



Indonesian Climate Policy and the Importance of Methane Mitigation in the Oil & Gas Sector

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Outline

1. An Overview of Mainstreaming Climate Change Initiatives in Indonesia
2. Indonesia's National Mitigation Actions
3. Development of NAMAs Framework
4. ICCSR: Roadmap Preparing Gas Flaring in Indonesia



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An Overview of Mainstreaming Climate Change Initiatives in Indonesia



Why Climate Change Becoming Indonesia's Main Concern?

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With more than 17,000 islands, Indonesia is very vulnerable to rising sea levels and floods, while erratic weather patterns will impact agricultural and fishery production which support many communities.

Climate change action is a target to the attainment of both Indonesia's National Development Goals and Millennium Development Goals (MDGs).



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CLIMATE CHANGE INITIATIVES: TOWARD LOW CARBON DEVELOPMENT

- 
- 2007: COP-13 on Bali and National Action Plan on Climate Change (RAN-PI)
 - 2007: 'Yellowbook': Integrating CC into development planning (regularly revised)
 - 2009: Technology Needs Assessment (TNA)
 - 2009: Indonesia Climate Change Trust Fund (ICCTF)
 - 2009: President announces mitigation targets (-26% /-41%)
 - 2010: Indonesia Climate Change Sectoral Roadmap (ICCSR)
 - 2010: Indonesian Second National Communication (SNC)
 - 2010: REDD+ Task Force
 - 2011: President Regulation for National Mitigation Actions (RAN-GRK)

Currently: Development of Indonesian NAMAs



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Roadmap and ICCTF

Indonesia Climate Change Sectoral Roadmap (ICCSR)

Mitigation

Forestry
Industry
Energy
Waste
Transportation

Adaptation

Water
Marine and Fisheries
Agriculture
Health



Input to Mid-Term (2010-2014) and
Next Development Plan (2014-2019)



Financial mechanism:

Indonesia Climate Change Trust Fund (ICCTF)

international & domestic; public & private funds

Adaptation&Resilience

Energy

Land Based Mitigation



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National Priority RPJM 2010 - 2014

11 National Priority –
Indonesia Bersatu Cabinet II
2009-2014

- 1 Bureaucracy Reform and Good Governance
- 2 Education
- 3 Health
- 4 Poverty Alleviation
- 5 **Food Security**
- 6 Infrastructure
- 7 Climate Investment and Climate Business
- 8 **Energy**
- 9 **Environment and Disaster Management (incl. Climate Change)**
- 10 Disadvantaged, Borders and Post-Conflict Areas
- 11 Culture, Creativity and Technology Innovation

Other Priority

- 12 Politic, Law and Security
- 13 Economic Development
- 14 Social Welfare



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Indonesia's National Mitigation Actions



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Scenario of 26% GHG Emission Reduction

President Commitment
G-20 Pittsburgh and COP15
To reduce te GHG Emission in 2020

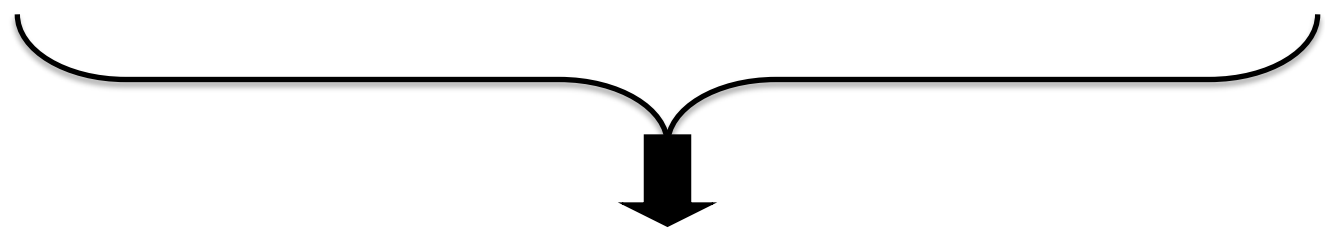


Unilateral



41%

**Unilateral
and
International
Support**



RAN-GRK



National Mitigation Action Plan (RAN-GRK)

Overall objective

- Contribute to global efforts to reduce emissions and to tap international funding for Indonesia

What it is

- Integral part of National Development Plan, regularly updated
- Core activities, integrated among sectors, to reduce emissions and support activities to strengthen policy framework
- Compiled based on proposals of actions from implementing agencies, based on existing actions that have co-benefits in reducing GHG emissions

Main principles

- Should not hinder economic growth
- Enhance people's welfare in the sense of sustainable development
- Protection of poor and vulnerable communities



Possible distribution and Target of Emission Reduction

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Sector	Emission Reduction (Giga ton CO2e)		Action Plan	Institutions
	26%	+15%		
Forestry and Peatland	0,672	0.367	Forest and land fire control, water and hydrology management on peatland, forest and land rehabilitation, illegal logging control, avoiding deforestation, community development	MoFr, MoPW, MoA, MoE
Waste	0,048	0,030	Sanitary landfill development, 3 R and sewerage system in urban areas	MoPW, MoE
Agriculture	0,008	0,003	Introduction of low carbon rice variety, irrigation efficiency, organic fertilizer utilization	MoA, MoPW, MoE
Industry	0,001	0,004	Energy efficiency, renewable energy development	MoI
Energy and Transportation	0,038	0,018	Biofuel development and utilization, fuel efficiency improvement, mass transportation, demand side management, renewable energy, energy efficiency	MoT, MoEnergy, MoPW, MoF
	0.767	0.422		

Source: Result from a Ministerial Meeting at Coordinating Ministry of Economics, 29 December 2009 – will be reviewed

Presidential Regulation of RAN-GRK – Distribution of Duties



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**Ministries/
Institutions**

- Implement RAN-GRK in their respective fields
- To monitor and inventory in their respective fields
- Report the implementation of RAN-GRK activities to the Coordinating Minister for the Economy, Bappenas, and MOE

**Province
(Governor)**

- Mandatory to develop RAD-GRK (12 months after the Presidential Regulation RAN-GRK) – signed based on action plan at district/city level.
- File a Report RAD-GRK to the Minister of Home Affairs and Minister of Bappenas.

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- Coordination of evaluation and review RAN-GRK
- Develop Guidelines for RAD-GRK
- Facilitate preparation of RAD-GRK
- Reported the results to the Coordinating Minister for Economy

MOE

- Coordinate the GHG inventory
- Facilitate preparation of RAD-GRK
- To report the results to Coordinating Minister for Economy

Ministry of Home Affairs

- Coordinator to facilitate the preparation of RAD - GRK

Coordinating Minister for Economy

- Coordination of monitoring of RAN GRK implementation
- Reporting to the President

Coordinating Minister for People's Welfare

- GHG Inventory Coordination



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Development of NAMAs Framework

Developing Indonesian NAMAs



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**RAN-GRK
(as Indonesian NAMA)**

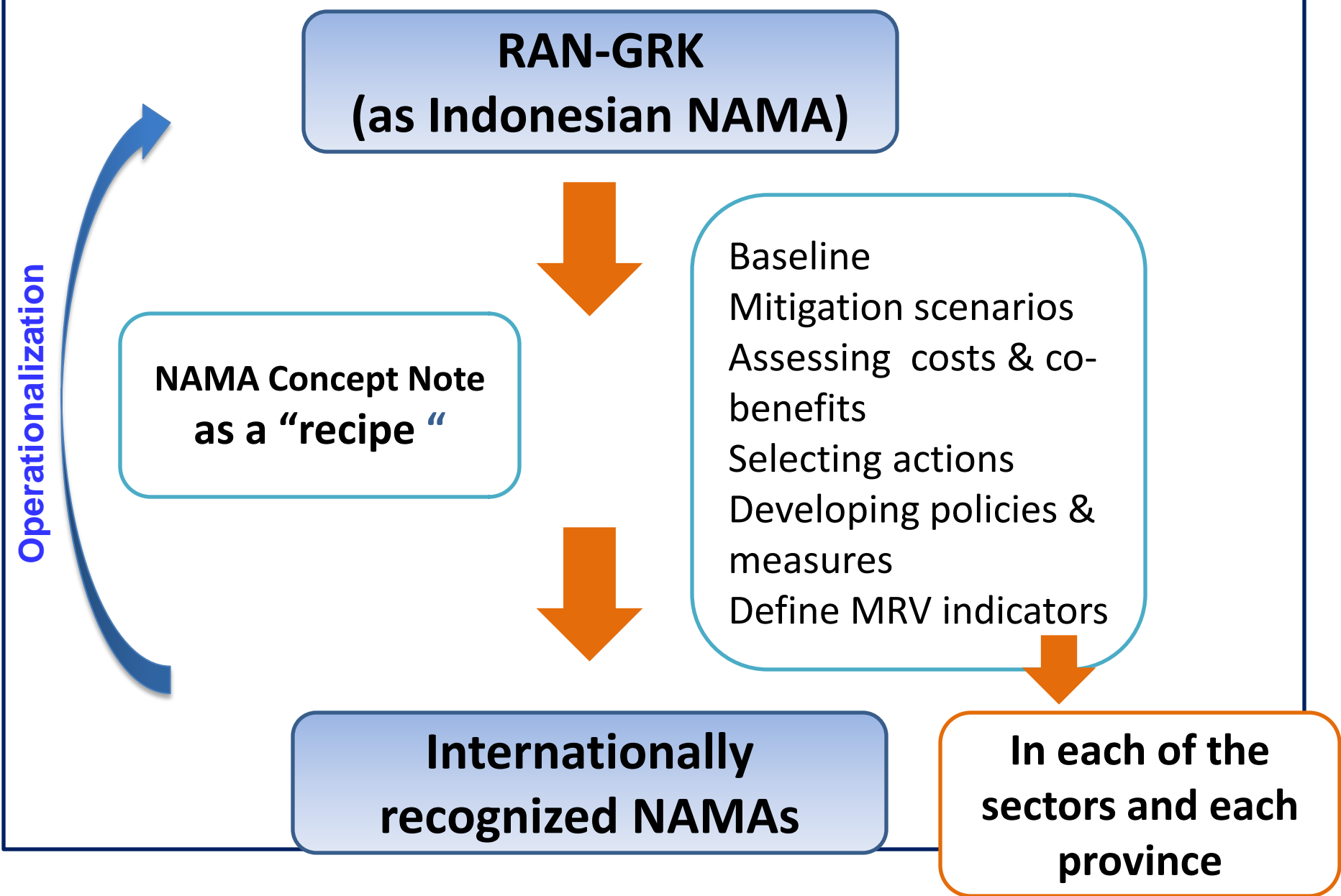
**NAMA Concept Note
as a “recipe”**

Baseline
Mitigation scenarios
Assessing costs & co-
benefits
Selecting actions
Developing policies &
measures
Define MRV indicators

**Internationally
recognized NAMAs**

**In each of the
sectors and each
province**

Operationalization





RAN-GRK: Dual approach

RAN-GRK: Dual approach for allocating mitigation efforts

Sectoral



- Land-based: Agriculture, forestry and land use
- Energy (Industry, transportation, electricity)
- Waste

Regional

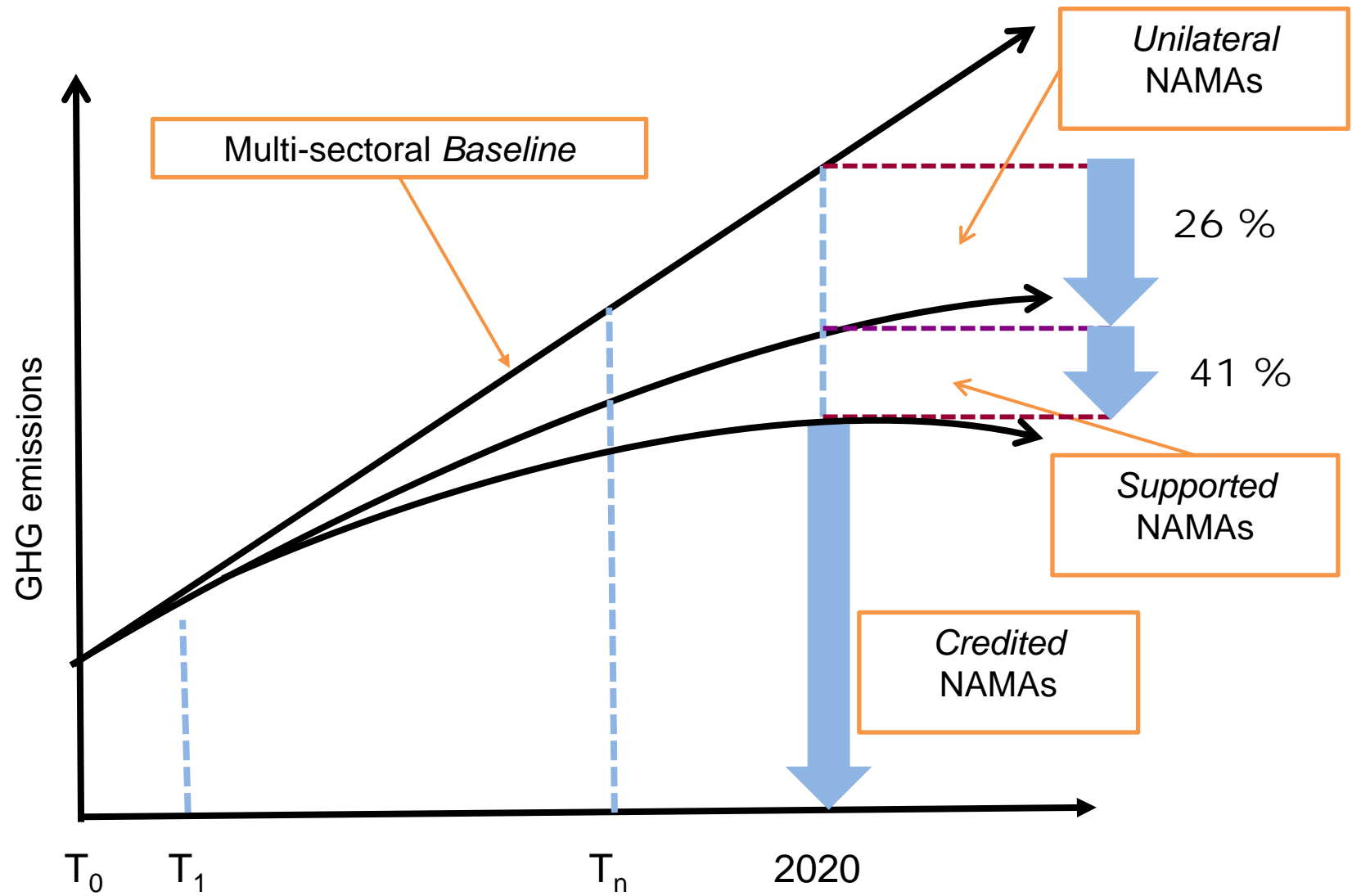


- Develop local mitigation action plans (RAD-GRK) incl. provincial targets



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Multi sectoral baseline



(source: Situmeang, 2011)



The Indonesian Mitigation Target (2020)

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MRV international / REDD+ MRV
 Clear and concise contracts
 Clear executing agencies
 Higher abatement costs
 No offsetting

MRV domestic
 Outlined in Medium-Term Dev. Plan (RPJM)
 Lower abatement costs, economically feasible
 National priorities
 No offsetting

- 41%

with international support

- 26%

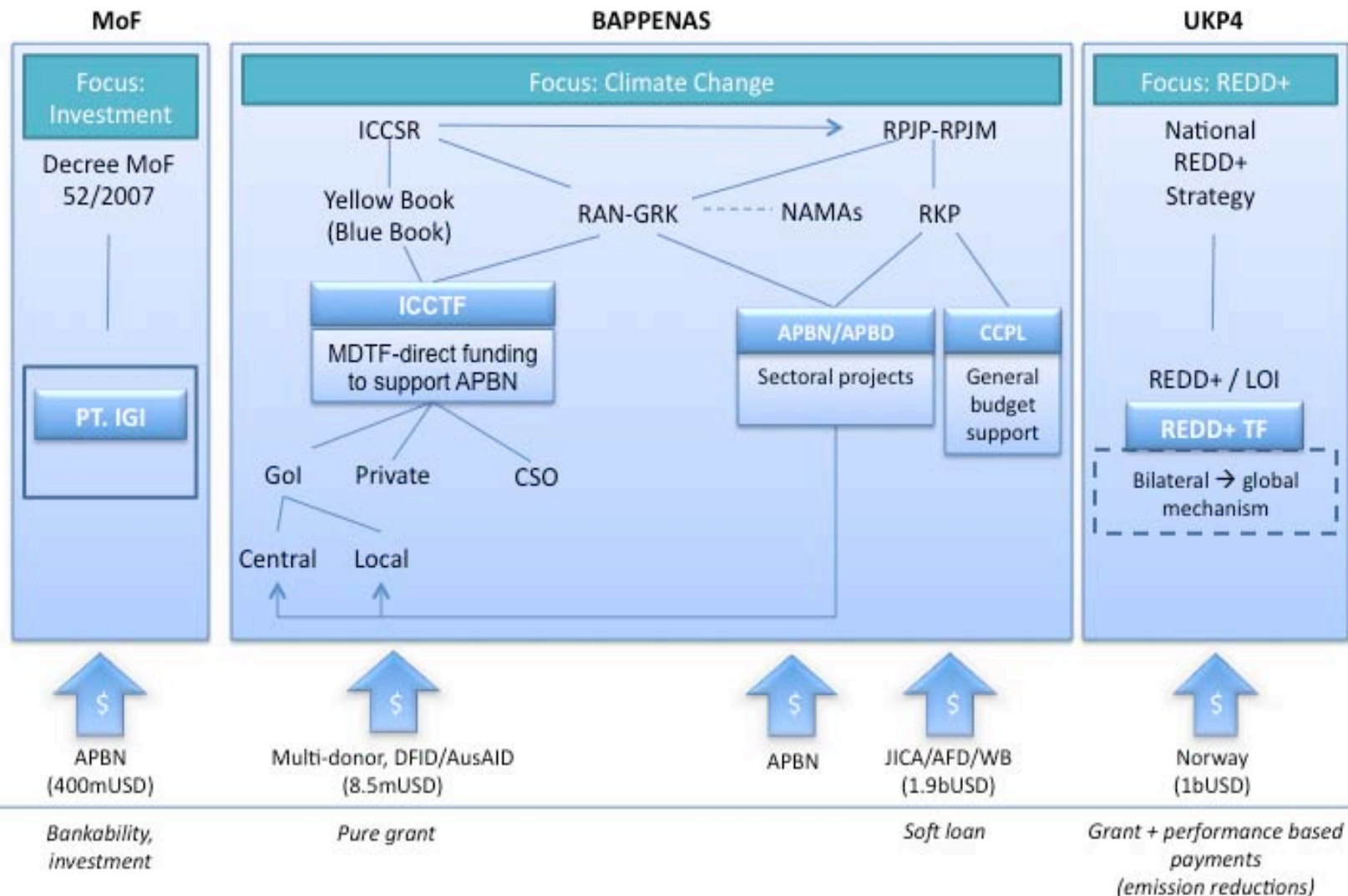
without international support

Sector allocations	Forestry + Peat	REDD+	Agriculture	Power - energy	Transport	Waste	Industry
Actions now	Mid-Term Development Plan, sector-strategic 5-year plans						



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Mapping of Climate Change Financing in Indonesia

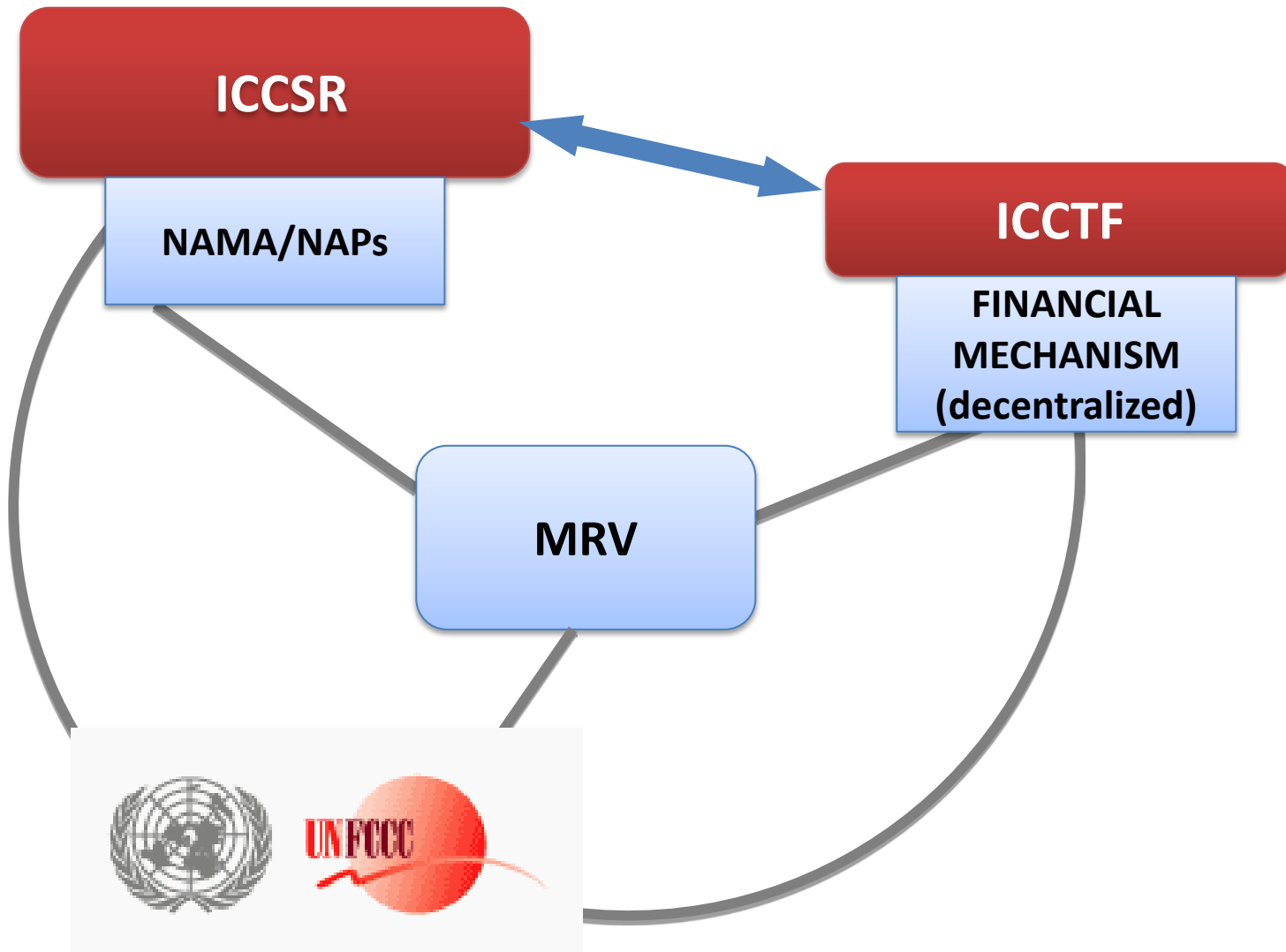


Source: Policy Coordination Forum, Bappenas, 2011



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ICCTF AND ROADMAP IN UNFCCC CONTEXT





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The ICCTF

GOAL

The goal of the ICCTF is to support the GOI's efforts to reduce emissions, move towards a low-carbon economy and adapt to the impacts of climate change.

PURPOSE

The purpose of the ICCTF is to attract, manage and mobilise funding to contribute efficiently and effectively to 1) the mainstreaming of climate change issues in national, provincial and local development planning and 2) the implementation of mitigation and adaptation climate change initiatives.

OUTCOME 1 – Land Based Mitigation

The ICCTF aims to contribute to address deforestation & forest degradation issues & to advance sustainable management of peat- lands and forest resources.

OUTCOME 2- ENERGY

The ICCTF aims to contribute to the improvement of energy security and reduction of emissions from the energy sector in Indonesia.

OUTCOME 3- RESILIENCE

The ICCTF aims to contribute to responding to the adverse impacts of and risks posed by climate change that are already occurring, while also preparing for future impacts through cross cutting and inter-sectoral measures.



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ICCSR:

Roadmap Preparing Gas Flaring in Indonesia



POLICIES ON NEW AND RENEWABLE ENERGY DEVELOPMENT

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National Policies:

- Conservation & Diversification of Primary Energy with the use of renewables.
- President Regulation No. 5/2006, Contribution of renewables in 2025 : 17% (boost by vision 25 % in 2025 (25/25))
- President Decree No. 4/2010 : Fast Track Programs for power plants using renewables, coal and gas (FTP-2), where the portion of energy generated from Geothermal Power Plants (GPP) 40 % and Hydro Power Plants 12 %
- MEMR Decree No. 15/2010 and MEMR Decree No. 02/2011.

Long Term Electricity Supply Planning(RUPTL 2010 -2019) :

- Projection of electricity growth 9,2 % per annum for upcoming decade
- Electrification ratio increases from 68 % in 2010 to 91 % in 2019
- Fossil Fuel Consumption Reduction Program by 3 % starting from 2013.
- Still dominated by Coal Fired Power Plants (CFPP) program (60 %), the certainty of readiness of the GPP may reduce the portion of CFPP.
- **The development of GPP currently is not based on “least cost” however based on the readiness of the geothermal field developers.**

Table 1a. Summary of 2000 GHG emission and removal (in Gg CO₂e)

	CO ₂	CH ₄	N ₂ O	PFC	Total
Energy	247,522.25	30,174.69	3,240.64	NO	280,937.58
Industrial Process	40,342.41	2,422.73	133.22	145.15	43,043.52
Agriculture	2,178.30	50,800.18	22,441.25	NO	75,419.73
LUCF ¹	821,173.35	56.35	24.47	NO	821,254.17
Waste	1,662.49	153,164.02	2,501.45	NO	157,327.96
Total	1,112,878.82	236,617.97	28,341.02	145.15	1,377,982.95

¹Note: Emission from peat fire was included

The main source of methane emissions was the waste sector (65%), followed by the agriculture (22%) and energy (13%) sectors. The total methane emissions from all sectors was 236,6 Gg CO₂e.



Combine Approach of Technology, Scheme and Mechanism for REFF-Burn

	Pre-Fossil Combustion (Pre-FC)		During Fossil Combustion (D-FC)		Post-Fossil Combustion (post-FC)
<u>A. Technology</u>	Energy Efficiency Technology (EEF)	Renewable Energy Technology (RET)	Energy Efficiency Technology (EEF)	Low Carbon Technology (LCT)	Carbon Capture and Storage
	Efficiency Improvement (Demand Sector): <ul style="list-style-type: none"> Industrial Sector Transport Sector Building Sector 	Non Fossil Combustion: <ul style="list-style-type: none"> Geothermal Hydro Bioenergy Solar Wind Ocean 	Efficiency Improvement (Supply Sector): <ul style="list-style-type: none"> Power Sector Fuel Switching Losses Reduction Cogeneration 	Carbon Reduction: <ul style="list-style-type: none"> Clean Coal Technology Clean Fossil Technology Flared Gas Reduction 	Carbon Capture Storage: <ul style="list-style-type: none"> Carbon Capture & Storage Technology Carbon Utilization
<u>B. Schemes</u>					
1. Financing	<ul style="list-style-type: none"> Intermediary and Risk Mitigation Carbon Market 	<ul style="list-style-type: none"> Long-term Financing Long-term PPA Mandatory Mechanism Carbon Market 	<ul style="list-style-type: none"> Intermediary and Risk Mitigation Carbon Market 	<ul style="list-style-type: none"> Carbon Market 	<ul style="list-style-type: none"> Carbon Market
2. Regulation					
a. Economic		<ul style="list-style-type: none"> Feed-in Tariff Tendering Renewable Energy Portfolio Standards 			
b. Technical	<ul style="list-style-type: none"> Industry Performance Targets Energy Management Standards Fuel Efficiency Standard Appliances Standard Building Codes 		<ul style="list-style-type: none"> Energy management standards Industry Performance Targets 	<ul style="list-style-type: none"> Good & Clean Engineering Practices 	
3. Institutional Reform	<ul style="list-style-type: none"> National Champion ESCO 	<ul style="list-style-type: none"> National Champion 	<ul style="list-style-type: none"> National Champion ESCO 	<ul style="list-style-type: none"> National Champion Carbon Market 	<ul style="list-style-type: none"> National Champion
<u>C. Clean Energy Mechanism</u>					
1. Kyoto Protocol	CDM	CDM	CDM	CDM	CDM
2. Beyond Kyoto Protocol	Voluntary, bilateral mechanism	Voluntary, bilateral mechanism	Voluntary, bilateral mechanism	Voluntary, bilateral mechanism	Voluntary, bilateral mechanism



Technology options for avoiding gas flaring and venting (to utilize gas)

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Name of Technology	Relevance for Indonesia
LPG	Indonesia has had long experiences in producing LPG, either from oil refinery, LNG plant and dedicated LPG plant. The largest LPG production is from LNG liquefaction complex. Indonesia is making large efforts to substitute kerosene with LPG; therefore demand for LPG will be kept high as well as attempts to provide them to domestic markets. It means that there are potentials to develop more LPG plants in Indonesia, means also to reduce the gas currently being flared and vented.
Treating and Re-injection	Due to the non-existence of strong regulation, many gas fields in Indonesia have not carried out proper treating and re-injection methods in order to reduce the activities of flaring the gas.
Pipeline	Indonesia has developed natural pipelines (transmission, distribution), both on-shores and off-shores, but it is still very limited and not integrated. Many marginal, off-shore fields are still far from pipeline services, including those in and around Java island that actually very close to potential gas consumers.



Technology options for avoiding gas flaring and venting (to utilize gas)

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Name of Technology	Relevance for Indonesia
CNG	The use of CNG as fuel for vehicle in Indonesia is still very limited. The CNG used still comes from a small scale CNG processing capacity. But since there are many scattered regions with moderate demand for gas and in the other side there are also many potential gas sources in Indonesia, CNG is a good option to be developed in the future.
LNG	Indonesia was included as the pioneer for LNG industry development in the world, by shipping its first LNG cargo from Bontang (East Kalimantan) to Japan in 1977. Since then, Indonesia had been the world's largest exporter of LNG for about 3 decades, before Qatar took over its position some 5 years ago. Tangguh (Papua) is just about producing its LNG and other LNG projects are being constructed and planned in Indonesia.
GTL	GTL technology has not existed in Indonesia. There is a study to develop GTL plant using Indonesia's natural gas (in Sulawesi area) but so far it has been not realized.
GTW/Power Generation	In Indonesia, gas in power generation is mostly used close to the sources rather than bring them to load centers. This is due to the volume of gas which is usually small, while demand for electricity has to be supplied by the available gas resulted from oil/gas wells.

Problem in reducing gas flare: Tambun's case

The Tambun field (West Java) was discovered by Pertamina in 2002 and went into production in 2003. The oil produced is sent to Balongan refinery using trucks. In 2004, production increased to 8,000 bpd with gas flare at 12-15 mmscfd. The gas is rich containing some 13 % C3 and 6% C4.

Due to “low expected revenues” of gas compared to that of oil (predicted as US\$160,000 per day) Pertamina agreed to sell the gas to Bekasi Regency (BR). Contract was signed for 10 year delivery starting in 2005 for 12 mmscfd for the first 5 year and 10 mmscfd for the second 5 year, with gas price stated as US\$ 1.85/mmbtu. Pertamina expected that the deal with the regency will help in ROW and other operating permits.

In another side, the Tambun field faced substantial resistance as the commencement of operation, as the single flare installed radiated too much heat and noise. As a result, a second flare was installed.

BR made cooperation with a private company to construct a LPG plant, which was expected to start production by 2007. A pipeline connecting the Tambun field with Pertamina pipeline system was constructed and completed in 2005, sell the gas to Cikarang Listrindo, Pupuk Kujang and other consumers. BR then formed a “BUMD” PT Dina Bangun Wibawa Mukti.

But the project (that potentially would reduce gas flare) has faced some problems.

The formation and involvement of a BUMN in regency level is a new approach and was slowly to work. The BR experienced a change of leadership, not only the personnel but also the ruling political party. The private sector expected to help BR was not able to provide the capital needed. Another problem was within the BR itself. Decentralization Law (25/2001) was new and the procedure for regency to conduct business were not clear.

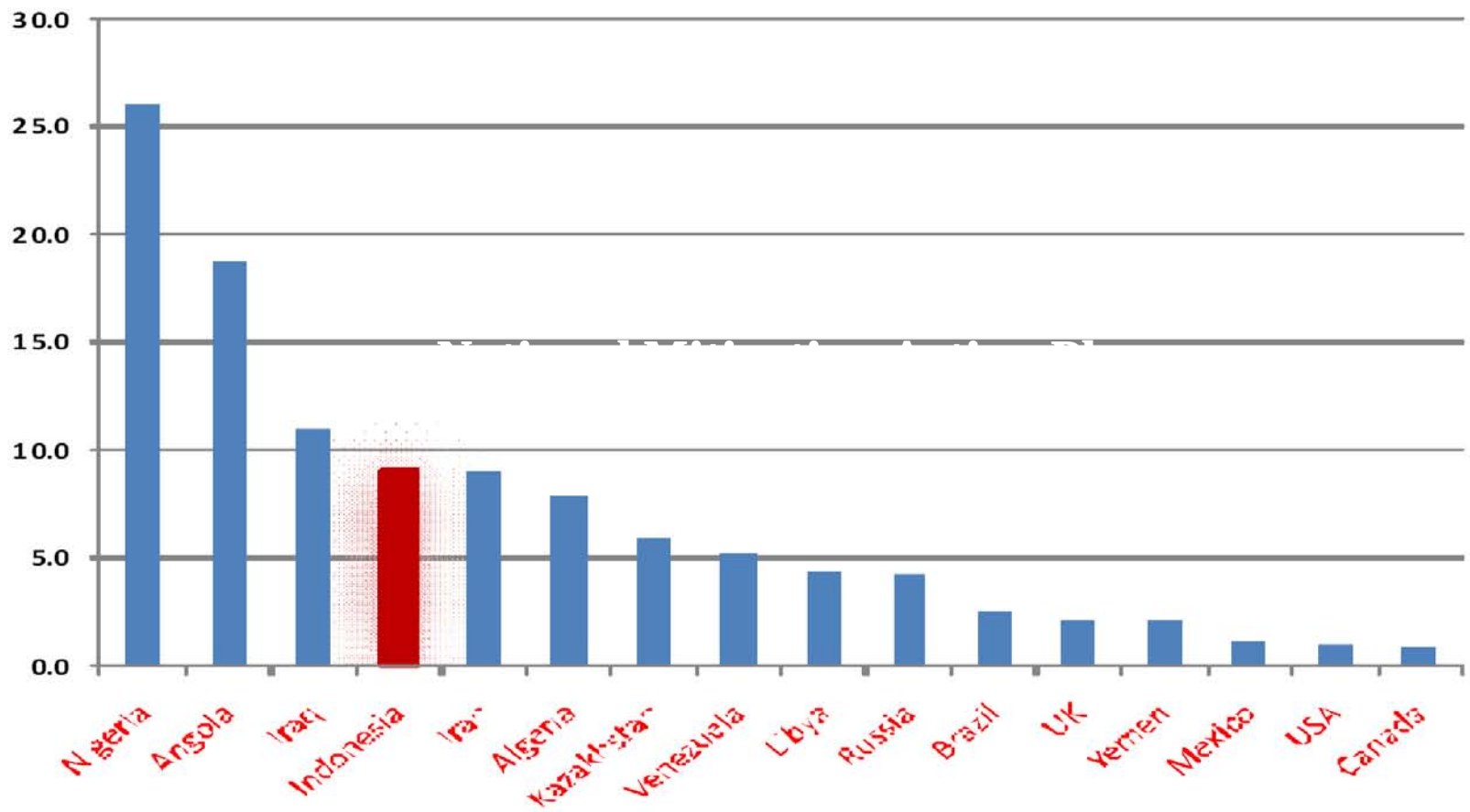
As a result, the LPG plant has not been materialized and the gas flare is still there.

Source: Indonesia Associated Gas Survey, 2006



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Flare Intensity

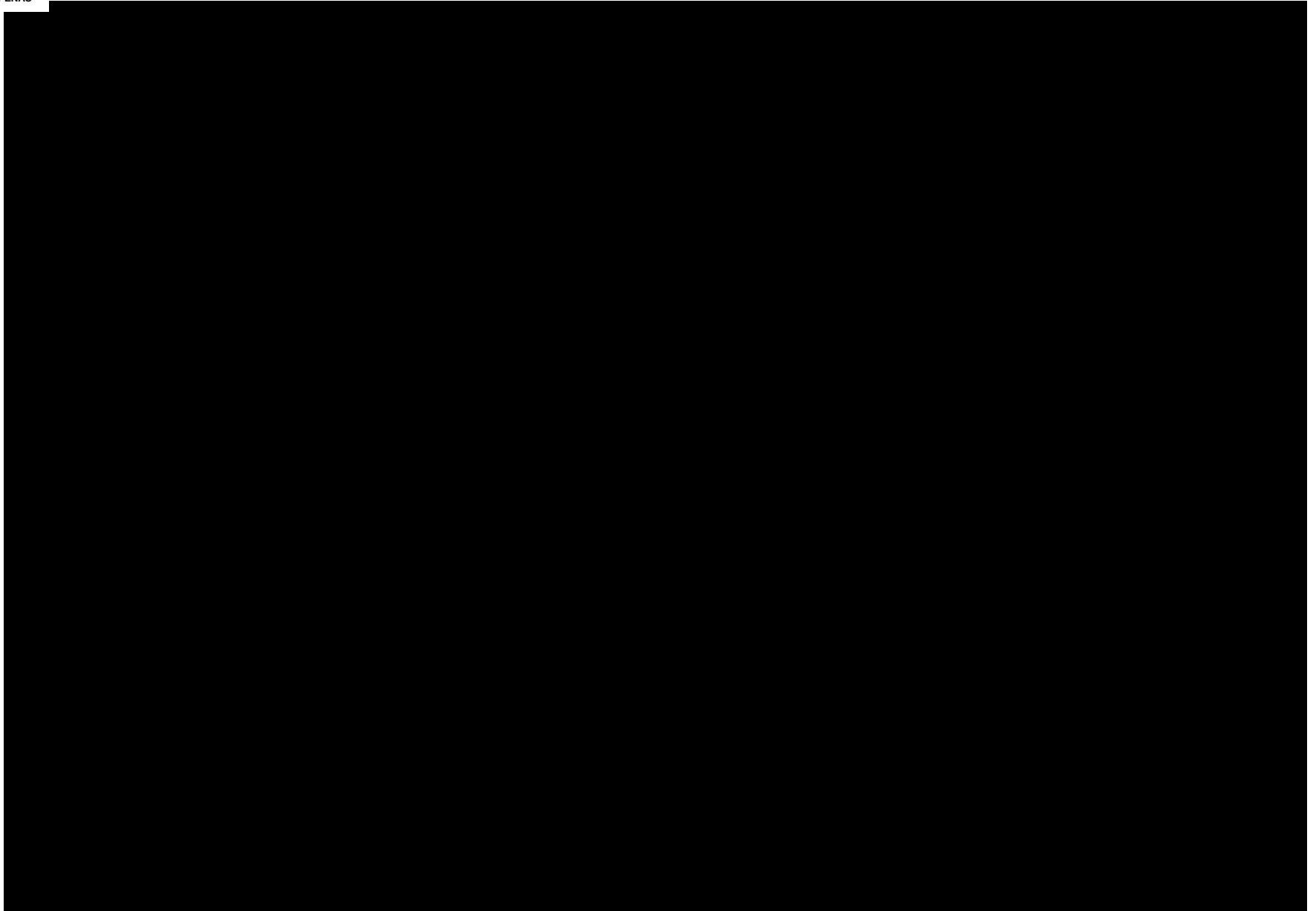


Source: BP World Statistical of Energy, The World Bank (GGFR). Data for 2004.



Data on oil wells and gas flaring in Indonesia (2004)

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Proposed Roadmap For the Medium Term Development Plan 2010-2014

- Produce Ministerial Decree on gas flaring utilization in Production Sharing Contract.
- Accelerate the development of natural gas infrastructure.
- Produce Ministerial Decree on gas flaring utilization as part of field's Plan of Development (POD).
- Produce technical regulation on gas flaring.
- Carry out several short listed gas flaring projects.
- Search funding and technical assistance to implement small-scale gas flaring projects.
- Socialize policies on gas flaring to stakeholders.



Major activities (road map) for gas flaring reduction (2010-2014)

No	Major Activity	2010	2011	2012	2013	2014	Lead Agency for the activity	
1	Produce Ministerial Decree on gas flaring utilization included in Production Sharing Contract	[Red bar spanning 2010-2011]						DG Oil & Gas
2	Accelerate the development of natural gas infrastructure	[Red bar spanning 2010-2014]						DG Oil & Gas, BPHE MIGAS, BPE MIGAS
3	Produce Ministerial Decree on gas flaring utilization as part of POD	[Red bar spanning 2010-2011]						DG Oil & Gas
4	Produce technical regulation on gas flaring	[Red bar spanning 2010-2011]						DG Oil & Gas
5	Carry out several short listed gas flaring projects	[Red bar spanning 2010-2014]						Production Sharing Contractors
6	Search funding and technical assistance to implement small-scale gas flaring projects	[Red bar spanning 2010-2012]						Bappenas, DG MIGAS
7	Socialize policies on gas flaring to stakeholders	[Red bar spanning 2010-2012]						DG MIGAS



Proposed Roadmap for in middle term and long-term: (1)

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- Promote utilization of gas (that otherwise would be flared) as a part of negotiation in Production Sharing Contract. Encourage development of LPG Plants and the use of flaring gas for electricity generators would be the center for using gas that otherwise would be flared or vented.
- Accelerate the development of natural gas infrastructure (transmission and distribution networks) to make transportation of gas in wider scale easier. This would be true, especially for Java, where sources of (marginal) gas are available quite many and consumers of gas are quite large, but the infrastructure to connect them have so far not been built seriously.
- Promote gas flaring utilization as part of field's Plan of Development (POD) submitted to the government.
- Furthermore, put activities related to gas flaring and venting reduction as "Cost Recoverable" items, means that the government has developed more responsibility for reducing gas flaring (as a part of the government environment policy).



Proposed Roadmap for in middle term and long-term: (2)

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- Conduct national survey on gas flaring and venting for every oil and gas fields. Based on the survey, rank the volume of gas flaring and identify the appropriate methods to utilize the gas (and to reduce gas flare).
- List projects for gas flaring reduction; make priority and schedule to implement them.
- Search for funding (grant; low interest loan) provided by international agencies to promote gas flaring reduction projects, including using CDM schemes.
- Develop in a further detail mechanism for using gas flare for power generation.
- Develop policy for encouraging development marginal oil and gas fields and combine them with the master plan for gas distribution network/areas.
- Develop in quite detail regulation/procedure on gas flaring: timing of flaring and venting, burn practices and technology, location of flaring and venting, smoke and odor, and heat and noise generation.
- Socialize all the policies/procedures on gas flaring reduction to production sharing contractors and all major stakeholders.



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THANK YOU