics

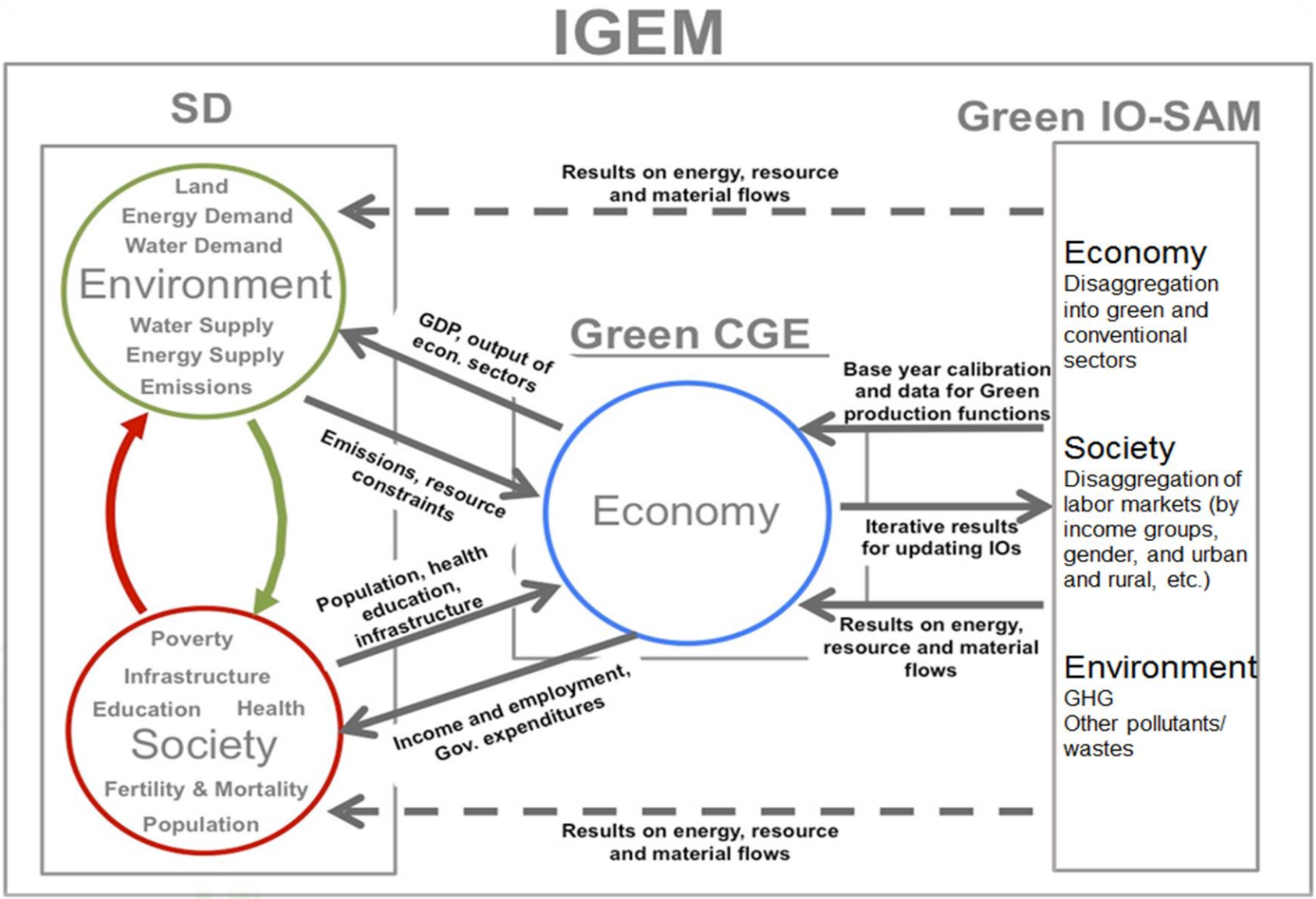
Input - Outputs SAM

Computable General Equilibrium

PART 3

AN INTEGRATED MODELLING FRAMEWORK FOR ASSESSING GREEN AND CLIMATE POLICIES: MEXICO

WHAT IS THE IGEM FRAMEWORK?



MEXICO: CARBON TAX ON FOSSIL FUELS (2014)

Scenario	Tax rate	CGE	System Dynamics
Feebate scenarios: **Scenario 1 - Low** tax rate	3.5 USD/tCO2eq	- Economic effects. - Use results from the SD to estimate effects of increased longevity on productivity.	- Social and environmental impacts resulting from the CGE simulation.
Scenario 2 - High tax rate	25 USD/tCO2eq		
Compared to:			
Rebate scenario (lump sum)	3.5 and 25 USD/tCO2eq		
Business-as-usual scenario	No carbon tax		

MEXICO: RESULTS BY 2035

1. GDP grows up to 1.3% (two models are linked):

   - The effect of lower emissions on longevity and

   labour productivity is better captured.

2. Greatest economic, social and environmental impacts are under the Feebate scenario (i.e., revenues used to finance RE) with high tax rate (i.e., 25 USD/tCO2eq).

3. All consumers would experience welfare gains BUT slightly higher for the higher income agents!

PAGE

THANK YOU

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