



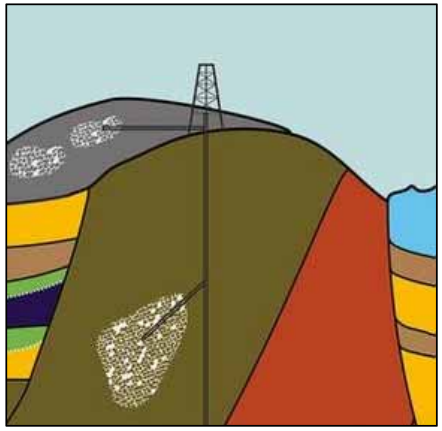

Indonesia NDC roadmap on AFOLU and Energy sector

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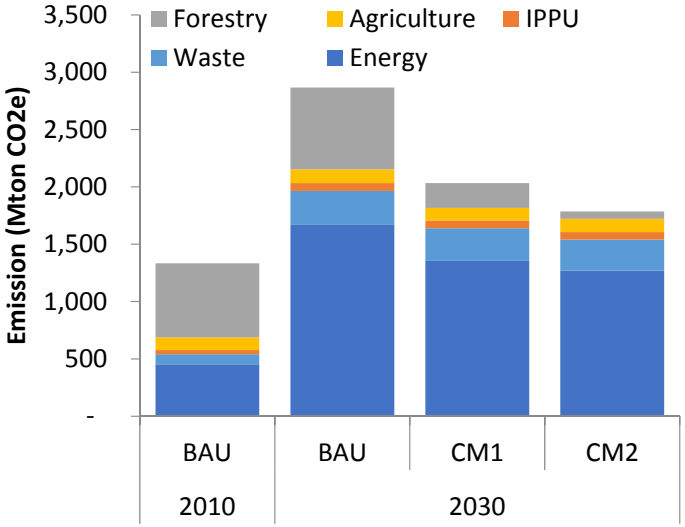
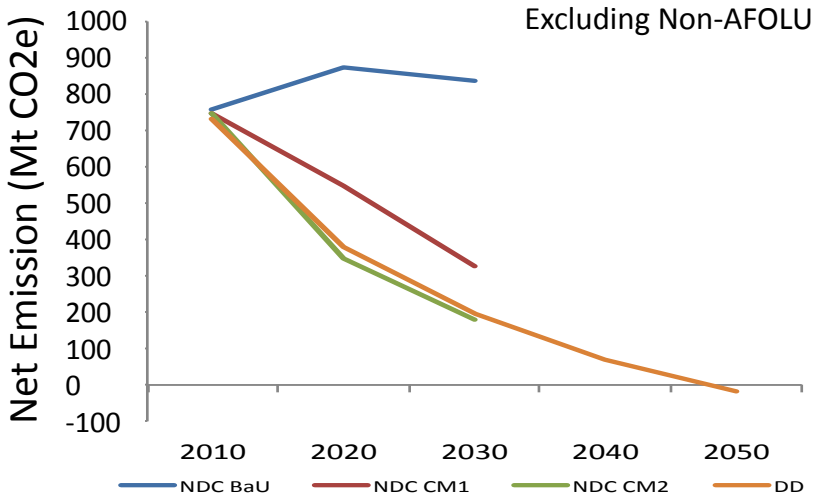
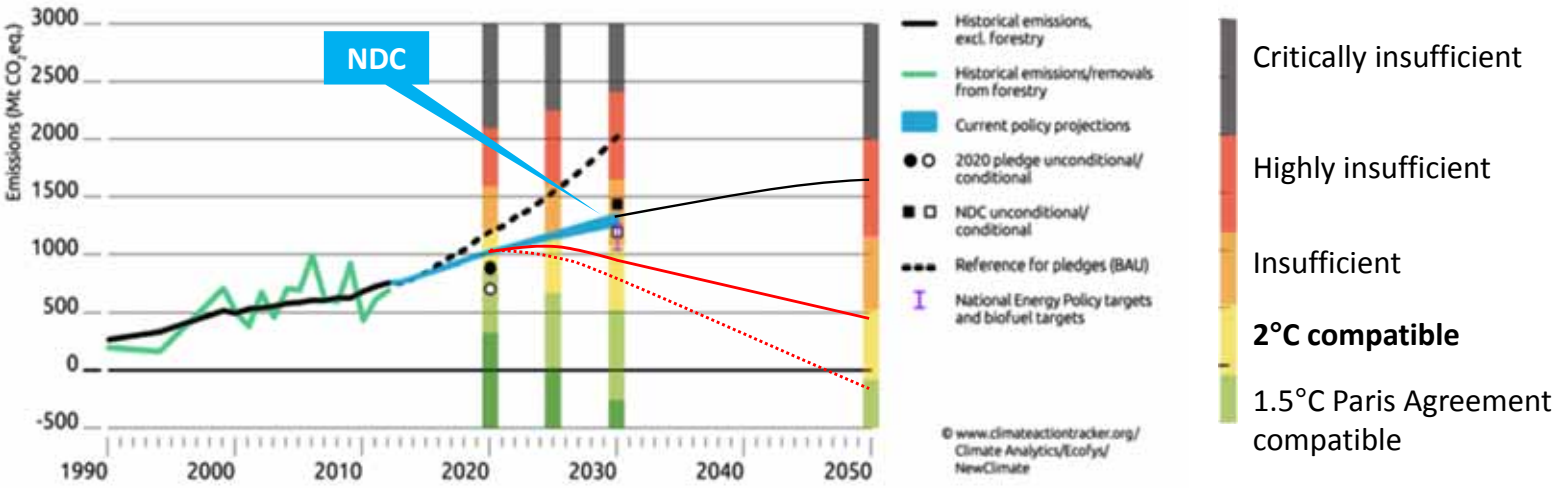
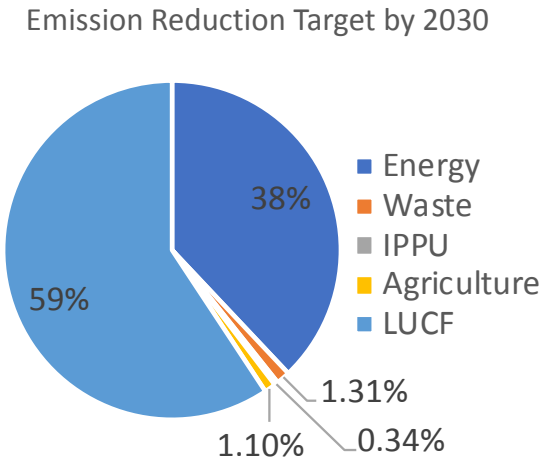
INTRODUCTION

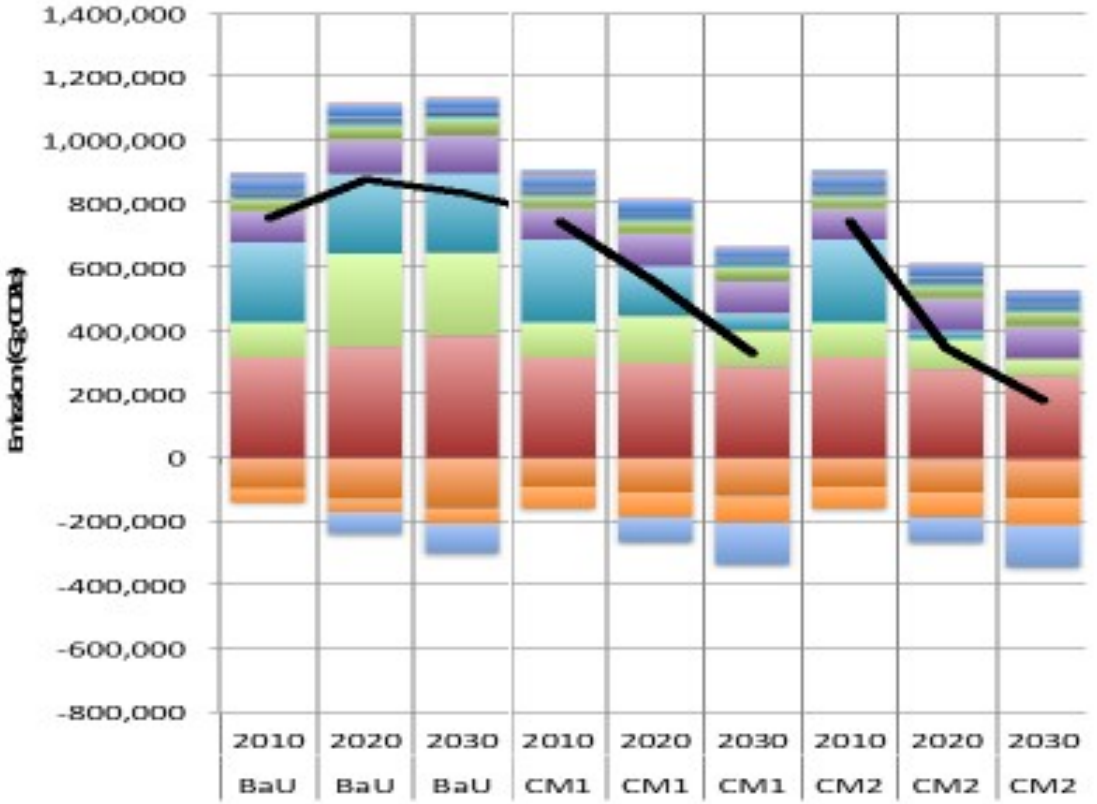


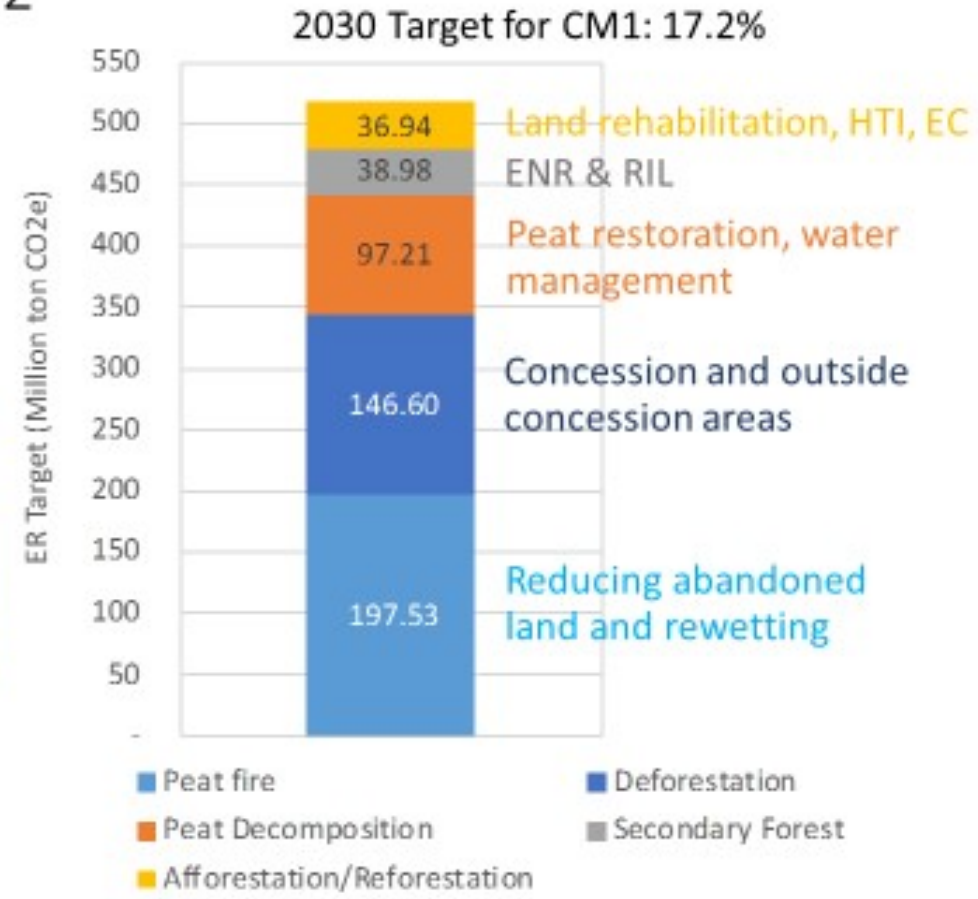






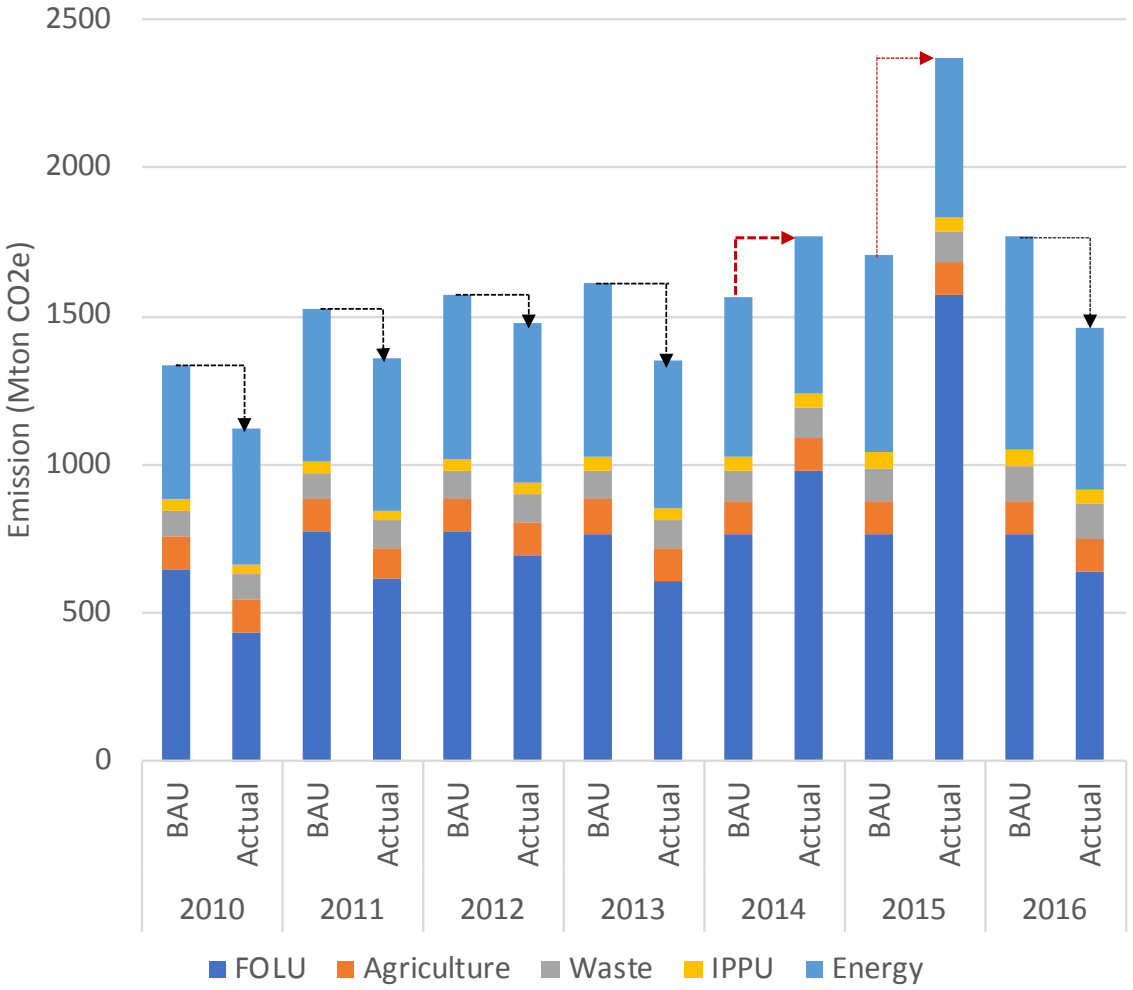
Projection of Emission BAU, CM1 & CM2 for AFOLU sector





Adapted from MoEF, 2018

PROGRESS

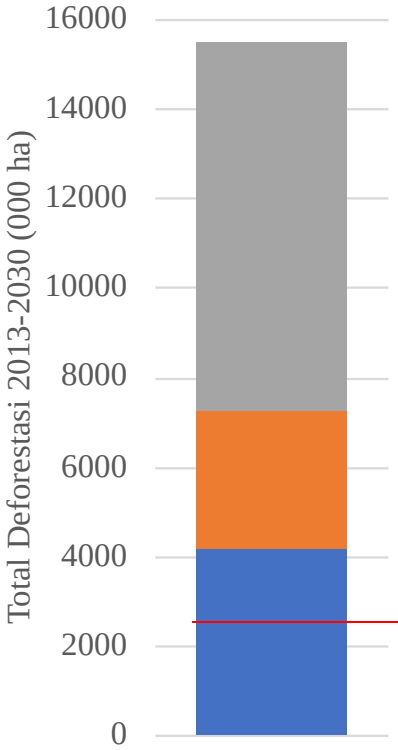


Source: MoEF, 2018

The increase of emission in 2014 and 2015 mainly due to the increase of emission from FOLU due to peat fire

In the period of 2010-2016, by excluding FOLU, the cumulative ER reached 555 Mt CO2e (equivalent to reduction of about 9.4% from BAU), while by including FOLU, it decreased to 269 Mt CO2e (equivalent to reduction of about 2.4% from BAU)

Reducing Deforestation (2018-2030)



BAU=15.53 Mha

CM1=7.26 Mha

CM1=4.15 Mha

Deforestation Quota
- 3.96 Mha to CM1
- 0.84 Mha to CM2

CM1=3,30 Mha (2013-2017)

2 Main Strategies

Controlling the conversion of natural forest in concession areas with incentive system **(PERMEN LHK 70/2017)**

Permanent moratorium for the issuance of new permit in primary forest and peatland outside the concession: **INPRES 5/2019**

Managing Illegal Driver of deforestation (Social Forestry: PERMEN LHK 83/2016 and TORA

Based on MOEF (2019)

Natural Forest in Concession areas 2017

HTI = 2.92 Mha
HGU = 1.44 Mha
PIAPS = 6.14 Mha
Total = 10.50 Mha
Protection = 5.85 Mha (PP46/2016)

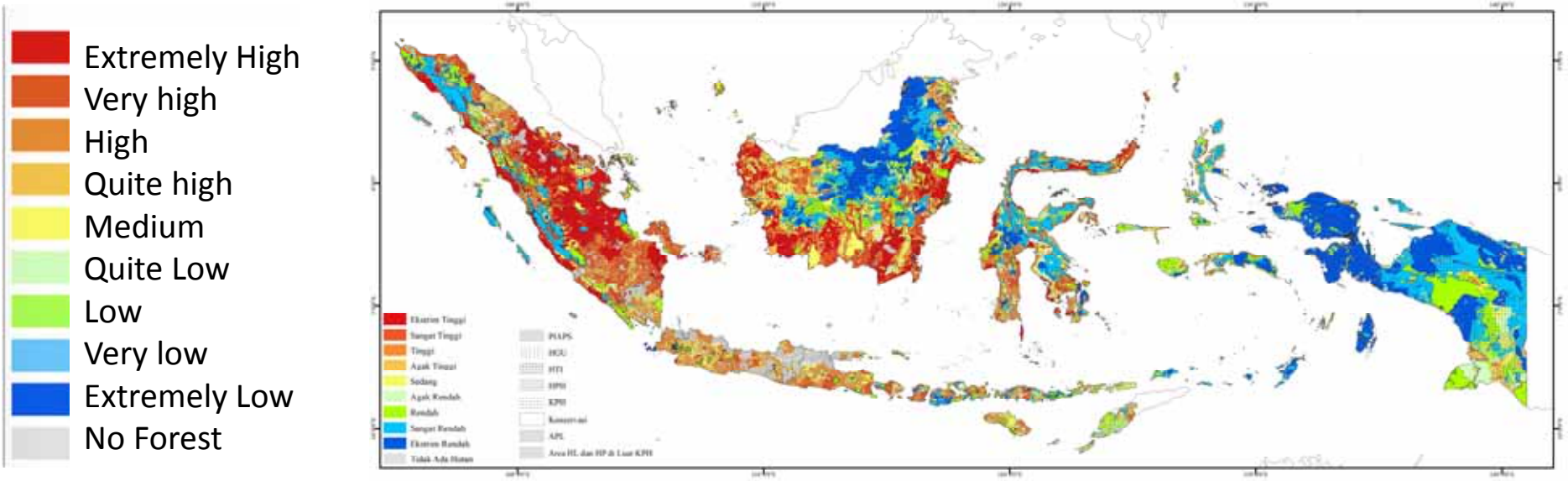
Scenario to meet the NDC Target

Jenis Konsesi	Optimum Scenario		Progressive Scenario	
	%	ha	%	Ha
Social Forestry	89.4	5,490,434	89.4	5,490,434
HTI	61.0	1,779,351	80.5	2,349,097
Agriculture Plantation	62.1	896,232	81.0	1,169,772
Total Conservation		8,166,017		9,009,303
Total Convertible in concession		2,334,526		1,491,240
Cap outside concession (Unconditional target)		1.601,474		2,333,760
Deep Decarbonization (Cap outside concession) CM2 (Conditional Target)		-1,489,526		-646,240

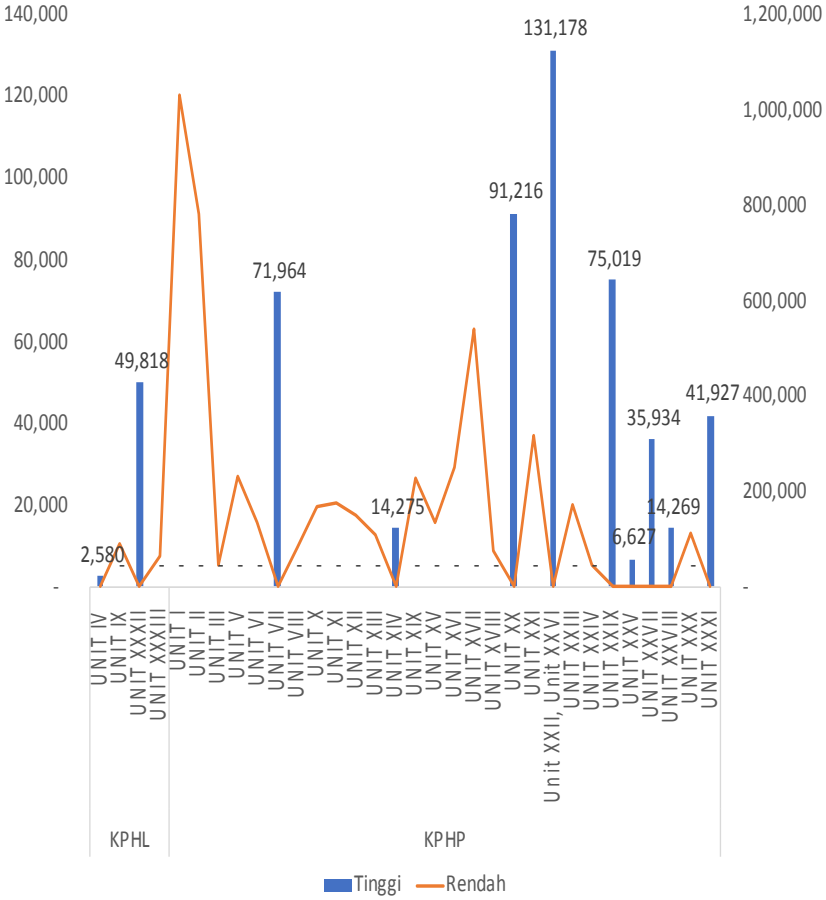
Forest in concession: 10.5 Mha-Timber Plantation = 2.92 Mha; Agriculture Plantation = 1.44 Mha; Social Forestry = 6.14 Mha; Side aside for protection based on Ecosystem Services 5.85 Mha

Bio-geophysical Index (Minister Regulation 70/2017)

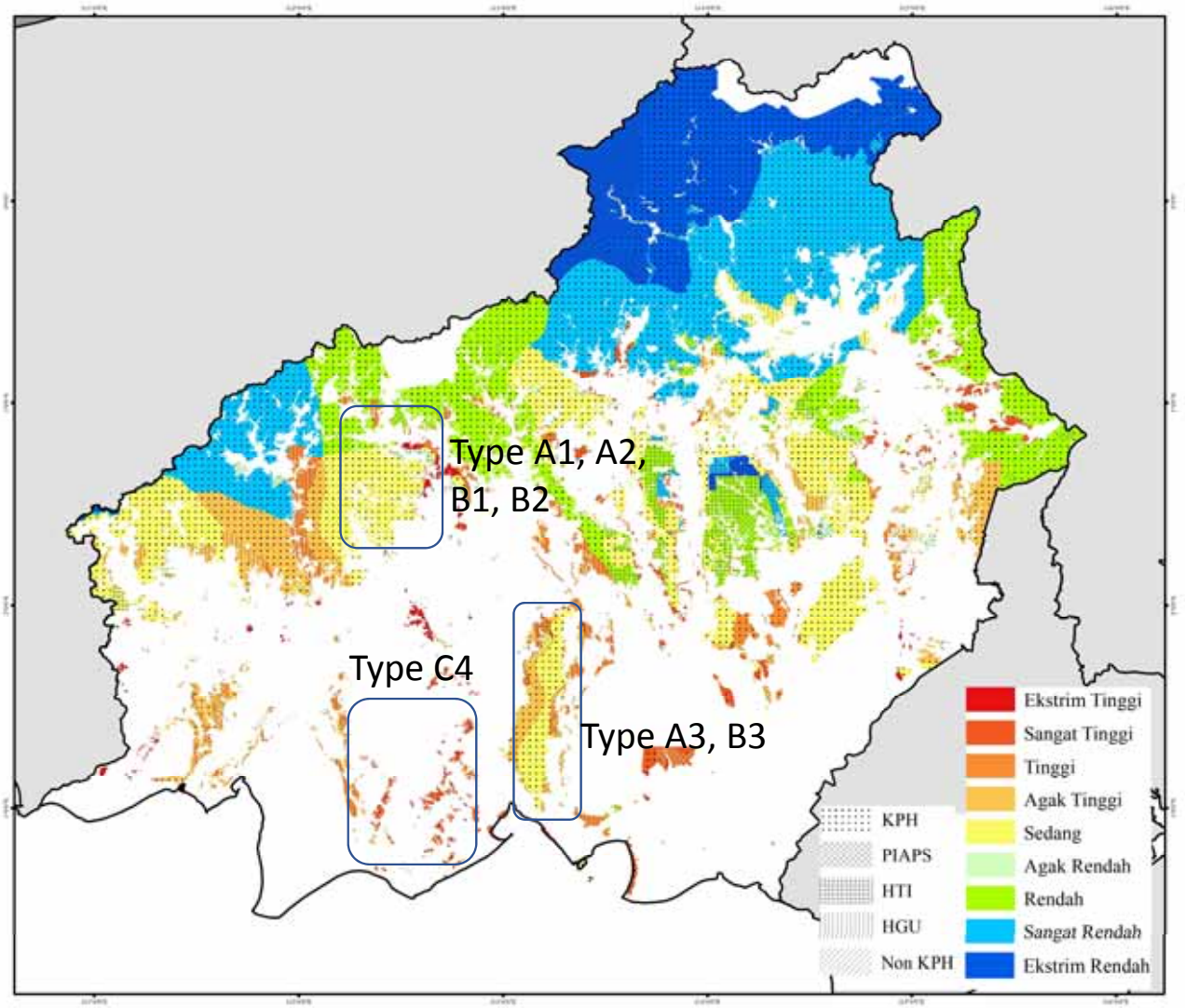
Historical Deforestati	Current Percent Forest Cover						
	0	1:<10	2: 10-20	3: 20-30	4: 30-50	5: 50-80	6: >80
1: High	0	1.0	1.5	2.0	2.5	3.0	3.5
3: Medium	0	2.0	2.5	3.0	3.5	4.0	4.5
5: Low	0	3.0	3.5	4.0	4.5	5.0	5.5



IBGF-Central Kalimantan



Forested land in FMU exposed to high risk of deforestation



Minister Regulation No. 6/2010: Policies that support the development of units mandated to improve management of forests in protection and production forests → Instituional typology → Use as guide for prioritizing the area for the implementation of Social Forestry, and Land Rehabilitation)

Target: Land Rehabilitation and Peat Management

Actions	Skenario	Kumulative (2014-2030)
Peat restoration (x1000 ha)[1]	BAU	-
	CM1	1,396
	CM2	2,908
	Aktual[2]	-
Improve water management (x1000 ha)	BAU	-
	CM1	1,656
	CM2	1,728
	Aktual[2]	-

1- Successful rate 90%
Source: MoEF, 2018

Presidential Regulation No. 57/2016 as revision to Presidential Regulation No. 71/2014: apply more rigid rules in using peat land and mandating government at all levels, to develop protection and management of peat land in coordinated ways and also to restore/rehabilitate the degraded peat land

Controlling Peat Fire

- Presidential Instruction No. 11/2015: Policies that mandate all level of governments to develop land and forest fire management system at their jurisdiction and sanction for business players who do not implement the fire management in the area under their authority
- With this policy, many of concession have been brought into the court and most cases the Government win the case. The penalty fund is planned to be used for financing mitigation activities (also incentive ~ Presidential Regulation 47/2017 Environmental Economic Instrument EEI→ Regulate incentive, disincentive and financial support for environmental protection and management)

Sustainable Forest Management (SFM) in Production Forest

Actions	Scenarios	Cumulative (2013-2030)
Rate (x1000 ha)	BAU	18.259
	CM1	31.099
	CM2	31.099
	Aktual[2]	-

Source: MoEF, 2018

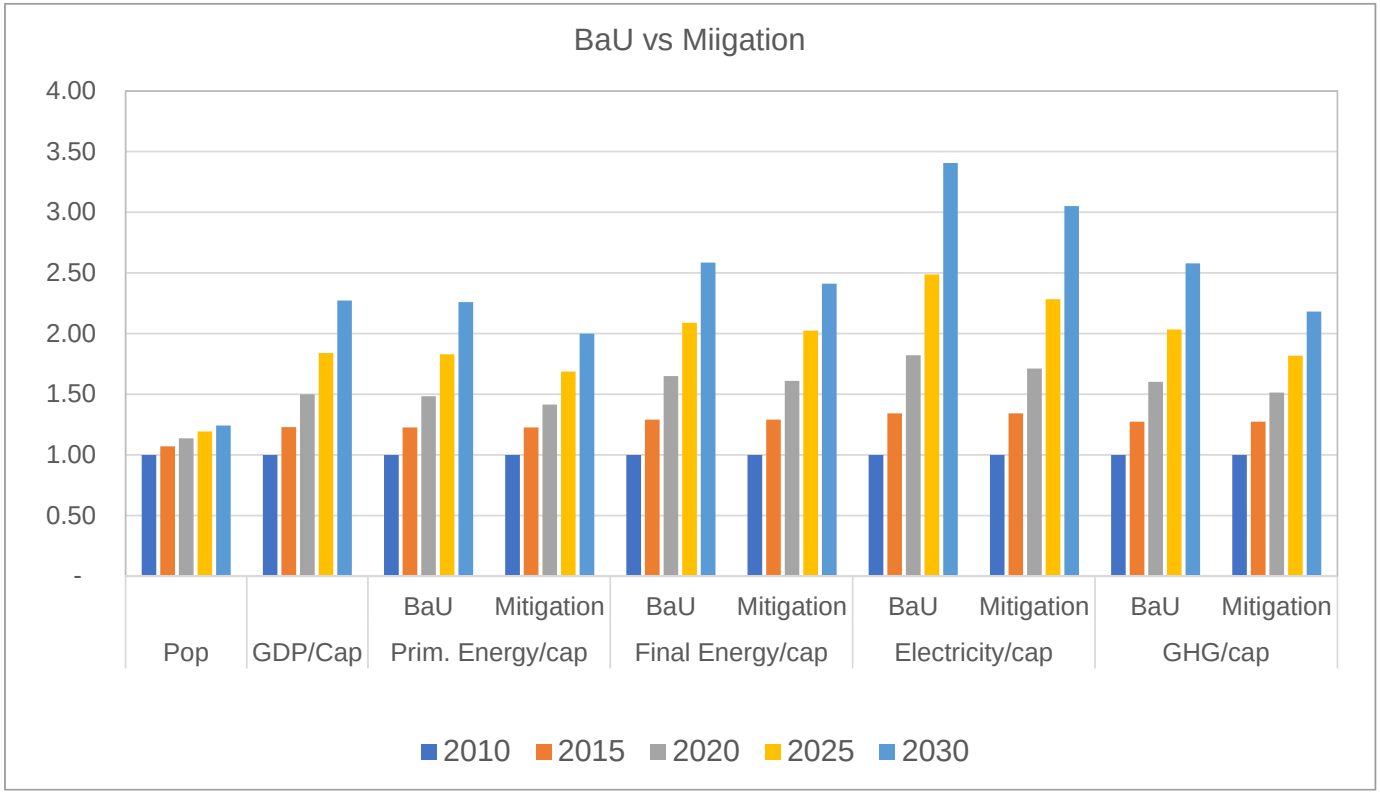
- Implementation of RIL **(Reduce Impact Logging, RIL)** and ENR **(*Enhanced Natural Regeneration)***
- **Minister Regulation No. 30/2016** on evaluation of performance of forest management→ *Policies that mandate all forest concession holders to have forest sustainable management certification. To ensure all concessions holders apply sustainable management practices*

Crown Cover	Conservation	Non-FMU	FMU	APL	Total
<30%	***17,589***	***30,216***	***184,316***	***149,045***	***381,166***
30%-70%	***422,715***	***383,269***	***2,285,067***	***1,822,375***	***4,913,425***
>70%	16,130,479	5,806,979	56,193,743	4,931,265	83,062,465
Total	16,570,783	6,220,464	58,663,126	6,902,684	88,357,057

Conclusion and Remark

- Mainstreaming the NDC in the process of revision of spatial plan and developing medium and long-term development plan
- Enhancing the participation of non-Party Actors (Private sectors) with incentive system
- Strengthening and acceleration of establishment Forest Management Unit in high risk area and synchronization of program across directorate supporting the social forestry programs and TORA
- Facilitating the adoption of farming system adapted to peat ecosystem and access to market
- Increasing access to fund for implementing climate actions (Public Service Agency for Environmental Fund)

NATIONAL CIRCUMSTANCES & DEVELOPMENT TRENDS: ENERGY



- Economic Growth Means Greater Access for Energy, considering the use of baseline technologies, this could lead to a climb in future energy related emissions.
- Fast-growing economy – rapidly increasing and fast-changing demand for energy.
- National Energy Policy: Security & Independences
  - Moving away from Oil, reducing Oil to 25% of total supply in 2025
  - Utilization of strategic assets (Coal and Natural Gas)
  - Energy efficiency improvements
  - New Energy (nuclear, CBM, shale-gas) and Renewable energies.
- Distribution challenge for a nation of thousands island

- ❑ Main driver of GHG emissions over the past decade has been economic activity, which increased at a rate of 5% to 6% per year, in which it will keep 5.5% (2020 to 2030)
- ❑ Decreasing energy use per GDP in mitigation scenario (compared to BaU) indicate improvement of efficiency
- ❑ Carbon intensity is still increasing indicate more fossil energy use

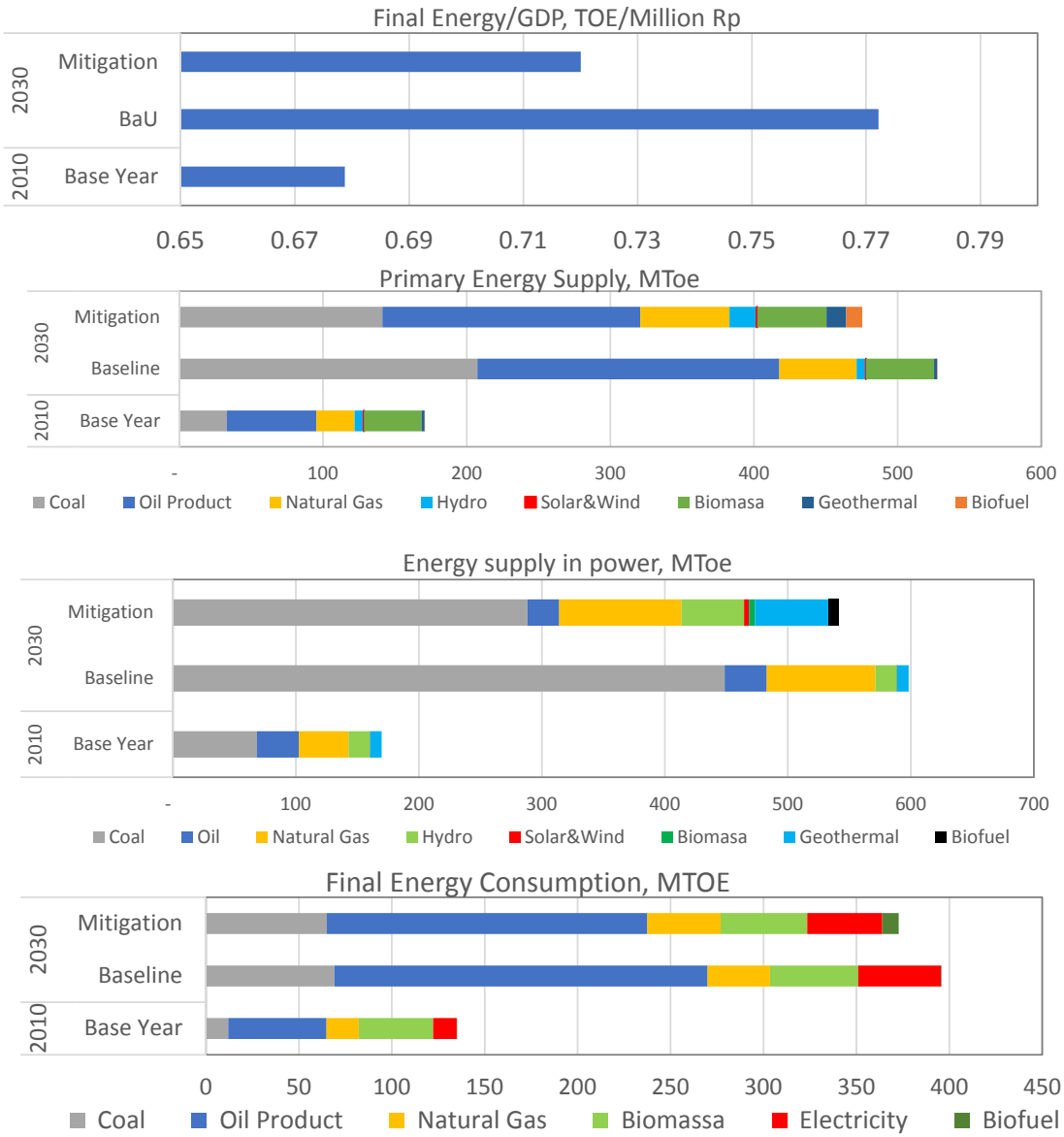
PILARS OF DECARBONIZATION

Pillar 1
Energy efficiency measures would decrease energy intensity of GDP (Energy per GDP)

Pillar 2
Renewable Energy will reduce fossil fuel combustions and reduce emission

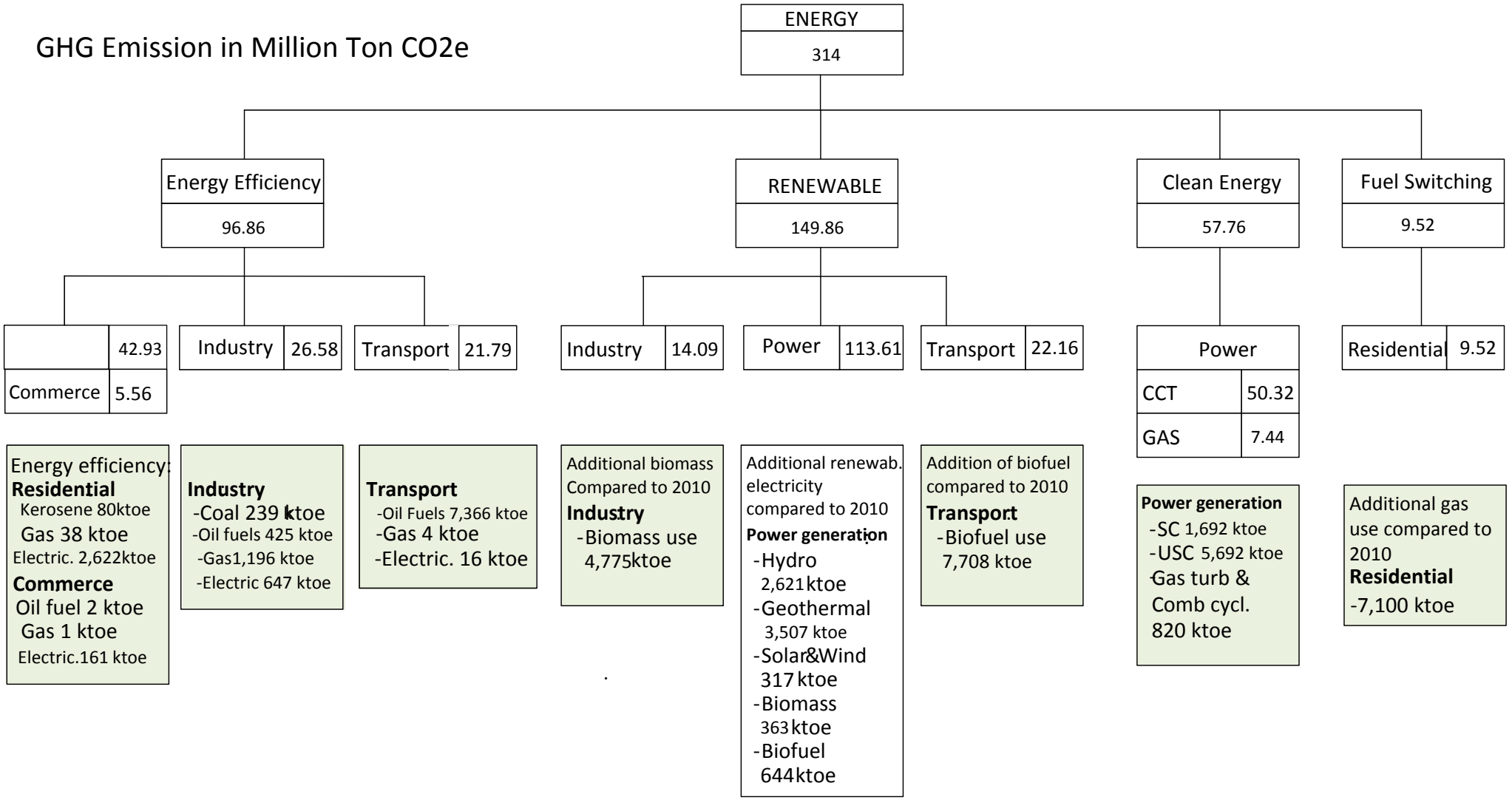
Pilar 3
Decarbonization of electricity will reduce fossil fuel combustions and reduce emission (as long as the power generation is also decarbonized)

Pillar 4
Fuel Switching to low carbon emitting fuels (from kerosene to LPG or natural gas) would decrease GHG emission in Households

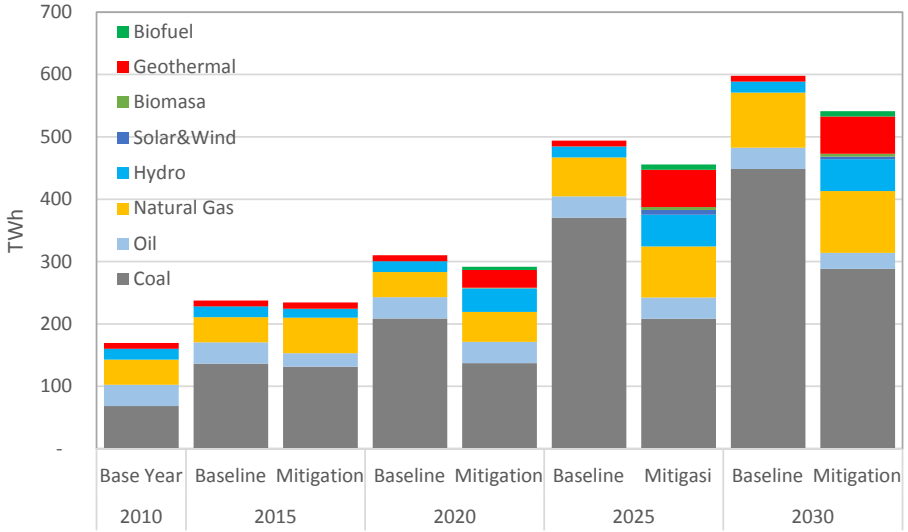


GHG Emissions Reduction Target of The NDC in Energy Sector

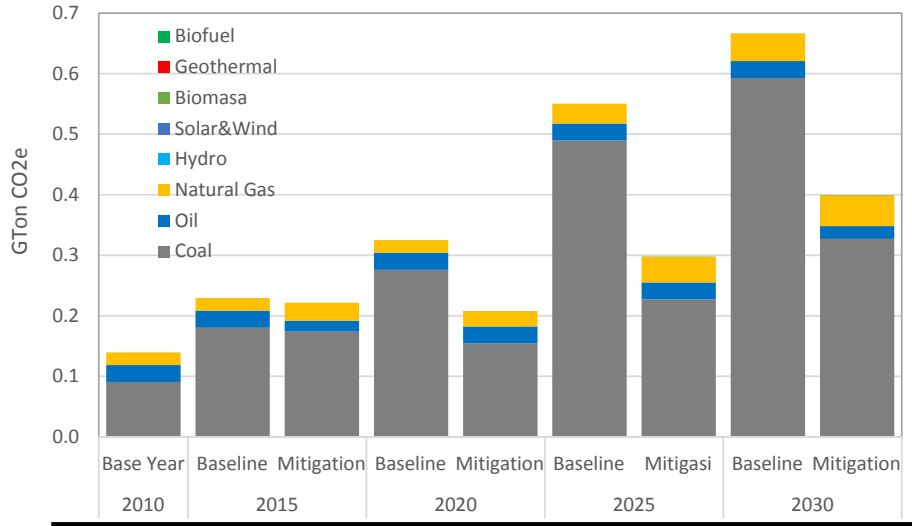
GHG Emission in Million Ton CO2e



Energy Supply Mix in Power Sector and The Associated GHG Emissions

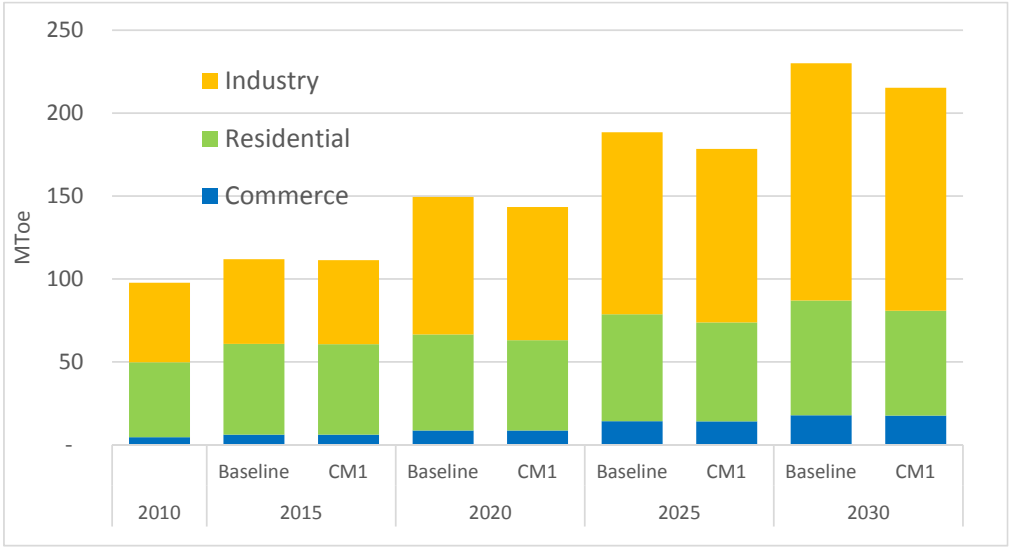


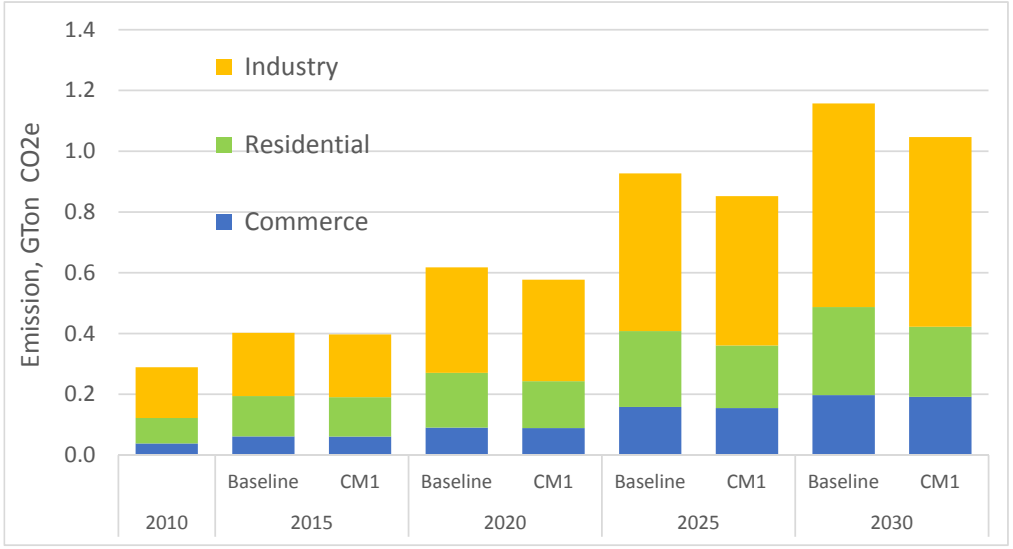
Year	Geothermal		Hydro and Pump Storage		Solar Energy		Wind Energy		CPO Based Power	
	Add. (MW)	Inst. Capacity (MW)	Add. (MW)	Inst. Capacity (MW)	Add. (MW)	Inst. Capacity (MW)	Add. (MW)	Inst. Capacity (MW)	Add. (MW)	Inst. Capacity (MW)
2019	190	2.138.5	294	5.233	63	88,19	0	71,07		44,2
2020	151	2.289.5	564	5.797	78,5	166,69	0	71,07	738,8	783,0
2021	147	2.436.5	1.234	7.031	219,3	385,99	30	101,1	108,8	891,8
2022	455	2.891.5	200	7.231	129	514,99	360	461,1	108,8	1000,6
2023	300	3.191.5	350	7.581	160,3	675,29	260	721,1	108,8	1109,4
2024	360	3.551.5	1.716	9.297	3,7	678,99	50	771,1	108,8	1218,2
2025	3690	7.241.5	3.074	12.371	250	928,99	150	921,1	110,5	1328,7

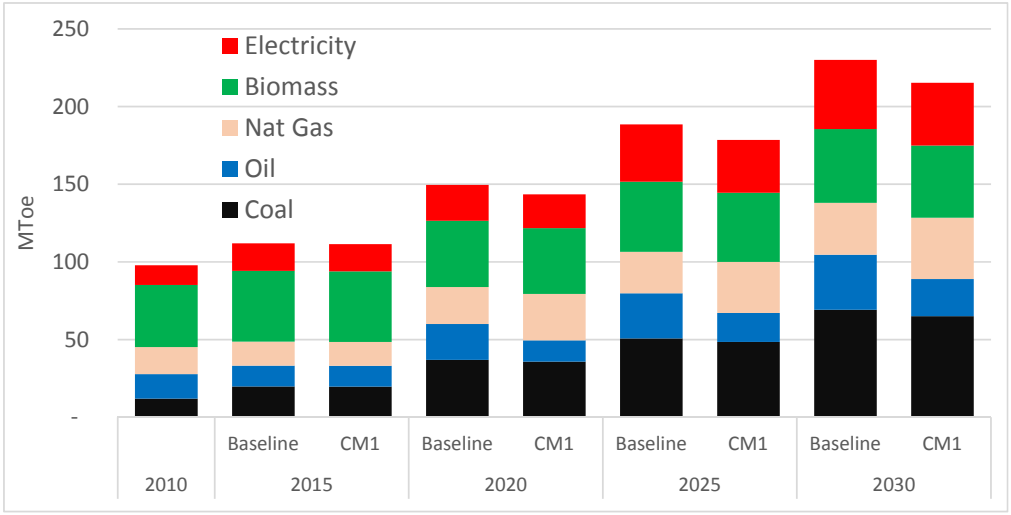


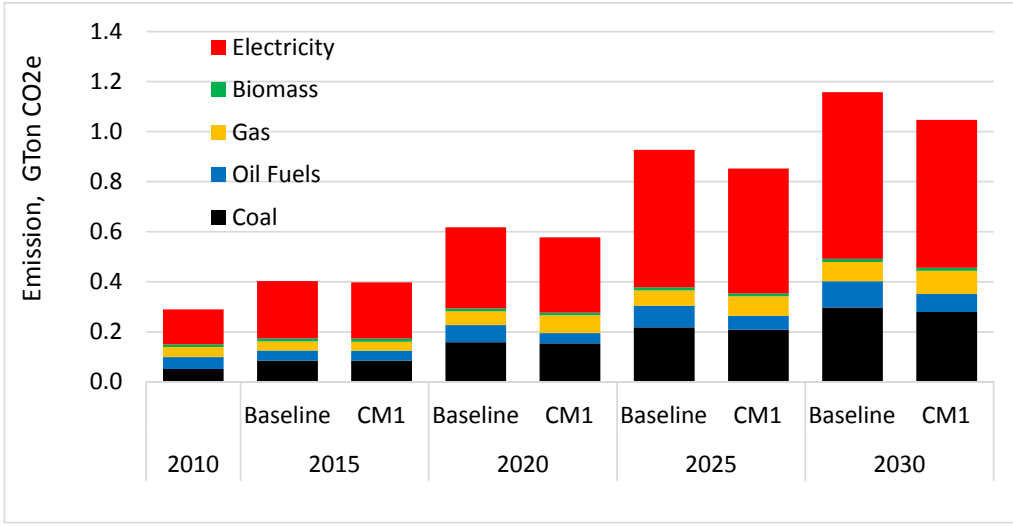
Bio Energy Technology	Additional Capacity of Bioenergy (MW)							Cummulative upto 2025 (MW)
	2019	2020	2021	2022	2023	2024	2025	2026
Biodiesel (PLT Bio)	0	62	55.2	70	39.8	102.6	4	333.6
MSW Power (PLTSa)	2	12.5	0	234	0	0	10	258.5
CPO Biofuel (PLTBn CPO)	0	5	0	0	0	0	0	5
Biomass (PLTBm)	3.5	50.7	15	52.9	5	0	5	132.1
Biogas (PLTBg)	6.4	8.5	0	0	5	0	0	19.9
Total	11.9	138.7	70.2	356.9	49.8	102.6	19	749

Final Energy Use (not Include Transport) and The Associated GHG Emissions

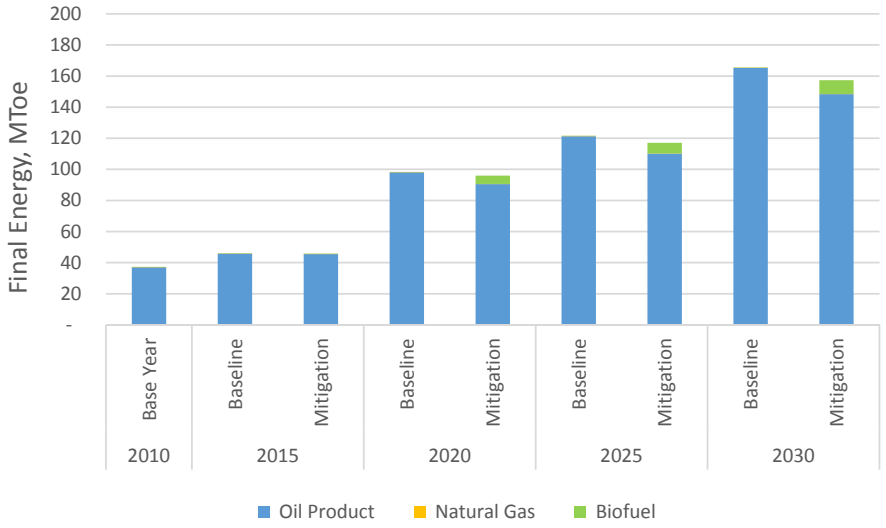


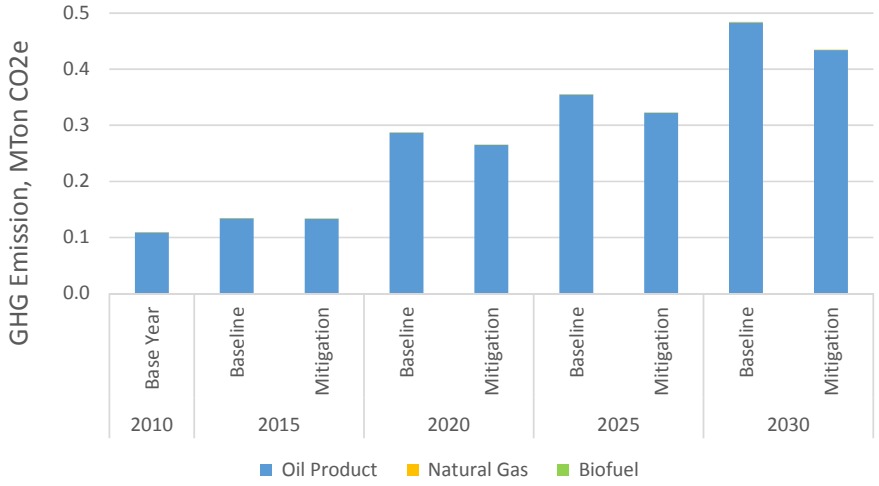


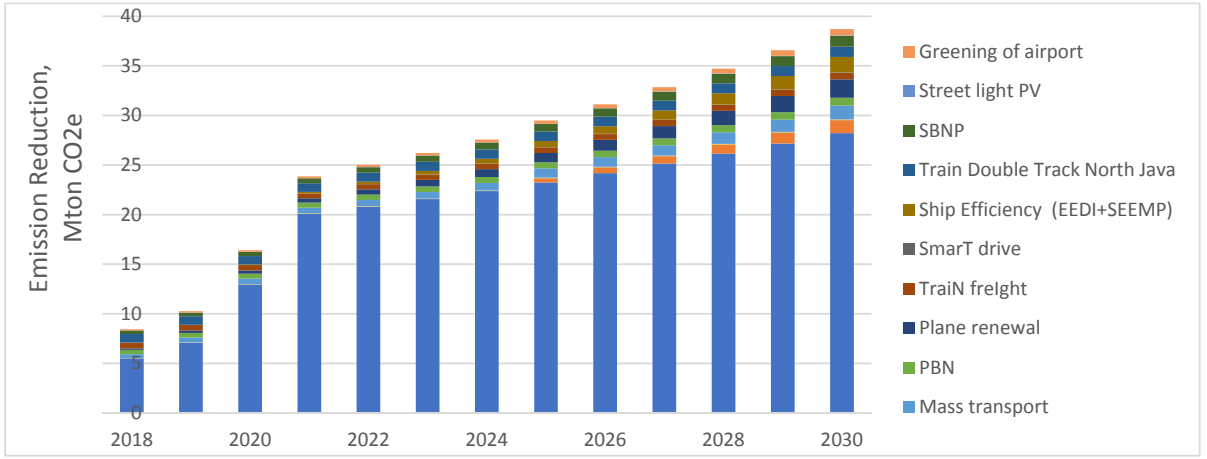




Energy Supply Mix in Power Sector and The Associated GHG Emissions







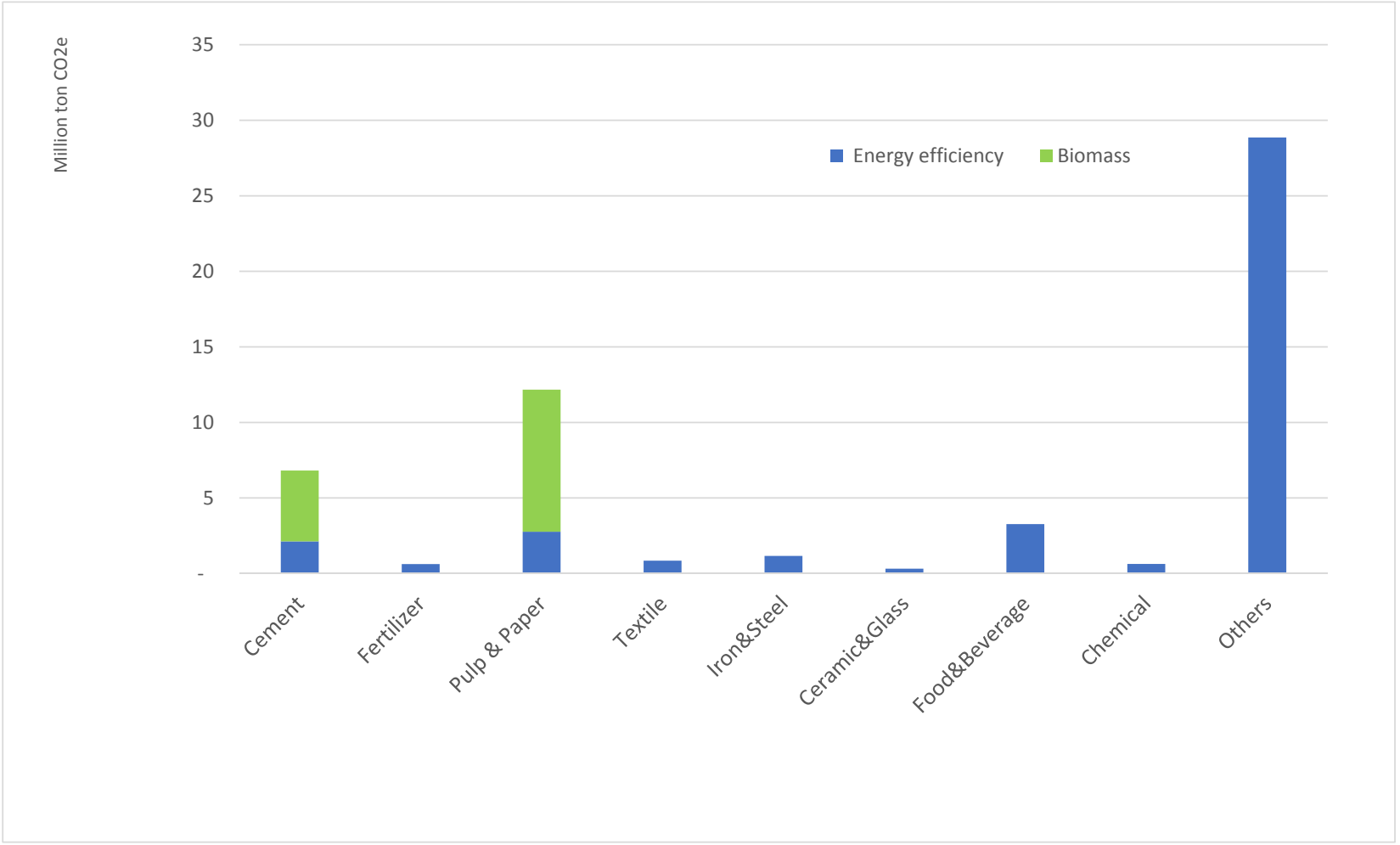
Increased efficiency of the transportation system, which includes:

- Increased mass transportation: BRT, MRT, LRT, Train
- Increased efficiency of transport equipment: vehicle rejuvenation,
- Electric motorized vehicles: KBL, LCEV (with low carbon electricity)
- Energy-efficient vehicles: LCGC (Low Cost Green Car)
- Increased efficiency in land transportation management: odd even, Area Traffic Control System (ATCS), Performance Based Navigation (PBN)
- Improvement of ship efficiency: Energy Efficiency Design Index (EEDI). Ship Energy Efficiency Management Plan (SEEMP)
- Double track Pantura train
- Increased use of trains for the transport of goods (moving from trucks to trains)
- Development of Sailing Navigation Supporting Facilities (SBNP)

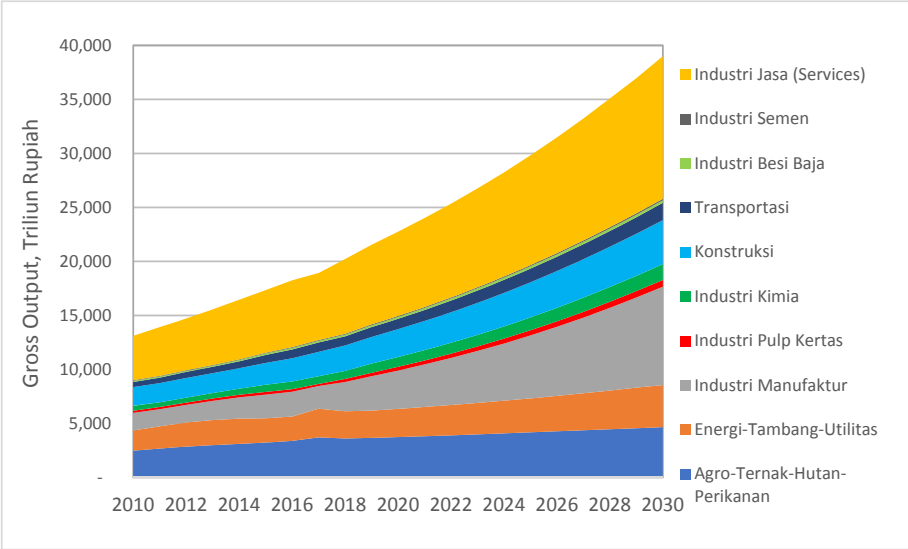
Increased use of low emissions fuels include:

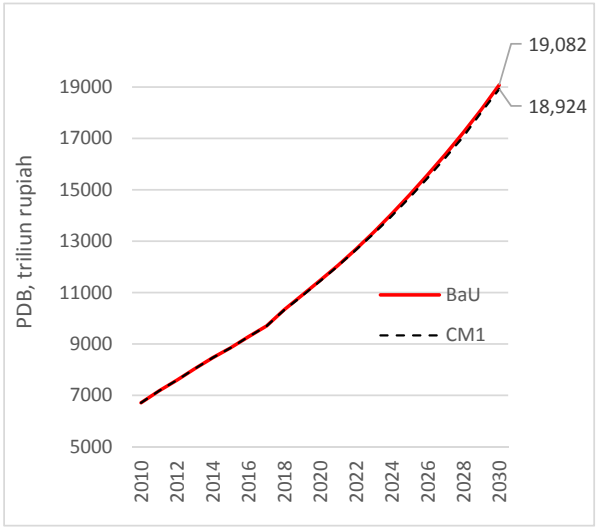
- CNG Vehicle Upgrade (replaces BBM)
- Increased octane number (RON> 88)
- Increased use of biofuel (replacing BBM)

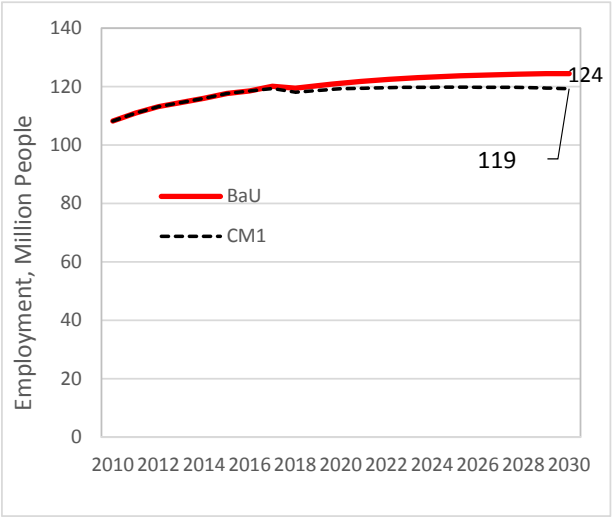
Industry Sector

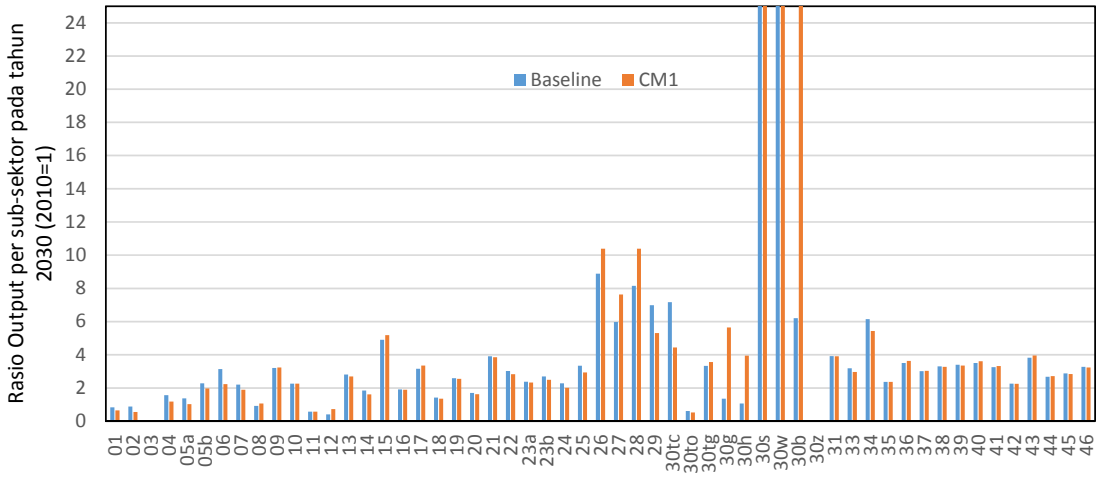


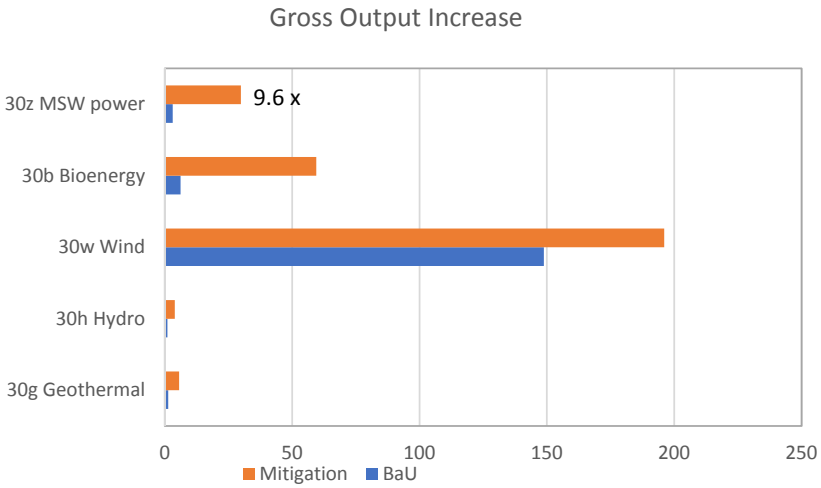
Conclusions and Remarks











Conclusion and Remark

1. There are four Pilars for achieving the target of GHG emissions reduction under the NDC road map: (1) energy efficiency, (2) renewable energy, (3) clean power (decarbonization of electricity), fuel switching to Low Carbon Emitting fuels (kerosene to LPG/Natural Gas) in households; among of these pillars, renewable energy will contribute to the reduction of about 48% of total GHG emissions reduction in energy sector.
2. The biggest increase of gross output in energy related sector: MSW power, wind, bioenergy, hydro, geothermal
3. Impacts of climate change mitigation action in energy sector: GDP/Capita and Emlpoyment are slightly below the BaU
4. Enabling condition the achievement of the NDC target in the energy sector:
   - The existence of energy price policies that are conducive to encourage the Energy Efficiency implementations;
   - There are regulations regarding the obligations of industries and commercial buildings with high energy consumption to carry out conservation or energy efficiency efforts with certain targets;
   - The existence of energy performance standard regulations for household, commercial and industrial equipment. There is a funding system that can be utilized for the development of renewable energy;
   - The existence of a policy of buying and selling renewable electricity and waste heat recovery, which is pursued by the public (companies & individuals), at an attractive price that encourages the RE Electricity development;
   - A review of regulations that can inhibit the use of municipal waste and other waste as an energy source.