"Regional workshop to facilitate development and use of tools and methodologies for modelling and assessing the impacts of response measures "
from 21 to 23 September 2022 in M'Bour.

Green Jobs Assessment Model (GJAM)

Background & application sample

By:

- Prof. Birahim Bouna Niang, Economist, Université Cheick Anta Diop, Dakar, Senegal
- Prof. Naga Coulibaly, Environmentalist, Université NANGUI ABROUA, Abidjan, Côte d'Ivoire

United Nations
Climate Change Secretariat

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Outline

- Introduction
- General information on the GJAM
- Experience of Côte d'Ivoire and Senegal

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Introduction

Well over a billion jobs are at risk in the sectors most threatened by environmental degradation, such as agriculture, forestry and fisheries.

Resource scarcity, climate impacts and pollution

- Humanity is simply using more than the planet can provide.

Agriculture is perhaps the sector most vulnerable to climate change

A transition to green growth depends on large-scale shifts in capital mobilization.

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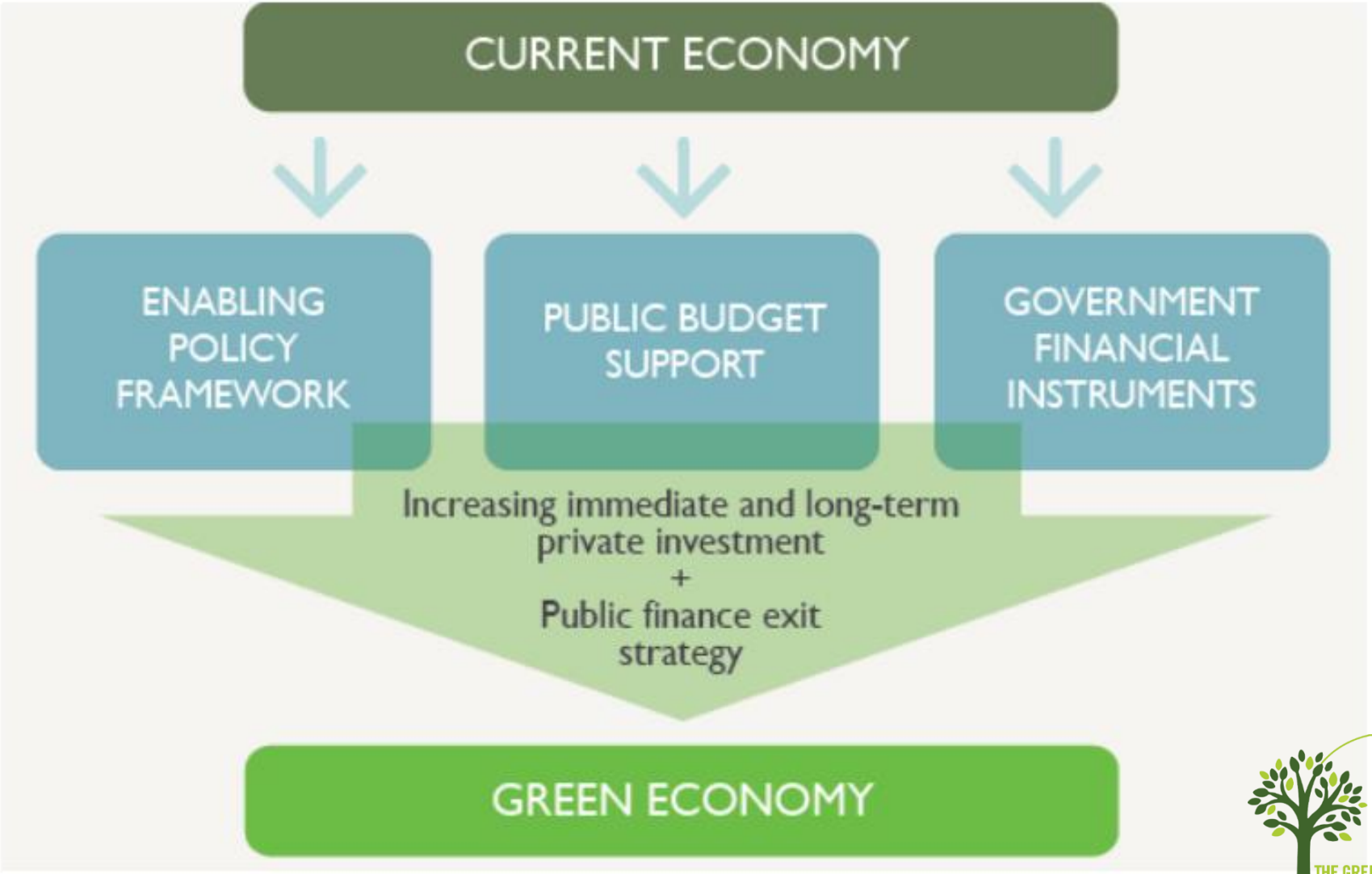
Introduction

The role of public policy and finance in unlocking private investment in green growth



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Introduction

Learning objectives :

1. understand the logic of the input–output (IO) table ;
2. understand how a conventional IO table can be expanded to distinguish green industries;
3. understand how satellite accounts link physical data, such as number of employees or CO2 emitted, to the financial information in an IO table;
4. be able to build a static IO model that projects output and employment from policy scenarios, which are modelled as changes in final demand or investment.

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General information on the GJAM

Policy questions that the model address :

What is the impact of climate policies on…

Social and Labour Market

- Direct and indirect employment
- Skills, Gender, Youth

Economy

- Sector GDP
- Poverty, inequality Feedback on demand -> Reality
- Taxes, income, profits, wages

Environment

- CO2 emissions by sector
- Forest, waste, energy, water

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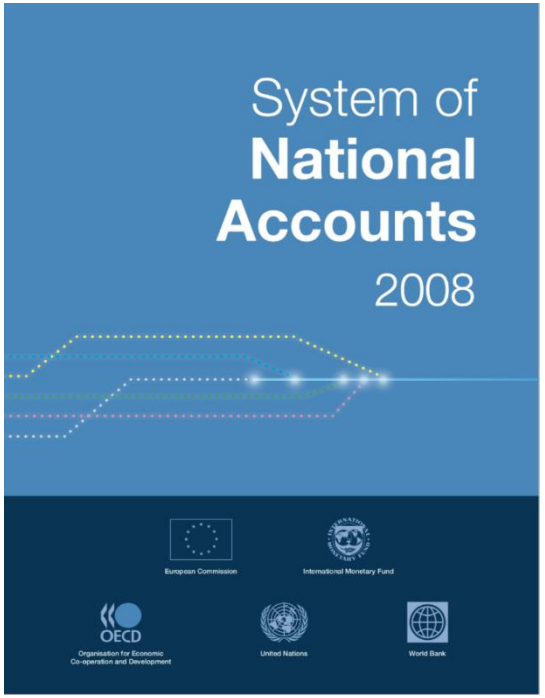
General information on the GJAM

Multiple source data on social, economic and environmental should be combined into a consistent framework



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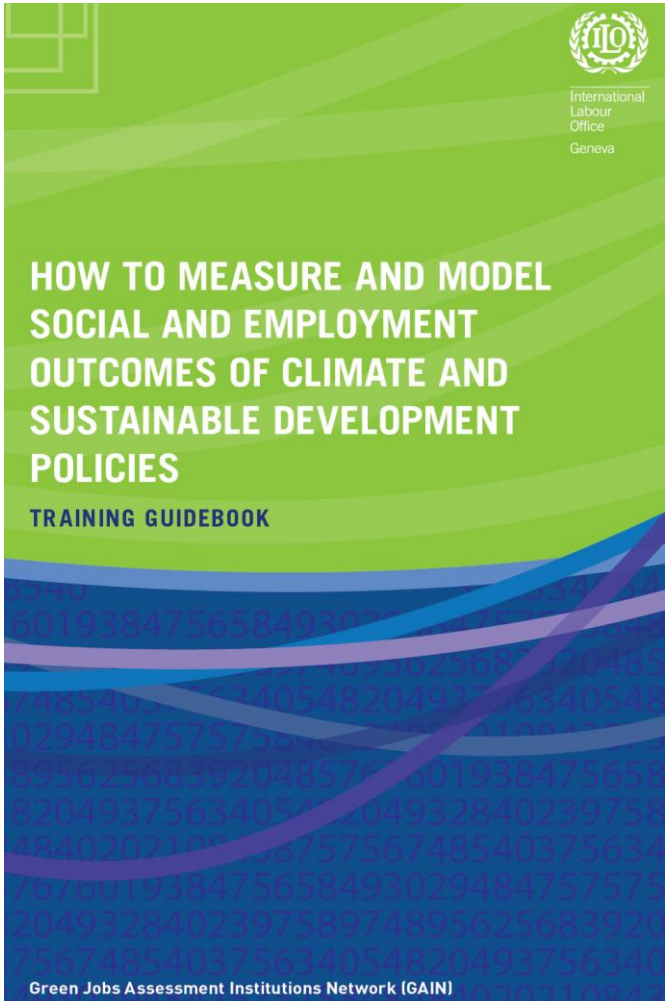
General information on the GJAM

- ✓ Open source methodology Training guide published
- ✓ GAIN ,30+ Network Research Institutions
- ✓ Government building capacity & national institutions
- ✓ Building national models for better climate policy



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General information on the GJAM

Properties of input and output based models :

- They are based on economic statistics according to the System of National Accounts (SNA)
- Economic sectors are highly disaggregated by the International Standard Industrial Classification (ISIC) (up to 4-digit level)
- And, they enable the integration of environmental and social statistics
- Allow simulation of structural change

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General information on the GJAM

IO Table as accounting framework

The IO table for a particular country follows the International Standard Industrial Classification (ISIC) for all economic activities

		Industry-by-industry Total domestic purchases of inputs			Total final demand (D)				
		Agriculture	Manufacturing	Services	Household demand	Private investment	Government demand	Exports	Output (sales)
Gross value of output: Industry by industry, Total domestic production of outputs	Agriculture	O_{11}	O_{12}	O_{13}	C_1	I_1	G_1	EX_1	X_1
	Manufacturing	O_{21}	O_{22}	O_{23}	C_2	I_2	G_2	EX_2	X_2
	Services	O_{31}	O_{32}	O_{33}	C_3	I_3	G_3	EX_3	X_3
IMPORT	Imports	M_1	M_2	M_3	M_C	M_I	M_G		M
Gross value added	Taxes minus subsidy	T_1	T_2	T_3					T
	Wages and salaries	W_1	W_2	W_3					W
	Profit[1]	$Profit_1$	$Profit_2$	$Profit_3$					Profit
Total input (payment)		X_1	X_2	X_3	C	I	G	EX	
Employment by industry		E_1	E_2	E_3					
CO2 emissions by industry		$CO2_1$	$CO2_2$	$CO2_3$					

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General information on the GJAM

All data in the ES table are presented in currency

			Industry-by-industry Total domestic purchases of inputs			Total final demand (D)				
			Agriculture	Manufacturing	Services	Household demand	Private investment	Government demand	Exports	Output (sales)
Gross value of output	Industry by industry Total domestic production of outputs	Agriculture	12.5	27	60	40	4.5	82	274	500
		Manufacturing	25	54	120	120	594	16	16	900
		Services	50	54	80	80	4.5	85.3	461.2	750
	IMPORT	Imports	75	108	160	160	297	206.7		876.7
	Gross value added (GVA)	Taxes minus subsidy	12.5	18	15					45.5
		Wages and salaries	250	540	450					1 240
		Profit	75	99	105					279
	Total input (payment)		500	900	750	400	900	390	751.2	
Satellite accounts										
Employment by industry			125	96	89			310 (total employment)		
CO_2 emissions by industry										
Other physical, social and environmental values,										

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General information on the GJAM

exogenous

endogenous

Data Processing and Construction of Green Job Evaluation Model

overall economic development

Population

GDP t-1 / GDP t-2

per capita GDP t-1, t-2,

Table 2.3: Supply and Use Tables framework

		Products				Industries				Final uses			Total
		Agriculture, forestry, etc.	Ores and minerals; etc.	...	Services	Agriculture, forestry, etc.	Mining and quarrying	...	Services	Final consumption	Gross capital formation	Exports	
Products	Agriculture, forestry, etc. Ores and minerals; etc. ... Services					Intermediate consumption by product and by industry				inal uses by product and by category			Total use by product
Industries	Agriculture, forestry, etc.	Output by product by industry											Total output by industry
	Mining and quarrying												
	...												
	Services												
Value added						Value added by component and by industry							Value added
Imports		Total imports by product											Total Imports
Total		Total supply by product				Total output by industry				Total final uses by category			

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employment by

Emissions by industry

GDP per capita & inequality

GJAM capture

- Direct effects
- Indirect effects
- Induced effects

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General information on the GJAM

Development of policy scenarios

- **Change in production structure**
  - New product/industry
  - For example, climate-smart agriculture
  - For example, energy efficiency
  - Employment coefficients
  - Emission coefficients
  - Import shares
- **Change of final request**
  - Investments
  - Household consumption structure
  - Government consumption structure

		Products				Industries				Final uses			Total
		Agriculture, forestry, etc.	Ores and minerals; etc.	...	Services	Agriculture, forestry, etc.	Mining and quarrying	...	Services	Final consumption	Gross capital formation	Exports	
Products	Agriculture, forestry, etc. Ores and minerals; etc. ... Services					Intermediate consumption by product and by industry				Final uses by product and by category			Total use by product
Industries	Agriculture, forestry, etc.	Output by product by industry											Total output by industry
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Value added						Value added by component and by industry							Value added
Imports		Total imports by product											Total Imports
Total		Total supply by product				Total output by industry				Total final uses by category			

Empty cells by definition

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Experience of Côte d'Ivoire and Senegal

- General framework:
  - Partnership agreement between the ILO, Cheikh Anta Diop University of Dakar and the University of Senegal
  - Partnership agreement between the ILO, Université NANGUI ABROGOUA of Abidjan, Côte d'Ivoire

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Experience of Côte d'Ivoire and Senegal

- **Activities carried out**
  - Situation analysis
  - Establishment of a GAIN team (academics, Ministry of Economy and Planning, Ministry of Environment, Ministry of Labour, Social Partners

- **Current phase**
  - Documentary collection
  - Collection of statistical data

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Experience of Côte d'Ivoire and Senegal

- Next steps
  - Disagregation by branches of activity (conventional/ecological)
  - Model implementation (Excel and R software)
  - Scenario analysis
  - Dialogue with stakeholders and drafting policy briefs

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Thank!

Questions ?

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