



# **Experiences in Embedding INDCs into Low-Emission Development Strategies (LEDS)**

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# Presentation Structure

1. Indonesia Development Planning Process
2. Linkage Between RAN-GRK and INDC
3. Exercise Using Modeling
4. The Way Forward



# 1. Indonesia Development Planning Process



# Mid Term National Development Plan (RPJM) 2015-2019 In the Framework of Long Term National Development Plan 2005-2025

## Development Vision 2005-2025

### INDONESIA Self Reliant, Developed, Equitable and Prosperous

LAW No. 17/2007: 4 medium term development plans

#### RPJM 1 (2005 – 2009)

To realize the development of Republic of Indonesia that is secure, peaceful, equitable, and democratic with a better improvement of the people's welfare

#### RPJM 2 (2010 – 2014)

To realize the development of Republic of Indonesia that is well integrated, improve the quality of human resources, manage a good knowledge on science and technology, improve the economy competitiveness

#### RPJM 3 (2015 – 2019)

To strengthen the well integrated and full coverage of development with good economic competitiveness based on the available natural resources and good quality of human resources, and good knowledge on the science and technology

#### RPJM 4 (2020 – 2025)

To realize the Indonesian people that are independent, developed, equitable, and prosperous, by escalating the development in all sector with a strong economic structure and based on the excellent competitiveness

#### Three important key words:

- Available Natural Resources
- Good Quality Human Resources
- Good Knowledge on Science & Technology



# NATIONAL DEVELOPMENT STRATEGY (RPJM 2015-2019)

## DEVELOPMENT NORMS

- 1) Development is for **people and community**;
- 2) Effort to improve the welfare, prosperity, productivity should not create inequality, Special attention: improving people's productivity at lower middle segment, without hampering and reducing flexibility of major actors as agent of growth
- 3) Development activities must not impair/degrade the carrying capacity of environment and the balance of the ecosystem

## Three Dimensions of Development

### Human Development Dimension

Education

Health

Housing

Mental/Character

### Sectoral Development Dimension

Food Sovereignty

Energy & Electricity  
Sovereignty

Maritime and Marine

Tourism and Industry

### Equality Development Dimension

Among Income  
Groups

Among Regions: (1)  
Village; (2) Borders; (3)  
Outer; (4) Eastern  
Region

## NECESSARY CONDITION

Certainty and Law  
Enforcement

Security and Order

Politics and  
Democracy

Governance and  
Reform

## QUICK WINS AND OTHER CONTINUES PROGRAM



# MACRO OBJECTIVES

Indicator	2014* (Baseline)	2019
<b>People and Community Development</b>		
▪ People Development Index	73,83	76,3
▪ Community Development Index <sup>1</sup>	0,55	Increase
▪ Gini Index	0,41	0,36
▪ Increase in the percentage of the community that is registered with the health insurance through a national social protection system	51,8% (October 2014)	Min. 95%
▪ Participation in the National Social Protection System for Employment		
Formal employee	29,5 Million	62,4 Million
Informal employee	1,3 Million	3,5 Million

<sup>1</sup>

Community development index is the composite index that measure the tolerance, cooperativeness, and security feeling in the community

\*Estimation

\*\*March 2014

Indicator	2014* (Baseline)	2019
▪ Economic Growth	<b>5,1%</b>	<b>8,0 %</b>
▪ GDP per Capita (000 IDR) base year 2010	43.403	72.217
▪ PDB per Kapita (000 IDR) base year 2000	40.785	
▪ Poverty Rate	10,96 % *)	7,0-8,0%
▪ Un-employment (TPT)	5,94%	4,0-5,0%

\*) Poverty rate in September 2014, the rate might change due to the fuel subsidy policy, that is enacted in November 2014



# Agenda: Natural Resources Preservation, Environment and Disaster Management



INDICATOR	2014 (baseline)	2019	Related Ministries
Forest Area Consolidation	-	100%	MoEF
FMU Operationalization	120	579	MoEF
Environment Quality Index	-	66,5-68,5	MoEF
<b>GHG emission</b>	<b>15,5%</b>	<b>26%</b>	<b>5 Ministries</b>
Disaster Management			
<ul style="list-style-type: none"> <li>Improve the community resilience to disaster</li> </ul>			National Agency for Disaster Mngmt
<ul style="list-style-type: none"> <li>Improve the early warning system for information service on weather and climate as well as disaster management</li> </ul>			Meteorological, Climatology, and Geophysics Agency
Improve the data accuracy and information service on meteorological, climatology and geophysics			<b>Meteorological, Climatology Agency</b>

## PROGRAM OF THE PRESIDENT

- Strengthen the international cooperation in solving the global problems such as climate change and epidemic;**
- Rehabilitation of the ocean and coastal destruction;
- Increase of water conservation area with sustainable management. The target of conservation area in the next 5 years is 17 Mio hectares with additional area of 700 hectare;
- Supervision and effective law enforcement for illegal logging actors;

### POLICY DIRECTION:

#### 1. Sustainable Forest Management and Conservation

- Escalation of the forest area consolidation through boundary management, mapping and determination with involvement of relevant stakeholders
- Establish and form an excellent management unit
- Improve the capacity of management and infrastructure of the FMU
- Develop a good relationship between the community, indigenous people and government for the forest management in the forest area

#### 2. Strengthening Environment Quality Monitoring System

- Environmental quality improvement
- Strengthening the incentive and disincentive system for environmental management
- Application of the sustainable consumption and production pattern
- Strengthening environmental financing and partnerships between ministries/agencies, local governments, and privates

### POLICY DIRECTION:

#### 3. Disaster Management and Disaster Risk Mitigation

- Strengthening the institutional capacity and human resources on the disaster management
- Provision of the mitigation means and infrastructure, preparedness, and early warning system on the disaster
- Educational management and building the capacity of the community on the disaster risk mitigation
- Improve the participation and the role of multi stakeholder on the risk management

#### 4. Provision of the Information on Climate and Disaster

- Improve the accuracy and analysis as well as the information provision for the early warning system, meteorological, climatology and geophysics information that support the sustainable climate change management.

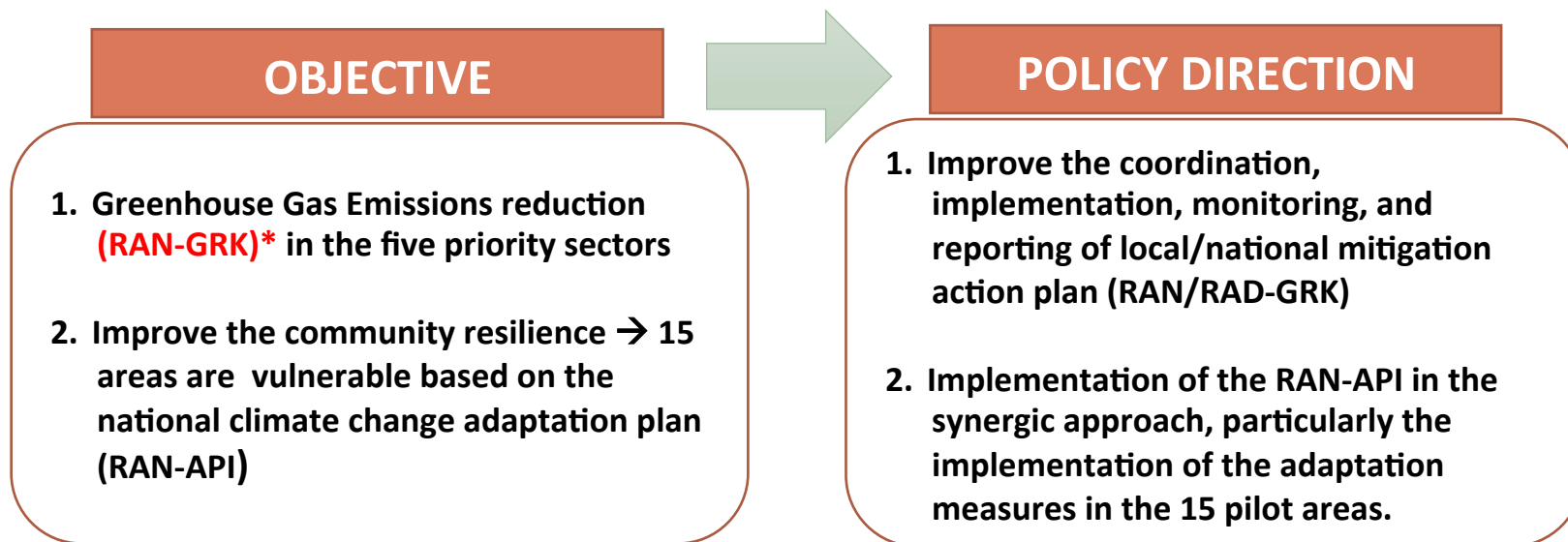


# RPJMN 2015-2019

## Book II Chapter I

### I. MAINSTREAMING THE SUSTAINABLE DEVELOPMENT

### II. CLIMATE CHANGE MULTI SECTORAL PROGRAM



\* Note: President Regulation 61/2011 about RAN-GRK stated explicitly in article 9 that the decree could be reviewed regularly based on national needs and global negotiation development

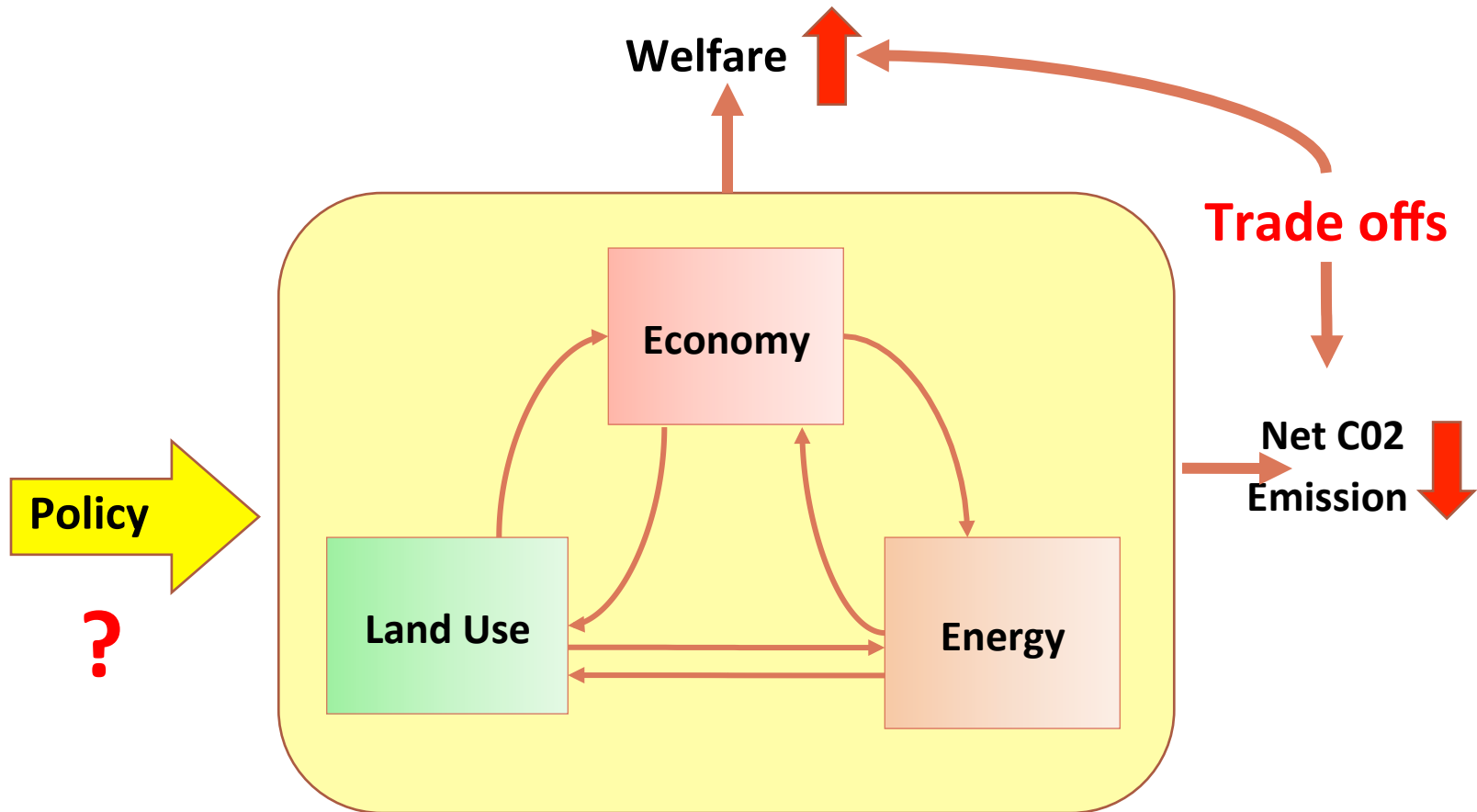




# 2. Linkage Between RAN-GRK and INDC



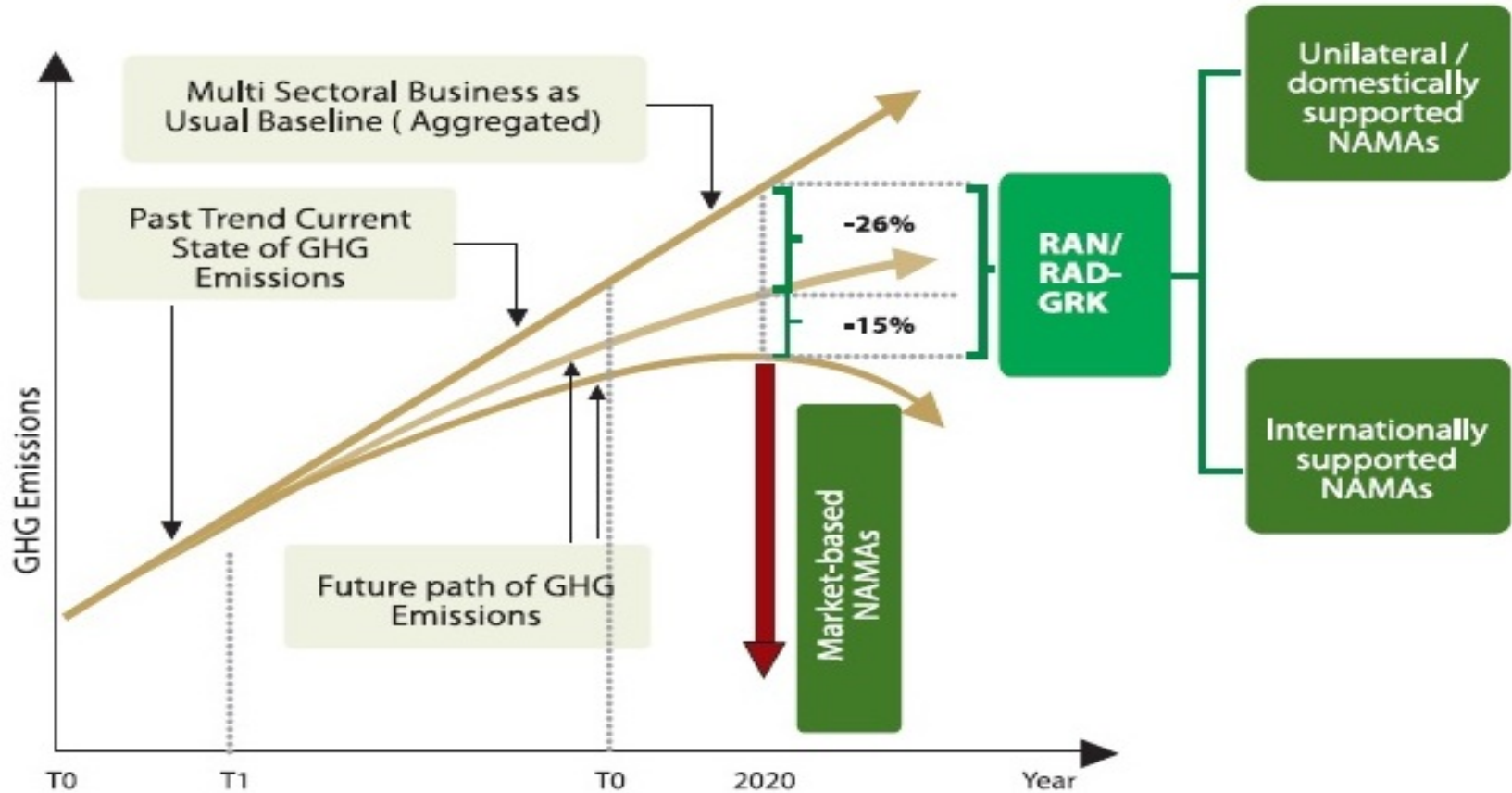
# Conceptualization of Review of RAN-GRK\*



Note: \* INDC shall use similar conceptualization with RAN-GRK



# Relation of National Mitigation Action Plan and NAMAs





# Main Components will be Reviewed



Base Year: 2010 ( starting year of calculation of mitigation action)



BAU Baseline vs FREL



Mitigation scenario: worst case (BAU Baseline), regular/fair case (existing policies), the best case (deeper cut/ambitious)



Organizational role & functions:  
Line Ministries/Governor/Head of District/Mayor



Mitigation Action Matrix : update from RPJM 2015-2019 & activities that require international support



Source of Fund/Incentive:  
elaboration of funds from private sectors and community as well as international funds



# Steps of Review RAN/RAD-GRK

Review of results of Monev of RAN/RAD-GRK Implementations

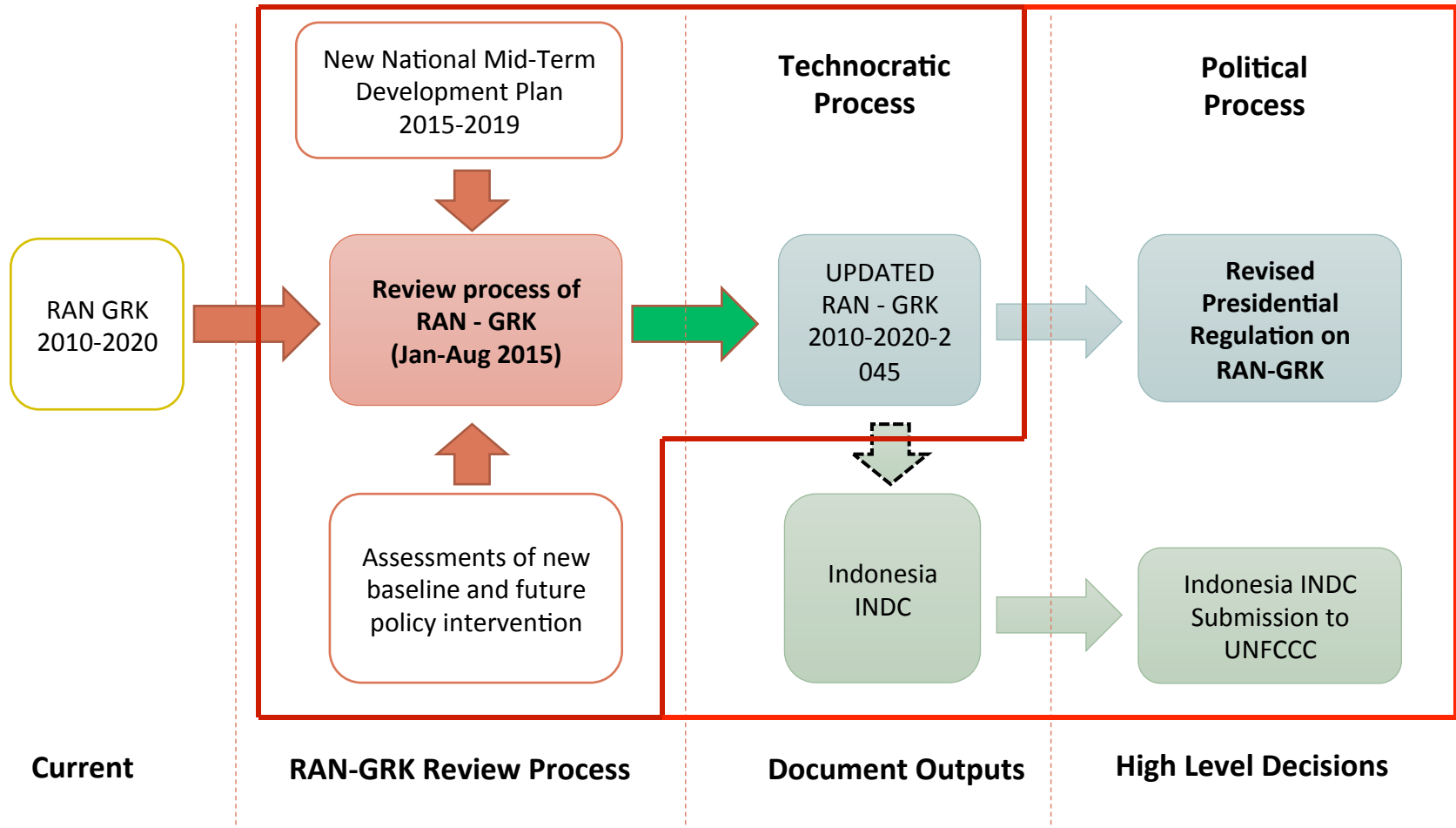
Review of RPJM 2015-2019 related to climate change issues

Development of Model: aims to see the mitigation scenarios and the consequences in the future

Revision of Presidential Regulation (*Perpres*) 61/2011



# Linkages between RAN-GRK and INDC



Indonesia INDC is a by-product of Indonesia Mitigation Policy (RAN-GRK) Review Process.



# Indonesia position to the INDC

- ✓ **Voluntary contribution (CBDR Principle) and Based on state capability (Respective capability).**
- ✓ **Based on rigorous scientific-policy assessments and using latest available data and information (without creating further additional burden).**
- ✓ **Should further strengthen existing long-term institutional arrangements that can also be useful for a future implementation phase.**
- ✓ **Should encourage policy integration process particularly non-climate policy and benefits with climate change policy: Well-designed policies can make economic growth and other national priorities such as sustainable development, poverty reduction, mutually reinforcing with climate objectives .**
- ✓ **For the time being, Indonesia still focuses only on mitigation until the adaptation concept related to INDC is clear enough.**



# Conceptualisation of RAN-GRK Review Process and INDC

## Review RAN-GRK objectives:

- Find suitable policy interventions to maintain green economic growth while reducing GHG emissions → Low Emission Development Strategy (LEDS)/ Green Growth
- Measuring the medium and long term impact of climate change policy interventions on each sector and the economy.

## Sectors Scopes:

- Economy and household (GDP, employment, Saving)
- Forestry and Peat
- Agriculture
- Energy
- Mining
- Industry
- Transportation
- Waste

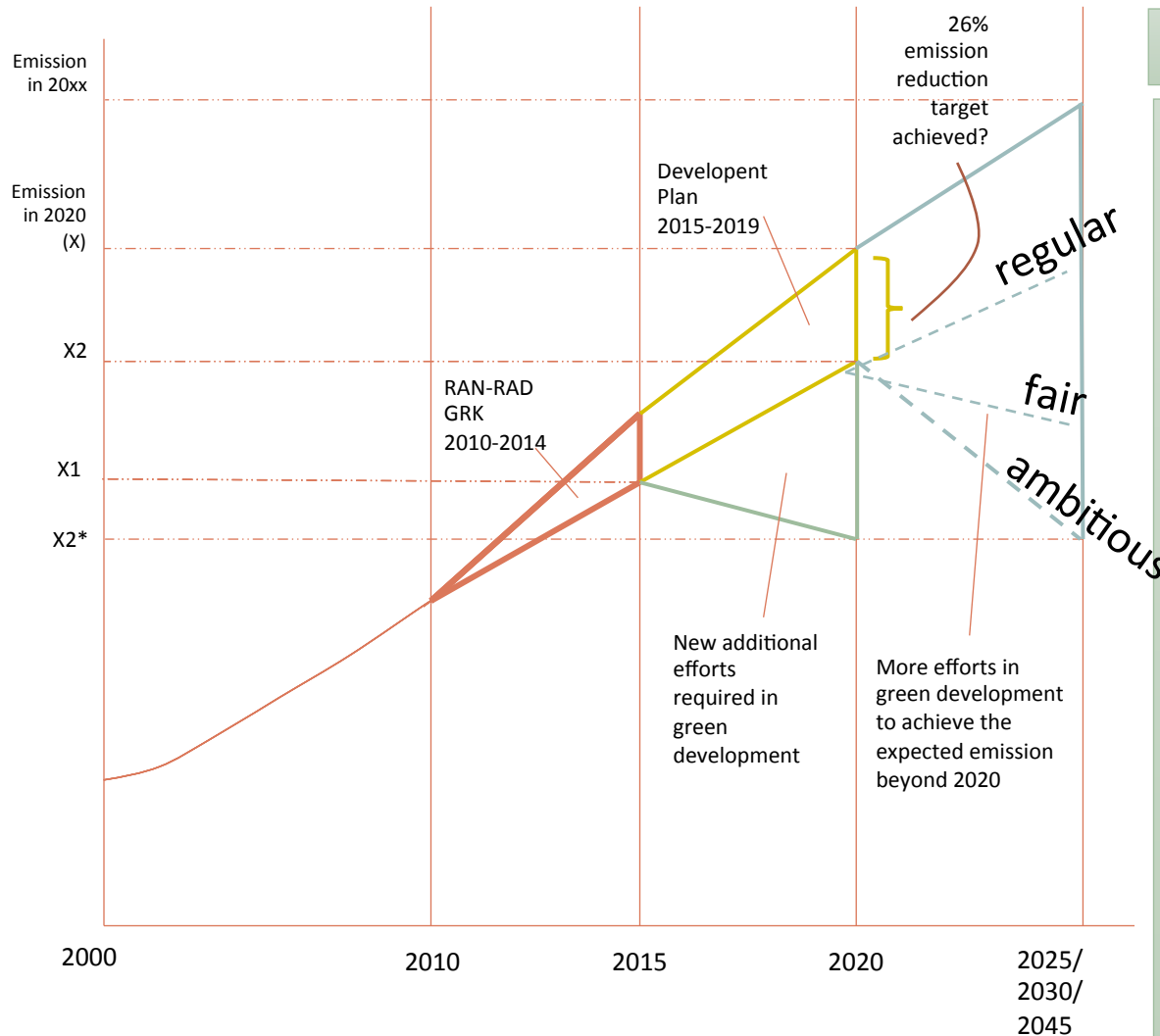
## GHG Scope:

All GHGs, not including Montreal Protocol





# Indonesia approach to RAN-GRK Review and INDC



## STEPS TO CONDUCT INDC:

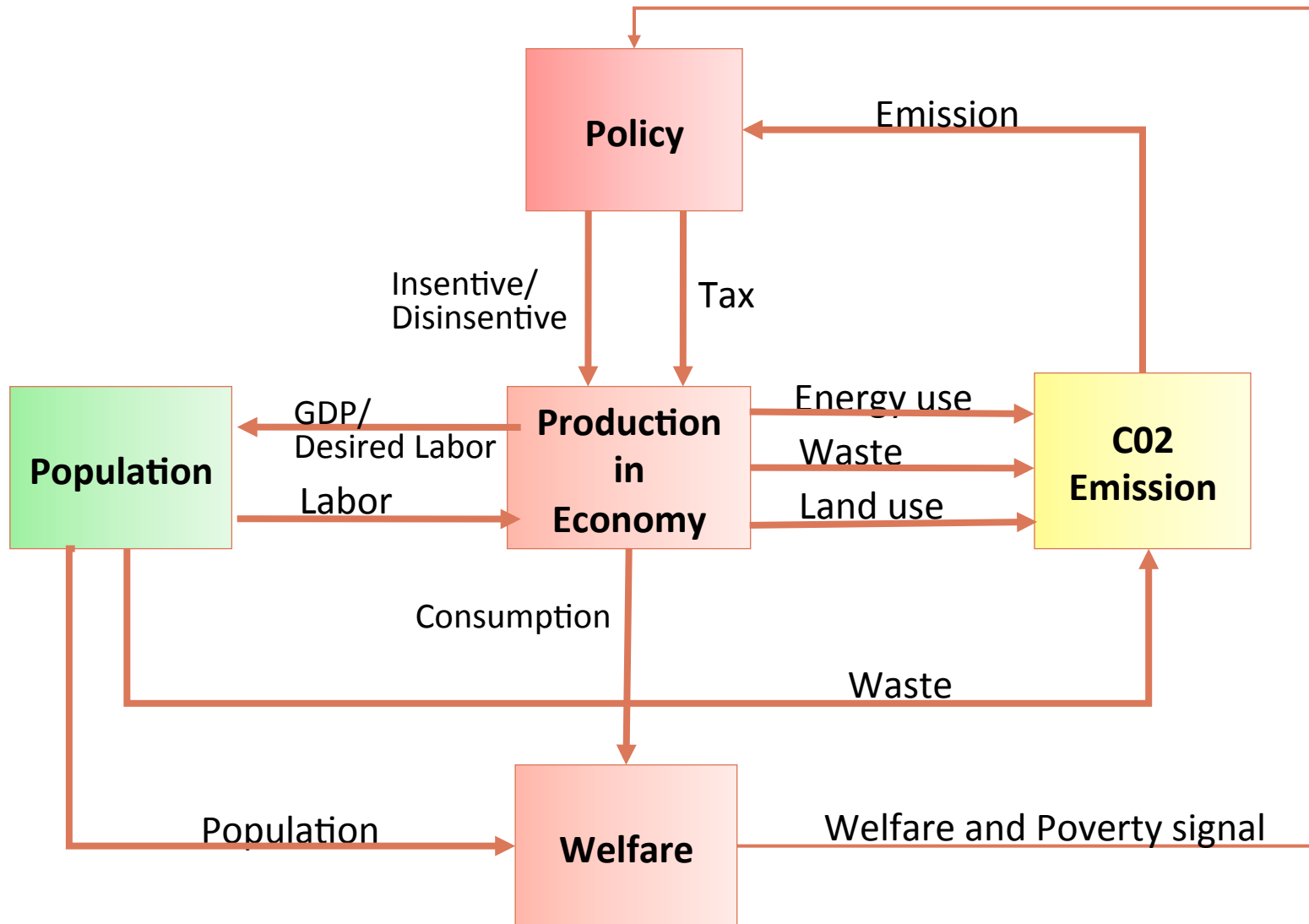
1. Develop Indonesia GHG Emission baseline – trajectory from 2010-2025/2030/2045.
2. Evaluate result of RAN-RAD GRK 2010-2014, and determine the level of GHG emission reduced compared to the baseline.
3. Review proposed policy intervention proposed in the RPJMN 2015-2019, and determine the amount GHG emission reduced compared to the baseline in 2020.
4. Review the 26% target in 2020. Decision makers will refine the existing target for INDC or put more policy intervention to achieve the 26% target.
5. Define the new target for INDC in 2045 with comprehensive policy intervention across sectoral line agencies



# 3. Exercise using Modeling



# Scope of RAN-GRK Review and INDC





# Why System Dynamics for RAN-GRK Review?

- Support policy makers to understand and assess complex relationships between parameters (feedback relationship) among the RAN-GRK sectors.
- Allow policy makers to overview the implications of policy scenarios being designed over time. → find leverage policies and avoid counter intuitive policy impacts.
- Allow policy makers to put some constrains/ limitations (for example carrying capacity) into policy scenario exercises.
- Provide policy makers a 'room' to communicate each other on policy design exercises.
- Easy to understand without using too many complex mathematical equations.
- Accommodate qualitative parameters.



# Boundary/Scope of Economic Sector Model

No	Sektor I-O
1	padi
2	Palmoil plantation
3	Non-palmoil plantation
4	forestry
5	Other farming (non padi non plantation non forest)
6	<b>Oil refinery</b>
7	<b>Mining oil, gas and geothermal</b>
8	<b>Mining coal, mineral and others</b>
9	Ind palmoil
10	ind food and beverages
11	Ind cemnt
12	ind amonia (Ind Fertilizer)
13	Ind iron and steel
14	Ind Pulp and Paper
15	Ind other
16	contruction
17	Trade, Hotel, Restaurant
18	Power Plant(40101)
19	LGA lainnya
20	Land transport
21	Sea transport
22	Air transport
23	Shipping and other communication
24	Finance and services

- Number of I-O sectors adjusted to number of sectors/sub sectors at RAN-GRK (Mitigation Actions Plan)
- Tabel I-O 2005 will be used
- Leontif matrix coefficient from tabel I-O: static (assumption) and exogenous.

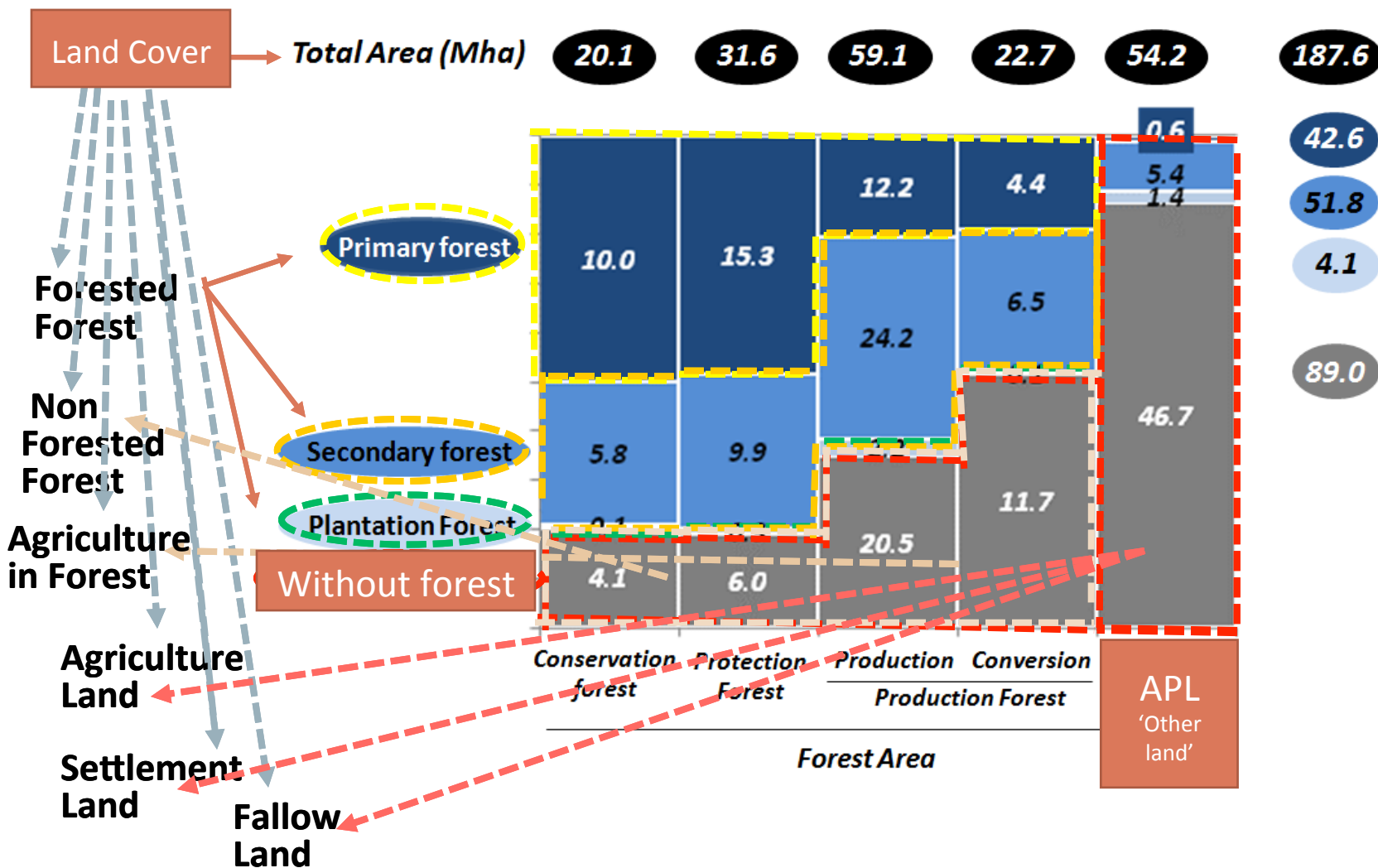


# Example: Emission from Landbased sector

1. Emission from biomass as the result of land use change,
2. Emission from peat decomposition,
3. Emission from peatfire,
4. Emission from padi field,
5. Emission of **CH<sub>4</sub>** and **N<sub>2</sub>O** from cattle,
6. Emission **N<sub>2</sub>O** from **nitrogen fertilizer**



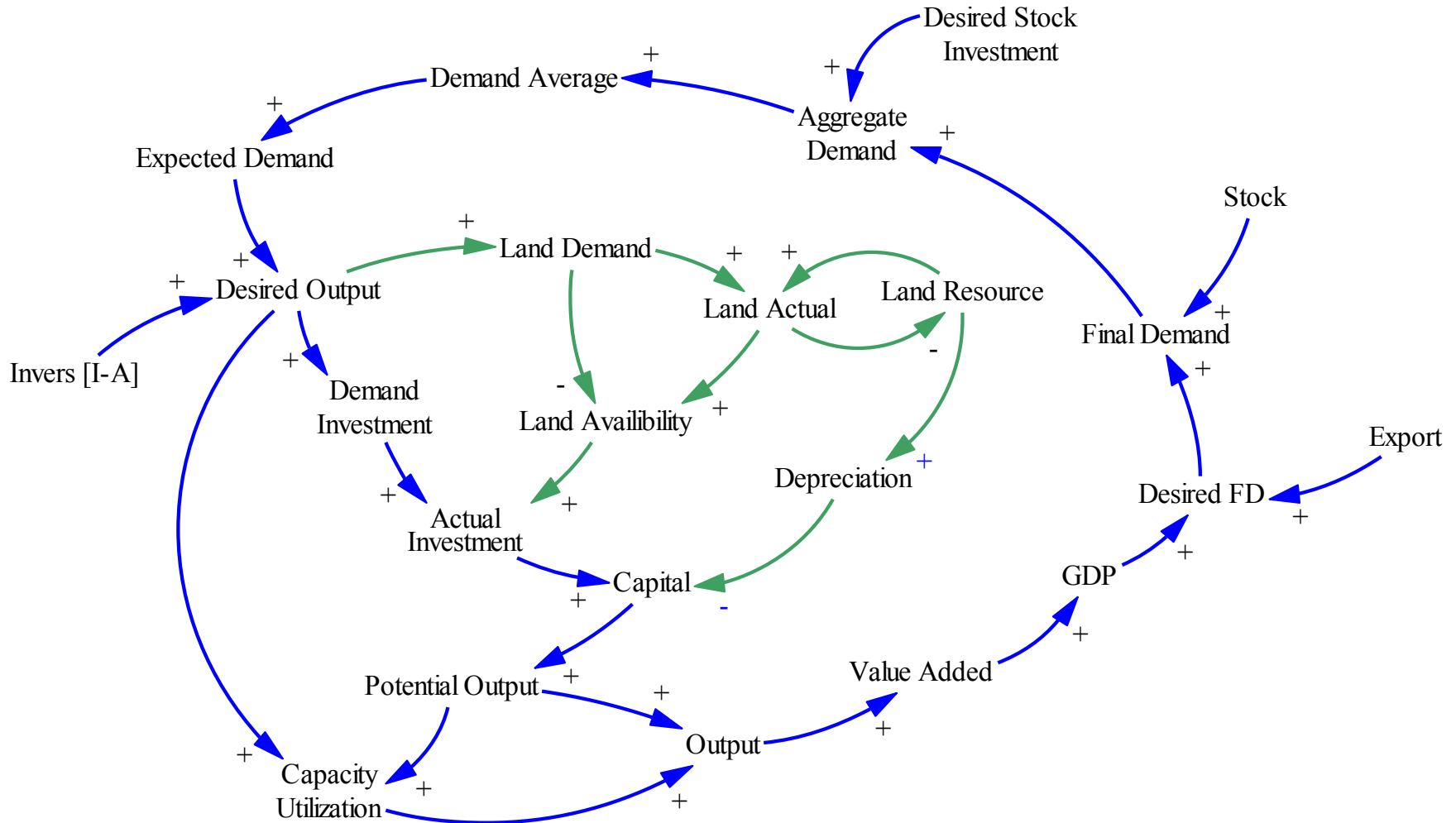
# Area and condition of forest by forest function and in non-forest area



Sumber: Indonesia 1<sup>st</sup> Biennial Update Report (BUR) (draft)



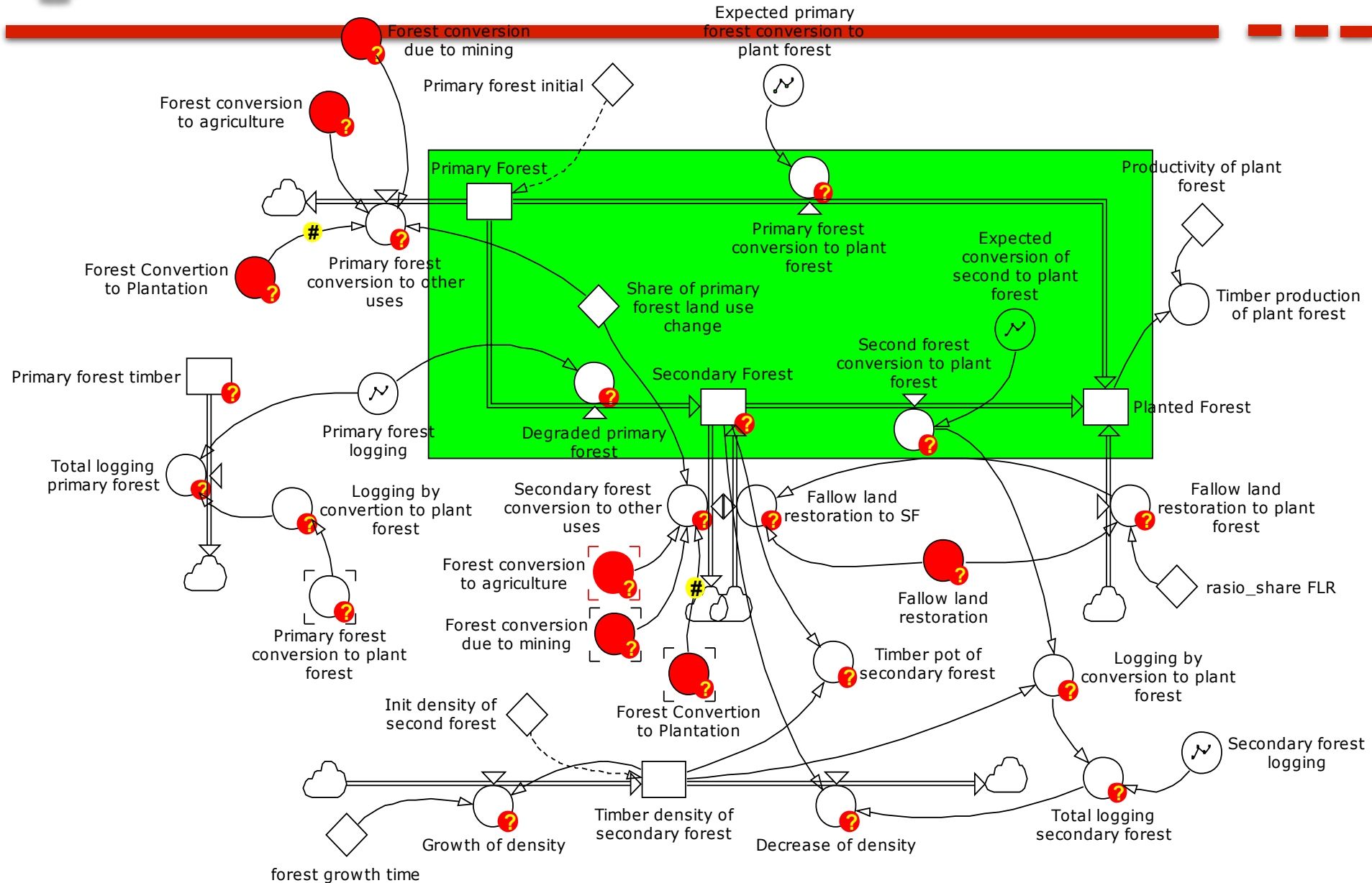
# Linkage between Landuse and economy







# Forest Cover Submodel





# EXAMPLES OF SYSTEM DYNAMICS MODEL SIMULATION BEING DEVELOP FOR RAN-GRK AND INDC

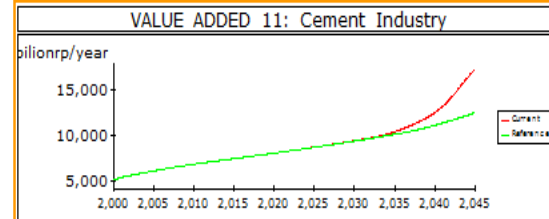
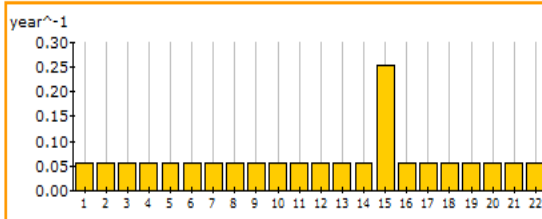
Powersim Simulation Presentation

English (United S... 43%

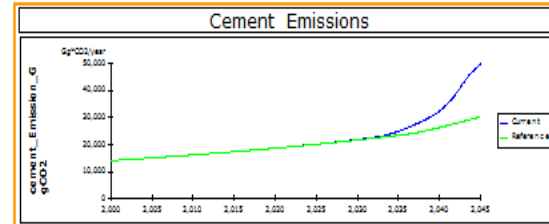
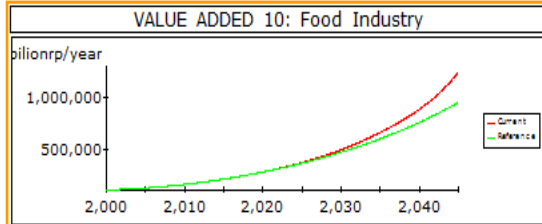
## TESTING : Economy & IPPU (Cement)

0 1 2

NO	Sektor Ekonomi	Pertumbuhan Ekspor
1	Padi	0.06 year <sup>-1</sup>
2	Perkebunan sawit	0.06 year <sup>-1</sup>
3	Perkebunan non sawit	0.06 year <sup>-1</sup>
4	Kehutanan	0.06 year <sup>-1</sup>
5	Pertanian lainnya	0.06 year <sup>-1</sup>
6	Pengilangan minyakbumi	0.06 year <sup>-1</sup>
7	Pertambangan migas&panasbumi	0.06 year <sup>-1</sup>
8	Pertambangan dan penggalian lainnya	0.06 year <sup>-1</sup>
9	Ind kelapa sawit	0.06 year <sup>-1</sup>
10	Ind mamin	0.06 year <sup>-1</sup>
11	Ind semen	0.06 year <sup>-1</sup>
12	Ind amonia	0.06 year <sup>-1</sup>
13	Ind lainnya	0.06 year <sup>-1</sup>
14	Konstruksi	0.06 year <sup>-1</sup>
15	Perdagangan, hotel, restoran	0.26 year <sup>-1</sup>
16	Pembangkitan tenaga listrik	0.06 year <sup>-1</sup>
17	Listrik, gas, air, dan lainnya	0.06 year <sup>-1</sup>
18	Angkutan darat	0.06 year <sup>-1</sup>
19	Angkutan Laut	0.06 year <sup>-1</sup>
20	Angkutan Udara	0.06 year <sup>-1</sup>
21	Angkutan komunikasi lainnya	0.06 year <sup>-1</sup>
22	Kuangan dan jasa-jasa	0.06 year <sup>-1</sup>



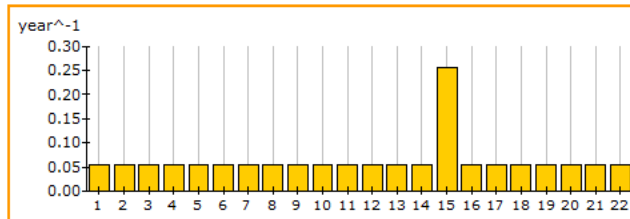
Scenario\_cement\_resources  
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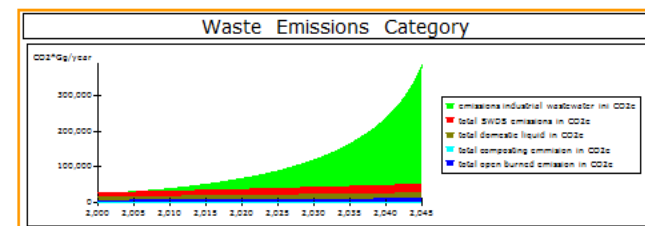
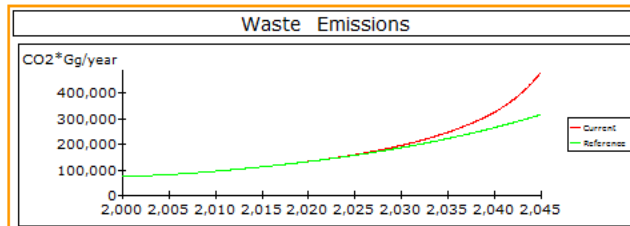
## TESTING : Economy & Waste

0 1 2

NO	Sektor Ekonomi	Pertumbuhan Ekspor
1	Padi	0.06 year <sup>-1</sup>
2	Perkebunan sawit	0.06 year <sup>-1</sup>
3	Perkebunan non sawit	0.06 year <sup>-1</sup>
4	Kehutanan	0.06 year <sup>-1</sup>
5	Pertanian lainnya	0.06 year <sup>-1</sup>
6	Pengilangan minyakbumi	0.06 year <sup>-1</sup>
7	Pertambangan migas&panasbumi	0.06 year <sup>-1</sup>
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20	Angkutan Udara	0.06 year <sup>-1</sup>
21	Angkutan komunikasi lainnya	0.06 year <sup>-1</sup>
22	Kuangan dan jasa-jasa	0.06 year <sup>-1</sup>



IPCC Category	in Gg Co2e	
	year 2000	year 2045
4.A Solid Waste Disposal	26,063.07	50,580.17
4.B Biological Treatment of Solid Waste	0.00	355.35
4.C Open Burning of Waste	4,696.71	9,702.35
4.D.1 Domestic WasteWater Treatment	14,375.03	25,780.12
4.D.2 Industrial WasteWater Treatment	24,588.00	385,742.73
5. Other (untreated solid waste)	5,234.11	8,415.72
<b>TOTAL WASTE EMISSIONS (CO2e)</b>	<b>74,956.92</b>	<b>480,576.45</b>

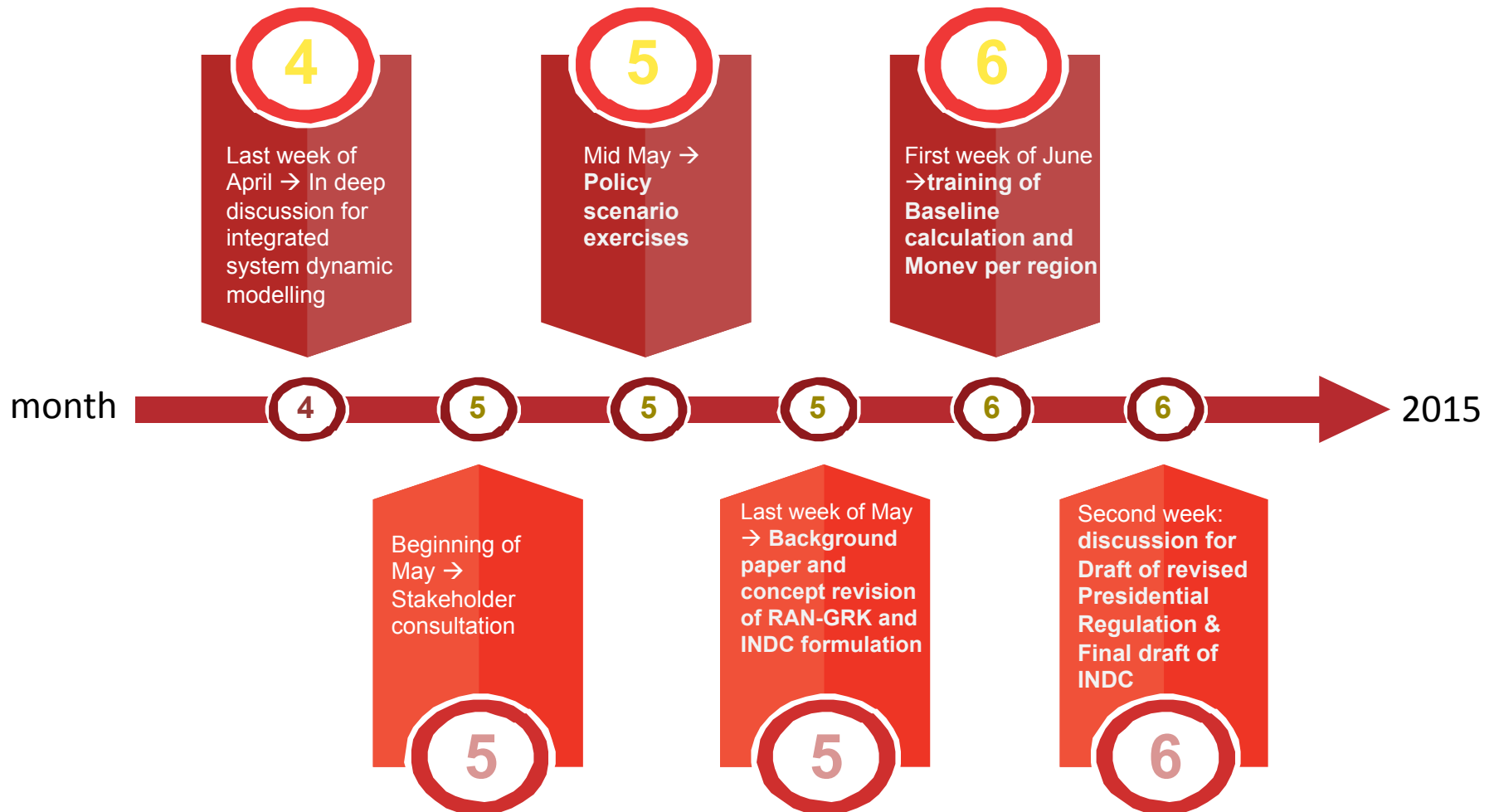




# 4. The Way Forward



# The Way Forward (Technocratic Process)





**Thank You**  
**Terima Kasih**

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