THE APPLICATION OF THE INTER-REGIONAL INPUT OUTPUT (IRIO) ANALYSIS IN POLICY MAKING

M. Agung Widodo

Act. Coordinator for Spatial Planning and Regional Social–Economic Analysis Directorate of Spatial Planning and Disaster Management - BAPPENAS
Outline of presentation

01 Country context
02 IRIO for identification of key sectors at subnational level
03 IRIO for policy impact assessment
Country context: Indonesia
The 2045 Vision:
To become an advanced and prosperous country

- 5% annual growth will not be enough
  Indonesia needs to transform into an economy with high productivity and sustainable growth

- Needs to identify potential growth engine
  Government focus on the promotion of 4.0 industries and high-quality tourism
The challenge:
High concentration in economic activity

- National GDP is highly concentrated in the western region.
  The shifting in the spatial proportion between eastern and western regions grows slowly.

- New direction to accelerate the economy of the eastern part while maintaining the performance of the western region.
  High variation in the growth potential within eastern region, with most of provinces rely on primary industries.

The past 30 years…

<table>
<thead>
<tr>
<th>Year</th>
<th>KBI</th>
<th>KTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>82.5%</td>
<td>17.5%</td>
</tr>
<tr>
<td>2013</td>
<td>80.1%</td>
<td>19.9%</td>
</tr>
<tr>
<td>2015</td>
<td>80.5%</td>
<td>19.5%</td>
</tr>
<tr>
<td>2045</td>
<td>74.9%</td>
<td>25.1%</td>
</tr>
</tbody>
</table>

30 years from now on…

"AFFIRMATIVE POLICY"
To facilitate and promote growth in the lagging yet potential regions.

PEMERATAAN PEMBANGUNAN
IRIO for identification of key sectors at sub-national level
IRIO Analysis

Identification of the key sectors in each region

Backward linkages

Forward linkages

Multiplier effects: output, income, employment

Intra-regional multiplier effects

Inter-regional multiplier effects

Induced effect from the increased spending as a result of income effect
IRIO Analysis

Desired growth and the key industries in each region

- Coal
- Food & beverage
- Paper & pulp
- Chemical, pharmacy, and traditional medicine
- Electricity
- Construction

5.7% PER TAHUN*

Key industries:
- Backward linkage index > average
- Forward linkage index > average

- Food & beverage
- Chemical, pharmacy, and traditional medicine
- Electricity
- Construction

6.2% PER TAHUN*

- Food & beverage
- Non-metal mining
- Electricity

6.7% PER TAHUN*

- Food & beverage
- Chemical, pharmacy, and traditional medicine
- Electricity
- Construction

7.6% PER TAHUN*

- Electricity
- Air transportation

8.3% PER TAHUN*

- Food & beverage
- Non-metal mining
- Electricity

5.3% PER TAHUN*

- Food & beverage
- Textile & apparel
- Leather & leather products
- Wood, bamboo, and rattan industry
- Chemical, pharmacy, and traditional medicine
- Rubber and plastic product
- Basic metal
- Computer & electronics
- Machinery

6.5% PER TAHUN*

- Electricity
- Land transportation
- Firm services

Source: Bappenas Analysis (2022)
IRIO Analysis

Backward linkage: increased demand for input

Forward linkage: output expansion as a response to stimulation in the supplied industries (demand-side analysis)

Forward linkage: stimulate expansion in the supplied industries (supply-side analysis)
IRIO Analysis
Spill-over effects: flow-on and feedback

Source: Bappenas Analysis (2021)
Application of IRIO Analysis

- Bappenas facilitates Local Government Planning Board to develop Road Map or Master Plan with the purpose to unlock region’ potentials
- Lesson-learned from COVID-19 Pandemic: Bali needs to develop an alternative source of growth to buffer the local economy from tourism demand shock
Application of IRIO Analysis:
Value chains of strategic industries in Bali

Source: Bappenas Analysis (2021)
IRIO for policy impact assessment
Policy Impact Analysis

Bappenas develops a user-friendly policy modelling:
- IRIO as a main data source
- Computable general equilibrium
- Bottom-up approach: optimization at region level

Source: Bappenas Analysis (2022)
Policy Impact Analysis

IRIO is used for ex-ante evaluation & project selection using Bappens Policy Model

Simulation #1: Increased efficiency in land transportation by 10% in all provinces in Sulawesi Region

- Policy to improve efficiency in land transportation in Sulawesi Island will benefit not only all provinces in Sulawesi, but also provinces in other islands
- GDP % change from baseline: South Sulawesi (0.29), North Sulawesi (0.18), West Papua (0.03), South Kalimantan (0.03), North Kalimantan (0.03), East Kalimantan (0.01)

Source: Bappenas Analysis (2022)
Policy Impact Analysis

IRIO is used for ex-ante evaluation & project selection using Bappens Policy Model

Simulation #2: Increased efficiency in sea transportation by 10% from Sulawesi to Java Islands

- Policy to improve efficiency in sea transportation from Sulawesi to Java Island will benefit all provinces in both island, but also provinces in other islands
- GDP % change from baseline: Gorontalo (0.12), Central Sulawesi (0.10), South Sulawesi (0.10), West Sulawesi (0.10), North Sulawesi (0.08), Southeast Sulawesi (0.06), West Papua (0.003), Papua (0.001)

Source: Bappenas Analysis (2022)
Policy Impact Analysis
IRIO is used for assessing the economic impact of earthquake in West Nusa Tenggara in 2018 Province using Bappens Policy Model

1. GDP growth
   - Counterfactual: no earthquake
     - Regional GDP: 1.11%
     - Reg. GDP w/o mining: 6.66%
   - Impact of earthquake
     - Regional GDP: -0.44%
     - Reg. GDP w/o mining: 4.82%

2. Inflation
   - Counterfactual: no earthquake
     - 3.77%
   - Impact of earthquake
     - 7.25%

Source: Bappenas Analysis (2020)
Terima kasih

Direktorat Tata Ruang dan Penanganan Bencana
Kedeputian Bidang Pengembangan Regional
Kementerian PPN/Bappenas
dit.trpb@Bappenas.go.id
(021) 317016