Ministry of Finance Study Report on

Green Planning & Budgeting Strategy

for Indonesia's Sustainable Development 2015-2019

UPDATE REPORT - 2015

Centre for Climate Finance and Multilateral Policy
Fiscal Policy Agency, Ministry of Finance
Republic of Indonesia

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Acknowledgement

This 2015 Update Report on the Green Planning and Budgeting (GPB) Strategy document has been prepared and published by the Center for Climate Finance and Multilateral Policy (PKPPIM) of the Fiscal Policy Agency of the Ministry of Finance. It updates the original GPB Strategy report prepared in November 2014.

Preparation of the 2015 Update Report has received technical assistance from the **Low Carbon Support (LCS) Programme** to the Ministry of Finance with funding support from the **United Kingdom's Climate Change Unit (UK-CCU)** in Jakarta.

Preparation of the 2015 GPB Strategy Update Report was conducted under the guidance and supervision of the Fiscal Policy Agency, particularly the Centre for Climate Change Financing and Multilateral Policy (PKPPIM) and involved the following officials: **Prof. Dr. Suahasil Nazara, Dr. Syurkani Ishak Kasim, Dr. Kindy Rinaldi Syahrir, Ria Sartika Azahari** and **Hageng Suryo Nugroho**. Policy advice was given by **Prof. Dr. Emil Salim**, Chairman of the GPB Strategy Advisory Panel, who provided guidance to **Kit Nicholson** and **Ismid Hadad**, senior LCS consultants who did the analytical and technical work of formulating and writing the strategy report in English and Bahasa Indonesia. **Paul Butarbutar** of LCS assisted with translation and **Dr. Vira Ramelan** of LCS undertook a final review and technical editing and publication of the Update Report.

Jakarta, September 2015

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Preface

The Ministry of Finance has a long history of concern over climate change and its impact to the Indonesian economy. The initial focus was on the reduction of GHG emissions, in response to the Presidential commitment to make emission reductions of 26% by 2020, compared with business as usual. This initial focus on climate mitigation led to studies and the development of policies as described in the Ministry's Green Paper in 2009 and the climate change Mitigation Fiscal Framework in 2012. Since then there has been growing realisation that Indonesia's economic growth is highly vulnerable to environmental risks associated with climate change and the losses, degradation and increasing damages to its natural resources. If these losses and damage are not stopped and the environmental risks are ignored, Indonesia's GDP growth rate most likely will be reduced by half of its 7% p.a. target over the next 35 years, which will prevent Indonesia from reaching high income country (HIC) status by 2030, as planned in the RPJMN 2015-2019.

The Ministry of Finance is also concerned with the Indonesian economy which has also been - to a large extent - dependent upon the extraction and exploitation of its natural resources such as oil, gas, coal, forest products and agricultural commodities. The extraction of these natural raw materials has greatly degraded the non-renewable natural resources, including water, forests, minerals, biodiversity and marine ecologies. If this exploitation remains unchecked, the environment will continue to degrade. If growth is to be sustained, then both extraction and increasing damage to these natural resources needs to be more carefully and strategically managed and actions that pollute and degrade natural resources need to be avoided and controlled.

The Green Planning and Budgeting (GPB) Strategy was designed in late 2013 and completed in November 2014 to respond to these strategic issues that are affecting the economy and aims to protect Indonesia from this loss and damage, whilst also reducing its GHG emissions. This is based on the Ministry of Finance's tasks and obligation to implement article 8 of the Law no. 17/2003 on Public Finance which provides the Ministry of Finance the authority to design fiscal policy, the macro-economic framework and the state budget plan and its budgetary amendments.

To implement the above tasks, the Ministry's GPB Strategy applied a green economy approach to achieve sustainable development goals, by valuing the medium to long-term sustainability in the planning of our natural resources and economic, environment and social development. To give a practical focus to this change in approach, the GPB Strategy identified 21 top priorities for moving to a green economy, which are clustered into the following 6 policy areas: protection of natural resources; agriculture; energy and industry; transport and urban planning; health and education; disaster risk management; and other supporting policies.

These priorities remain valid. However, since a new government has been elected and there are a new set of development agendas - called 'Nawa Cita'- which is now reflected in the new Medium Term Development Plan (RPJMN), we need to have an update of the GPB Strategy priorities to make it applicable to the new agendas and the context of institutional change. This brief 2015 Update Report summarises the original GPB Strategy (of 2014),

provides an update and review of institutional changes and new developments in green economy issues, including new evidence of losses and damage to natural resources and economic growth, and describes how the new green approach can be applied within the RPJMN for 2015-2019.

The 2015 GPB Update Report concludes with a section that identifies the various actions that can be taken by the key institutions responsible for implementing the strategy. The Ministry of Finance, Bappenas and the Ministry of Environment and Forestry are already committed to the green approach and have the necessary strategies and plans in place. Further progress will require strong collaboration with line ministries, with provincial and local governments and with the private sector and civil society. The Ministry of Finance will continue to support this new approach to sustainable and climate smart development so ensuring that Indonesian quality of life is protected and that Indonesia plays a leading role in developing and implementing global policy and agreements on the green economy.

Jakarta, September 2015

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Abbreviations

ADB	Asian Development Bank
APBN	Anggaran Pendapatan dan Belanja Negara (State Budget of Revenue & Expenditure)
APBN-P	Anggaran Pendapatan dan Belanja Negara – Perubahan (State Budget Amendment)
APIP	Aparat Pengawasan Internal Pemerintah (Government's Internal Control Apparatus)
BEI	Bursa Efek Indonesia (Indonesian Stock Exchange Agency)
BKF	Badan Kebijakan Fiskal (Fiscal Policy Agency, Ministry of Finance)
BNPB	Badan Nasional Penaggulangan Bencana (National Agency for Disaster Management)
BP-REDD	National Agency for Reducing Emissions from Deforestation and forest Degradation
BUN	Bendahara Umum Negara (State Treasury, Ministry of Finance)
CBA	Cost Benefit Analysis
CBFM	Community Based Forestry Management
CC	Climate Change
CCFF	Climate Change Financing Framework
CMfHDC	Coordinating Ministry for Human Development and Culture (was CMfSW)
CMfMA	Coordinating Ministry for Maritime Affairs
CPEIR	Climate Public Expenditure & Institutional Review
DAK	Dana Alokasi Khusus (Specific Allocation Grant)
DAU	Dana Alokasi Umum (General Allocation Grant)
DBH	Dana Bagi Hasil (Shared Revenue Fund)
DIPA	Daftar Isian Pelaksanaan Anggaran (Legalization of Budget Execution Document)
DNPI	Dewan Nasional Perubahan Iklim (National Council on Climate Change)
DR	Dana Reboisasi (Reforestation Fund)
ETF	Exchange Traded Fund
FPA	Fiscal Policy Agency, Ministry of Finance
FPF-SDLBS	Fiscal Policy Framework for the Sustainable Development of Land Based Sectors (MoF)
FSI	Financial Service Industry
GCF	Green Climate Fund
GDP	Gross Domestic Product
GE	Green Economy
GE%	Green Economy weight: the value of Green Economy benefits as a proportion to the total of development benefits
GGAP	Green Growth Assessment Process
GGGI	Global Green Growth Institute
GHG	Greenhouse Gases
GPB	Green Planning and Budgeting
GPBS	Green Planning and Budgeting strategy
HIC	High Income Country
ICCTF	Indonesia Climate Change Trust Fund
IDR	Indonesian Rupiah
IDX	Indonesian Stock Exchange (Agency)
INDC	Intended Nationally Determined Contribution
IPCC	Inter-governmental Panel on Climate Change
KEHATI	Yayasan Keanekaragaman Hayati Indonesia (Indonesia Biodiversity Foundation)
KEM	Kerangka Ekonomi Makro (Macro Economic Framework)
LCS	Low Carbon Support Programme to the Ministry of Finance
LESS	Low Emission budget Tagging and Scoring System of MoF
MEMR	Ministry of Energy & Mineral Resources
MFF	Mitigation Fiscal Framework (MoF)
MoASPA	Ministry of Agrarian & Spatial Planning Affairs

MoEC	Ministry of Education and Culture
MoEF	Ministry of Environment and Forestry
MoF	Ministry of Finance
MoMF	Ministry of Marine and Fisheries
MoPWH	Ministry of Public Works and Public Housing
MoRLDT	Ministry of Rural, Left behind area Development & Transmigration
MoRTHE	Ministry of Research, Technology & Higher Education
MoSABR	Ministry of State Aparatus & Bureaucracy Reform
MP3EI	Masterplan for Acceleration and Expansion of Indonesia's Economic Development 2011-2025
MP3KI	Masterplan for Acceleration and Expansion of Indonesia's Poverty Alleviation, 2011-2025
MRV	Measurement, Reporting and Verification
MTEF	Medium Term Expenditure Framework
Nawa Cita	Nine Priorities Agenda (of the new Government)
NBSAP	National Biodiversity Strategy and Action Plan
NPV	Net Present Value
OJK	Otoritas Jasa Keuangan (Financial Services Authority)
PES	Payment for Ecosystem Services
PKPPIM	Pusat Kebijakan Pembiayaan Perubahan Iklim dan Multilateral (Centre of Climate Change Financing and Multilateral Policy), Ministry of Finance
PPKF	Pokok-pokok Kebijakan Fiskal (Main Points of Fiscal Policies)
PPP	Public-Private Partnership
RAD-GRK	Rencana Aksi Daerah untuk Penurunan Emisi Gas Rumah Kaca (Regional Action Plan for Reducing Greenhouse Gas Emissions)
RAN-API	Rencana Aksi Nasional untuk Adaptasi Perubahan Iklim (National Action Plan for Climate Change Adaptation)
RAN-GRK	Rencana Aksi Nasional untuk Penurunan Emisi Gas Rumah Kaca (National Action Plan for Reducing Greenhouse Gas Emissions)
RAPBN	Rancangan Anggaran Pendapatan & Belanja Negara (Draft of State Budget Plan)
REDD	Reducing Emissions from Deforestation and forest Degradation
RENJA-KL	Rencana Kerja Kementerian/Lembaga (Ministerial/Institution's Work Plan)
RPJMN	Rencana Pembangunan Nasional Jangka Menengah (Medium Term National Development Plan)
RPJP-N	Rencana Pembangunan Nasional Jangka Panjang (Long Term National Development Plan)
RKA-KL	Rencana Kerja & Anggaran – Kementerian/ Lembaga (Ministerial/Institution's Work Plan and Annual Budget Plan)
RKP	Rencana Kerja Pemerintah (Annual Government Work Plan)
RKPD	Rencana Kerja Pemerintah Daerah (Annual Local Government Work Plan)
SDA	Sumber Daya Alam (Natural Resources)
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Appraisal
SNA	Sub-National Authority (Local or Regional Government)
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

1 SUMMARY OF THE 2014 GPB STRATEGY

Abstract

Indonesia's impressive record on economic growth is vulnerable to environmental risks associated with climate change and the losses, degradation and increasing damage to its natural resources. If losses and damage are not stopped and the environmental risks are ignored, Indonesia's economic growth most likely will be gradually reduced over the next 35 years, falling to about half of its 7% p.a. target. This will prevent Indonesia from reaching high income country (HIC) status by 2030, as currently planned. The Green Planning and Budgeting (GPB) Strategy aims to protect Indonesia from this loss and damage, whilst also reducing its GHG emissions. This will be achieved by defining and applying 21 priorities for green economic growth, mainly in forestry, agriculture, marine &fisheries, energy, public transportation, infrastructure, municipal and regional development. The strategy involves a steady shift from reliance on direct public expenditure to the use of incentives and regulations that will encourage private green investment. If implemented in full, these 21 priorities should prevent most of the loss and damage, without involving major increases in public expenditure. However, this will require strong commitment, concerted efforts and coordination across many government institutions and multi-stakeholder participation.

1.1 Rationale

Rationale for the Strategy. Indonesia has enjoyed strong economic growth in recent decades and expects to maintain growth at 7% and so to move rapidly through middle income status to reach high income country (HIC) status in 20 years. However, there are some serious problems on this horizon that could cause significant loss and damage, both to the country's natural resources and to economic growth and infrastructure, which would result in significant reduction in economic growth and major delays in achieving HIC status.

1. Indonesia is vulnerable to climate change and, in particular, to increased variability and intensity of rainfall and to sea level rise. The impact of climate change can be reduced both by participating in international mitigation efforts to reduce GHG emissions and by investing in adaptation to climate change to protect against loss and damage to the country's natural resources.

2. The Indonesian economy has been, to a large extent, dependent on the extraction and exploitation of natural resources such as oil, gas, coal, forest products and agricultural commodities. If this exploitation remains unchecked, the environment will continue to degrade. If growth is to be sustained, then extraction of these natural resources needs to be more carefully and strategically managed and actions that pollute and degrade natural resources need to be avoided and controlled.

3. The government of Indonesia has made a commitment and policies to implement Presidential Regulation No.61/2011 on the National Action Plan for the Reduction of Greenhouse Gas Emissions (RAN-GRK) by the year 2020. Implementing this national policy and regulation will require significant economic and financial resources which needs to be prepared carefully through a medium to long-term development planning and budgeting strategy at the national, sectoral and regional levels.

Objectives. The Green Planning and Budgeting (GPB) Strategy is prepared to respond to these strategic issues by describing the key priority areas in which green economy approaches can reduce Indonesia's vulnerability to climate change impact and environmental risks, and minimise the loss and damage to natural resources and economic growth. The strategy also aims to describe the most effective policies and instruments to be followed and to define scenarios that show the level of resources that will need to be involved in green investment. Finally, it aims to describe how to mainstream green and low carbon development into the national planning and budgeting processes, working with RPJMN framework and introducing new prioritisation methods.

Principles. The GPB Strategy is also guided by five principles to support its implementation.

1. Regional integration of Indonesia as one nation state (Negara Kesatuan Republik Indonesia (NKRI) which spreads pressure on the natural resources and opens up new opportunities for sustainable natural resources use.

2. Exploiting the demographic bonus and offering new employment opportunities in high value jobs, with low environmental costs.

3. Valuation of natural resources and use of these values in policy design.

4. Considering the food-energy-water nexus and promoting efficiency in resource use.

5. Good governance, with wide participation to use all available skills and capacities for the green economy.

1.2 Methodology and Process

Process of Preparing the GPB Strategy. The GPB Strategy was initiated and prepared by the Centre for Climate Change Financing and Multilateral Policy (PKPPIM) at the Fiscal Policy Agency (BKF) of the Ministry of Finance (MoF). The formulation of the strategy was guided by a panel of senior advisers from government and the private sector. Detailed guidance was provided by an inter-ministerial team of officials from eight key ministries, who met through seven consultative workshops. A team of Indonesian and international experts also assisted with the preparation and strategy formulation processes.

Approach. The GPB Strategy shows how to close the Green Economy Gap, which is the difference between what needs to be done to avoid the problems and the current levels of green investment, both public and private. Thus, a Green Economy Gap of 50% indicates that it would be necessary to double current green investment to sustain 7% growth. Describing the Green Economy Gap, and how it can be closed, involves the following steps.

A. Understand the scale of the challenge, by:

1. Estimating the loss and damage that is expected to occur from climate change and natural resource degradation, if there is no green investment.

B. Selecting Priorities and describing the factors that determine policy impact, including:

1. Reviewing existing strategies and policies related to the green economy (e.g. RAN-GRK, RAN-API and the Green Paper) to create a long list of green policy areas;

2. Selecting the 21 most important policy/programme areas and grouping into 6 clusters of programme category;

3. Reviewing the policy instruments used and so estimating the leverage ratios, that is the extent to which public expenditure leverages, or causes, private expenditure and/or investment; and

4. Analysing the effectiveness of this public expenditure in reducing loss and damage, both public and private.

C. Analyse recent green investment and its impact, including:

1. Recent levels of public green investment;

2. The instruments used in recent budget expenditure, which determine the leverage ratio and private green investment; and

3. The reduction in loss and damage caused by recent green investment.

D. Define scenarios for future green investment and their impact, including:

1. The extent to which public expenditure can be turned into green expenditure;

2. The extent to which a shift towards highly leveraged instruments (such as incentives and regulations) can accelerate private green investment; and

3. The reduction in loss and damage caused by the future green investment.

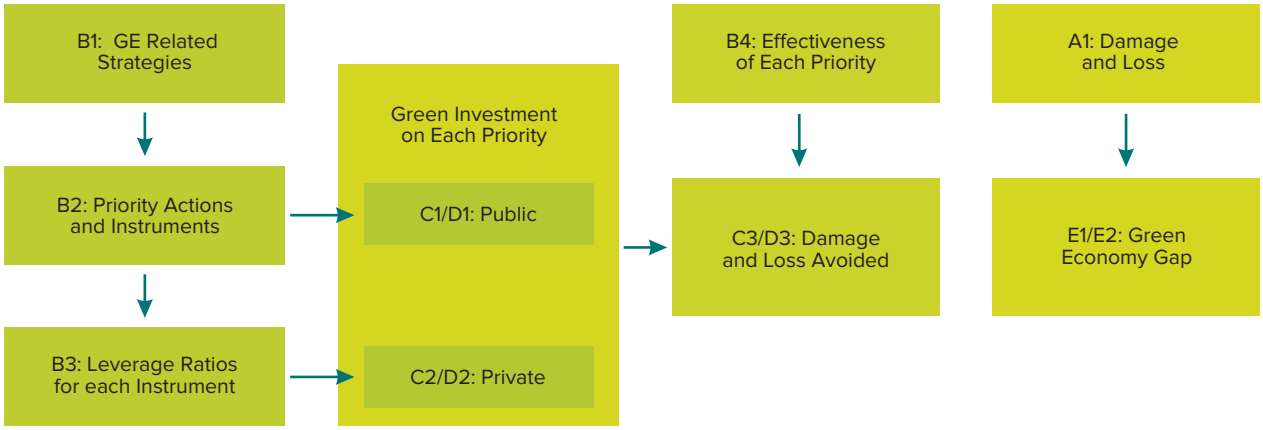
E. Estimate the Green Economy Gap, which is the difference between the loss and damage and the extent to which current green investment reduces that loss and damage, both:

1. For current levels of green investment (i.e, from Steps A and B); and

2. For future scenarios of green investment (i.e. from Steps A and C), which show how far the gap can be closed.

F. Describe the methods for managing green planning and budgeting, including changes to policy appraisal and budget practices

Figure 1. Methodology for Estimating the Green Economy Gap (summary of GPBS Figure 2)



Note: the numbering refers to the steps mentioned in the Approach, above

1.3 Identifying the Priorities and their Instruments

The top 21 development priorities of the GPB strategy were selected from a long list of green economy actions (see **Table 1**), taken from the existing government green strategies (e.g. RAN/RAD-GRK, RAN-API, NBSAP and the MoF's Green Paper). The prioritisation was done by using criteria and indicators defined and agreed by the core team of officials from related government institutions through a series of seven consultations. The 6 clusters of priority areas were defined to assist in the presentation of the top 21 priorities, after these priorities had been agreed by all team members.

Table 1. Top 21 Priorities and Main Instruments Available (from GPBS Table 5)

No.	Priority	Main Instruments Available
1	Forest Protection	Expenditure, information, licenses and CSR
2	Peatland Protection	Expenditure, finance, regulations, awareness
3	Coral Protection	Expenditure, regulations, awareness
4	CC Adapted Crops	Expenditure, finance
5	Plantation Crops	Finance, regulations, CSR
6	Irrigation	Expenditure, finance, regulations
7	Energy Efficiency	Grants, subsidies, finance, regulations, CSR, awareness
8	Renewable Energy	Grants, subsidies, tax incentives, finance, licenses, regulations, CSR
9	Resource Efficiency	
10	Fuel Pricing	Expenditure, price controls
11	Large Scale Power	Grants, subsidies, finance, licenses, price controls, quotas
12	Sustainable Mining	Grants, information, tax incentives, regulations, CSR
13	CSR	Tax incentives
14	Public Transport	Expenditure, grants, subsidies, tax incentives, price controls, CSR
15	Waste Control	Expenditure, grants, subsidies, tax incentives, finance, prices, CSR
16	Roads/Bridges	Expenditure
17	Regional Infrastructure	Expenditure, grants, subsidies, tax incentives, licenses, regulations, CSR
18	Green Education	Expenditure, regulations, awareness
19	CC Sensitive Health	Expenditure, regulations, awareness
20	Disaster Risk Management	Expenditure, regulations, awareness
21	GE Coordination	Expenditure, regulations, awareness

Table 1. above lists the 21 GPB priorities and summarises the main instruments available for each priority. Direct public expenditure is most appropriate for natural resource protection, smallholder agriculture, some elements of urban planning, social services and policy coordination. Grants, subsidies and tax incentives and financial instruments (i.e. interest rates subsidies, loan guarantees and loanable funds) are most useful for energy and industry and for some elements of transport and urban planning. Loanable funds may also be useful for agriculture. Licenses, price controls and quotas are also mainly relevant for energy and urban planning, though licenses are also crucial for forest and peatland protection. Regulations are available for many of the priorities and CSR and awareness are also relevant to a variety of priorities.

The GPB Strategy expects the choice of instrument to move as quickly as possible from a reliance on government expenditure to private enterprise, involving the role of the financial sector such as banks, capital market, insurance, where possible. It also expects a growing reliance on licenses and various forms of regulations. This trend will reduce

the pressure on the budget, allowing public finance to focus on core government services. Even more importantly, it will mobilise the wider capacity of the Indonesian private, civil society and philanthropic organizations to participate in the Green Economy, directly or through their roles as employees in enterprises and organizations.

Leveraging and the Private Sector. As countries move through middle to high income status, they move from a reliance on direct public expenditure interventions towards policies and instruments that rely more on the capacity of the private sector. Initially, this involves greater use of government policy incentives (e.g. grants, subsidies and tax incentives). As the financial sector develops, they take responsibility for some of these incentives (e.g. through loan guarantees and interest rate subsidies) which broadens the skills and resources available to the green economy and improves the leverage ratio. Eventually, policy relies mostly on regulations and public expenditure is limited to the costs of enforcing regulations. The evidence on leverage ratios for different types of instruments comes mainly from international experience (**see Annex 1**).

Table 2. Types of Instruments and Associated Leverage Ratios (see GPBS Table 7)

Category	Type of Intervention	Leverage Ratio
A	Direct government expenditure, which has limited leveraging effect	0 to 1
B	Financial transfers (including tax incentives) to companies	2 to 4
C	Funding through banks and other financial institutions	3 to 5
D	Government regulatory controls & promotion, with public enforcement costs	4 to 6
E	Transfers from central to local government for Green Economy initiatives	Any of the above
F	Public awareness and investment in human capital	Wide variety

By reviewing the importance of the different types of instrument used for each priority, the GPB Strategy produces an estimate of the average leverage ratio for the priority, from which an estimate can be made of the private green investment that is leveraged.

1.4 The Scale of the Green Economy Challenge

The GPB Strategy starts from an assessment of the likely loss and damage arising from climate change and natural resource degradation. This suggests that, by 2050, GDP growth will be reduced from 7% to 3.5% p.a., if there is no green investment. This reduction in growth would happen gradually, in equal annual steps so that the reduction will be only 0.1% in 2016, 0.2% in 2017 and 1.0% in 2025. However, the impact will be cumulative and this means that GDP in 2033 will be only 3 times higher, instead of the expected 3.6 times higher. By 2050, GDP will be 46% lower than it would have been without climate change and natural resource degradation.

This analysis of loss and damage uses a range of sources of evidence, details of which are provided in of this GPB Update Report. The results also drew on various existing sources of modelling, including the work for SE Asia by ADB. **Table 3**. summarises the evidence on loss and damage used in the GPB Strategy.

Table 3. Breakdown of Estimates of Loss and Damage

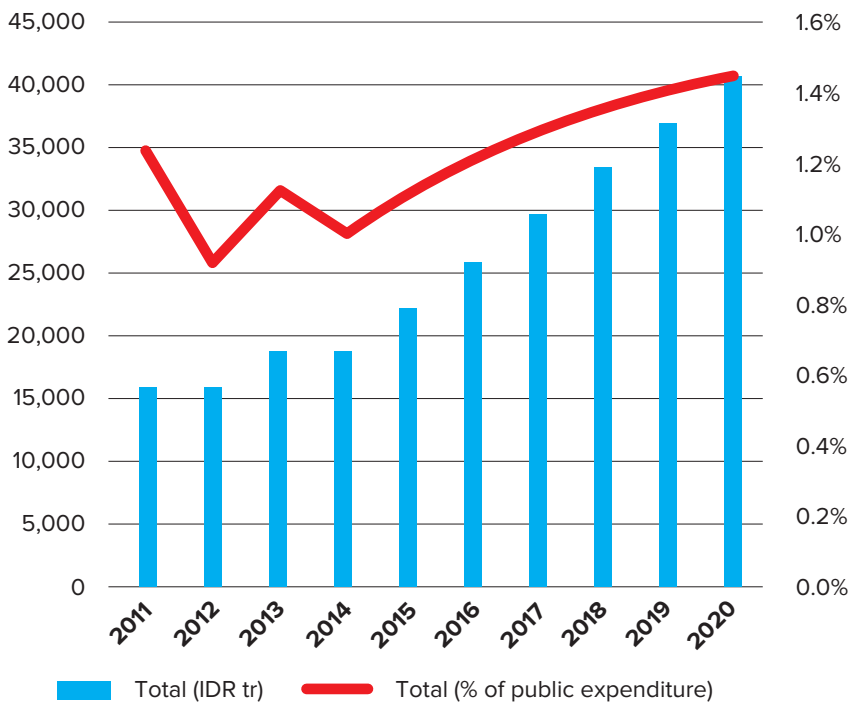
Source of Loss & Damage to Natural Resources and Economic Growth	Loss/damage (%GDP)
Loss and Damage Related to Climate Change	
Losses in agricultural productivity from temperature and more variable rain	0.85%
Loss and damage to crops from floods and drought	0.05%
Losses from increased pest attack on crops	0.05%
Livestock, forestry and fisheries (limited basis for estimation)	0.01%
Losses in energy sector from higher transmission losses and cooling costs	0.02%
Faster degradation of roads, irrigation, water and sanitation infrastructure	0.55%
Flood/storm damage to property and loss of life, injury and disease	0.09%
Flooding and salinization in coastal areas (no basis for estimation)	0.00%
Increased occurrence of diarrhoea and other climate sensitive diseases	0.78%
Total from climate change	***2.40%***
Loss and Damage Related to Natural Resource Degradation	
Loss of GDP from reduced deforestation	0.17%
Costs of soil erosion from changes in land use.	0.68%
Health costs of increased pollution	0.25%
Total from natural resource degradation	***1.10%***
Grand Total	***3.50%***

In addition to the above loss and damage, the GPB Strategy recognises that there is a backlog of past exploitation of natural resources which has enabled GDP to be higher than it would be if long term sustainability were being pursued. This backlog is reflected in the fact that Green GDP is lower than conventionally measured GDP, by between 4% and 7%. As a result, GDP growth will have to reach 7.3%, rather than 7%, if Indonesia is to reach HIC status in 2033.

1.5 Existing Green Economy Activity

The government is already devoting considerable resources to green economy activities. This is estimated by reviewing the entire public budget. For those ministries and agencies that may contain some green economy activities, the complete listing of activity codes was reviewed and scores (i.e. GE%) were assigned to any activity that was thought to deliver green benefits (see **GPBS Annex 1**). The GE% scoring was based on international experience with estimating the relative size of the green benefits, compared with normal development benefits.

Figure 2. Green Economy Expenditure by Central Government

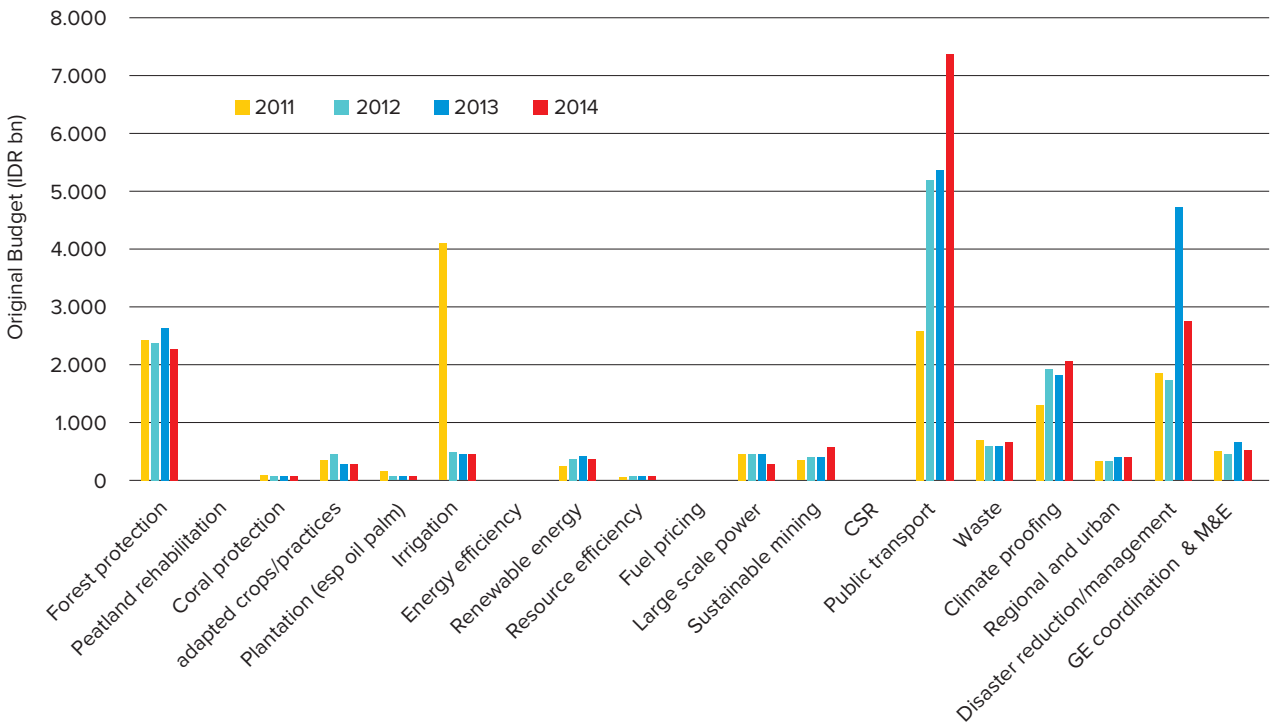


The graph in **Figure 2** shows that, in 2014, about 1.0% of public expenditure (or IDR 18.6 tr) was devoted to green economy investment (see GPBS Table 13). Over the last four years, there has been an increase in spending in nominal terms, but no clear trend in expenditure as a % of total public expenditure. The graph also shows the expected trend in spending under the first scenarios defined in the GPB Strategy. Green economy expenditure is expecting to increase to about 1.4% of total public expenditure by 2020.

Note: figures are weighted expenditure – i.e. totals multiplied by GE% (see above).

The graph in **Figure 3**. summarises the trends in expenditure for each of the 21 priorities. Further details are provided in the third column of **Annex 1** of this Update Report. The average leverage ratio was 1.87, and the private green investment leveraged by public policies was therefore IDR 34.6 tr.

Figure 3. Recent Expenditure on Green Economy Activities (see GPBS Figure 7)



1.6 Effectiveness of Public Policies

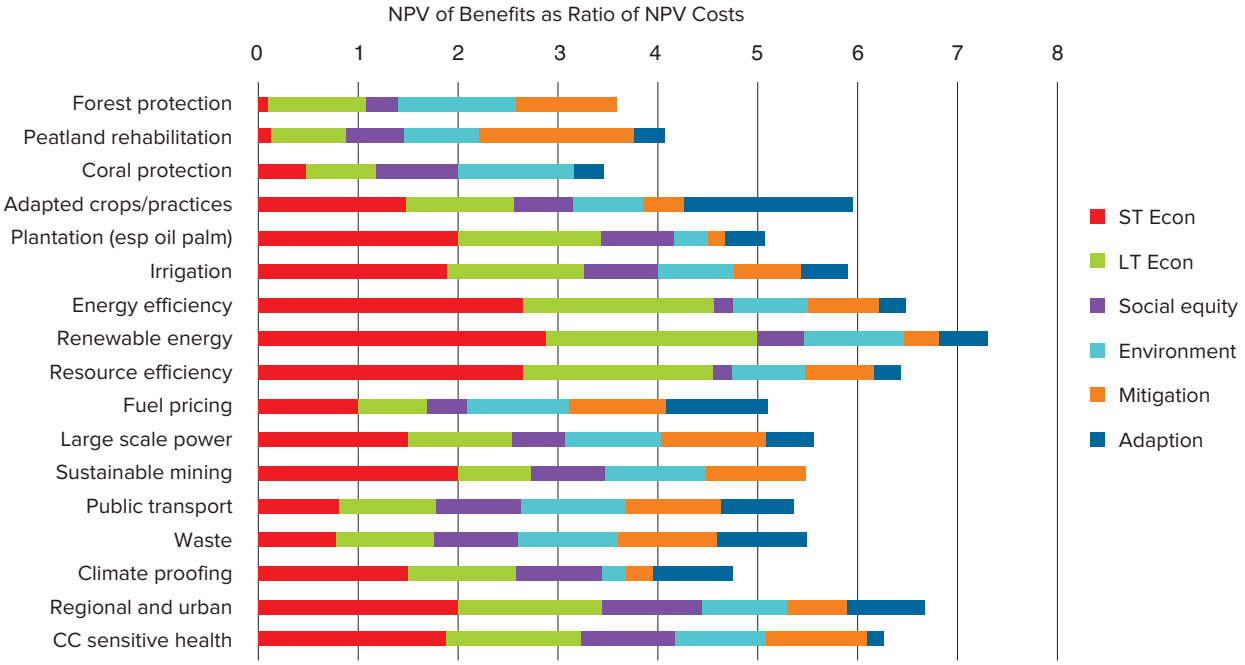
The effectiveness of green public expenditure refers to the extent to which the action delivers additional green benefits. Effectiveness is estimated for each of the 21 priorities, based on the following two sources of evidence:

- Where case studies of cost benefit analysis (CBA) were available, these were used as the primary source. The Mitigation Fiscal Framework of MFF (2012) undertook some case studies and other international sources are also available. This evidence is summarised in **Annex 2** of the 2014 GPB Strategy; and

- The core team of officials undertook a structured scoring exercise to estimate the relative importance of the various benefits for each of the priorities. Guidance was provided which linked the scores to a qualitative description of the results expected from CBA (see **GPBS Table 10**). For example, if the environment benefits were considered 'strong positive, easily enough, on their own, to justify the public/private cost', then they were given a score of 1.5-2.0. If social benefits were considered a 'minor benefit, worth noting but unlikely to be a major factor in justifying the costs', then they were given a score of 0.1 to 0.4.

Despite the guidance, the expert opinion of the official core team produced results that were often substantially higher than the CBA results, where CBA results were available. This was thought to reflect 'optimism biases' and so the results from the expert opinion were scaled down by the same factor, to bring them into line with the CBA results.

Figure 4. Effectiveness of the 21 Priorities



1.7 Scenarios for Reducing Loss and Damage

Scenarios. Three scenarios for reducing loss and damage in natural resources are defined, covering public expenditure, effectiveness of green policies and leveraging of private green investment.

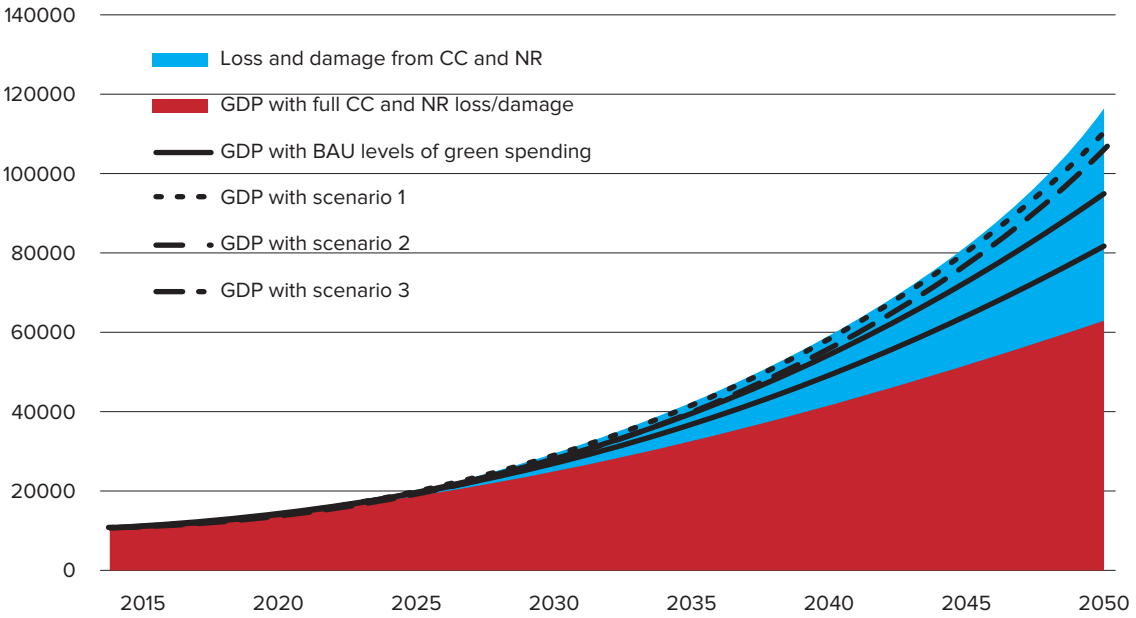
- The first scenario, involves achieving 7% p.a. growth in Green GDP and requires an increase in the share of total central government budget expenditure that is devoted to green priorities, from the current level of 1.0% to 3.8% by 2025. This involves a greening of existing public expenditure and not an increase in total budget expenditure.

- The second scenario involves the green share in public expenditure increasing to only 1.6% by 2025 and succeeds in preventing half the damage that would otherwise arise from climate change and natural resource degradation. As a result, total GDP is nearly 10% lower by 2025 and HIC status is reached two years later, in 2035.

- The thirds scenario involves the same level of public spending as the second scenario, but succeeds in accelerating the move towards reliance from the public sector to the private sector and civil society in green investment, with leverage ratios improving three times as fast. This protects Indonesia from about three quarters of the expected damage from climate change and natural resource degradation. Total GDP is only 5% lower in 2025 and HIC status is reached in 2034.

Impact in reducing damage/loss. The impact of the three scenarios in reducing loss and damage is based on the assessment of effectiveness of green policies, since the additional green benefits are those derived from avoiding loss and damage. In the case of climate change mitigation, the benefits are obtained from the pooled global mitigation effort and it is therefore assumed that Indonesia's share of global mitigation benefits is proportional to her share of global mitigation expenditure.

Figure 5. The Impact of Expenditure Scenarios in Addressing Loss/Damage



The scenarios are not expected to require a substantial increase in total public expenditure, as shown in the figure below. The benefits are achieved mainly by greening the existing public expenditure, rather than increasing the budgeted expenditure. For example, existing public expenditure on agricultural extension will give added focus to farming practices that conserve soil moisture, and so provide increased protection from the more frequent dry spells. Roads, irrigation and water/sanitation infrastructure will be built using standards that recognise the increasing frequency of floods.

Table 4. The Budget Neutrality of GPB Scenarios

	2014	2020 No GDP	2033 Scen 1	2020 Scen 2	2033 Scen 3	2014	2020 No GDP	2033 Scen 1	2020 Scen 2	2033 Scen 3
	IDR trillion					% GDP				
GDP	10.123	14.904	15.173	15.160	15,175					
Central Government Finance										
Revenue	1.620	2.325	2.367	2.365	2.367	16,0%	15,6%	15,6%	15,6%	15,6%
Expenditure	1.873	2.519	2.564	2.562	2.565	18,5%	16,9%	16,9%	16,9%	16,9%
of which energy subsidies	282	415	0	0	0	2,8%	2,8%	2,8%	0,0%	0,0%
GPB expenditure	19	27	55	39	39	0,2%	0,2%	0,2%	0,4%	0,9%
Non-GPB expenditure	1.572	2.076	2,509	2.523	2.525	15,5%	15,5%	15,5%	16,5%	16,0%
Balance	-253	-194	-197	-197	-197	-2,5%	-1,3%	-1,3%	-1,3%	-1,3%

The implications for line ministries depend on the proportion of public expenditure that is amenable to greening. The table below shows the proportion of expenditure for the key ministries that will need to be 'greened' to respond to climate change and reduce natural resource degradation. Where the % is higher than 100%, it will not be possible to rely entirely on greening the existing budget and it will be necessary to increase the total budget of the Ministry.

Table 5. the Greening of Line Ministry Expenditure

	2014	2015	2016	2017	2018	2019	2020
GE as % total expenditure							
MoFor	51%	61%	74%	90%	108%	127%	149%
MoA	5%	6%	7%	8%	10%	11%	12%
MPW	4%	5%	5%	6%	7%	8%	9%
MEMR	8%	9%	10%	11%	12%	13%	14%
MoI	2%	2%	3%	3%	4%	4%	4%
MoT	21%	24%	27%	32%	36%	41%	45%
MHA	0%	0%	0%	0%	1%	1%	1%
NDMA	85%	98%	113%	131%	149%	167%	186%
MoE	72%	86%	102%	122%	145%	169%	195%

1.8 Implementing the GPB Strategy

Coordination. The 2014 GPB Strategy defines the functions of the various institutions involved, as shown in the **Table 6**.below

Table 6. Key Tasks and Institutional Responsibilities for Implementing the GPB Strategy

	2015	2016	2017	2018	2019	2020
Using the GPB to ensure the RPJMN/D is green (MoF/Bappenas)	----					
Improved green policy appraisal (MoF/Bappenas./ DNPI/LMs	> > >	>>>>	- - - -	-------	-------	-------
Using the GPB to appraise budget submissions (MoF/Bappenas)	---	---	---	---	---	---
Green para in budget submissions (Lms)	- - -	- - - -	-------	-------	-------	-------
Including a green paragraph in the budget (MoF)		--	--	--	--	--
New regulatory/financing modalities (MoF/LMs)		- - -	- - - -	-------	-------	-------
Valuation of natural resources strengthened (BPS)	-------	-------	-------	-------	-------	-------
Annual GPB Report, including aggregate benefits (PKPPIM)	> > >	>>>>	-------	-------	-------	-------
Consolidate SNA grants pilots and scale up (MoF)	>>>>	>>>>	-------	-------	-------	-------
Explore options for green planning and SNA levels (SNA)	> > >	>>>>	-------	-------	-------	-------

Notes: '>>' refers to preparatory work building capacity and developing practices, whilst '--' refers to established routine institutional work.

Using the Budget to Implement the GPB Strategy. MoF and Bappenas share responsibility for different areas of development priorities and public budget expenditure. The key to institutionalising a greater interest and portion of green economy allocation in the public budget is to require the line ministries and agencies that implement development activities to ensure that their strategic and annual plans, institutional policies and budget expenditure are 'greened' when they submit their budget proposals to MoF. This means that the budgeted activities should be designed to meet the following green criteria: a) deliver maximum reduction in GHG emissions; b) take account of climate change (and especially the increased intensity and variability of rainfall); and c) avoid unnecessary natural resource degradation.

The greening of the budget cycle will be delivered through the following key steps.

- Bappenas/MoF should ensure that the government policy directives and development priorities (in RAPBN, RKP, Renstra K/L) require green economy dimensions to be pursued in the development plan, resource envelope and budget preparation.

- Line ministries should ensure that all actions in their work-plans (RENJA K/L) are green.

- MoF/Bappenas issue guidelines (in MTEF, KEM & PPKF) for line ministries requiring all macro frameworks, fiscal policies and work-plans to be green.

- Line ministries should ensure that their work-plans and budgets (RKA-KL) are green.

- Budget submissions will be tagged with a Green Economy tag and score, which will be integrated in the state budget software. MoF will use this to produce companion reports showing the extent to which each ministry is following the green expenditure scenarios. These reports will be produced as part of the public/government accounts. They will also be produced as 'real time' companion reports during the budget negotiations.

Monitoring and Evaluation. The monitoring of the GPB Strategy will be undertaken through a system of 3 levels of indicator (see Chapter 5.4 of the 2014 GPB Strategy):

- 6 high level impact indicators (green GDP, mineral reserves, poverty, vegetative cover, GHG emissions, vulnerability index), which will show only gradual change and will only be updated when new data sources (e.g. household surveys) are available.

- 7 high level process indicators (inter-ministerial group, budget references, provincial green strategies, green investment appraisals, green expenditure reporting, public debates, Annual Progress Report).

- 15 indicators for monitoring the top 21 priorities, as listed in the 2014 GPB Strategy.

2. 2015 GPB UPDATE REPORT

The Green Planning and Budgeting (GPB) Strategy was designed in late 2013 and completed in November 2014. Since then there have been many events and new developments which are related to the new government policies and green economy issues affecting the GPB Strategy. This 2015 GPB Update Report provides an update and review on the state of play and recent developments on the following topics: (a) on the challenge of Green Economy and options offered by the GPB Strategy; (b) on strategic changes in the national policy direction and the new development agenda of the new government; (c) institutional changes and new ministries/agencies responsible for green economy; (d) review and update of the 21 GPB policy priorities and instruments for implementation; (e) review in the work and latest developments of evidence with regard to the loss and damage to natural resources and economic growth in the last 12 months; (f) review on the effectiveness of policy instruments to be applied for reducing the loss and damage in the national and international context; (g) update on public finance instruments for promoting private sector financing for green economy; (h) review and update on recent international developments in climate financing at the global level; and (i) on implementation and reporting the GPB Strategy.

2.1 Summary of Findings from the 2014 GPB Strategy

The 2014 Green Planning and Budgeting (GPB) Strategy suggested that the impact of climate change and natural resource degradation could delay Indonesia's graduation to HIC status by at least 5 years, if nothing is done to ensure that growth is greener.

There is already quite a wide range of work taking place on the green economy, but existing policies and public expenditure address only 35% of the challenge. The extent to which existing polices and public expenditure fail to reduce loss and damage is termed the 'green economy gap'. There are three main options for responding to this challenge and closing the 'green economy gap'.

- Building green dimensions to existing public expenditure;
- Improving effectiveness of existing public policies on green expenditure; and
- Shifting to policy instruments that rely on the private sector.

MoF play a key role in all three, and especially in the second (policy effectiveness) and third (shifting policy instruments). However, green growth also requires the engagement of Bappenas, line ministries and local governments, as well as private sector and NGO responses.

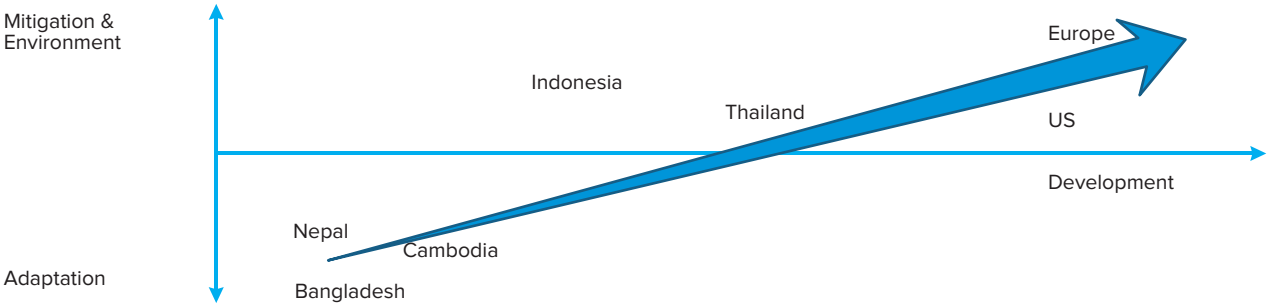
The key is to use the limited natural resources wisely, to shift priorities from unsustainable primary production to a high value economy (e.g. by using Natural Resource profits to invest in infrastructure, human resources and regional development).

Coordination is needed from MoF and Bappenas with increased awareness, and new policy appraisal practices, in line ministries, especially with MoEF and MEMR.

Most developing countries place a strong focus on adaptation, in preference to mitigation and environment protection, with over 90% of public expenditure on green economy devoted to adaptation. In contrast, developed

countries devote the large majority of their green economy expenditure to mitigation and environment, as shown by the arrow in the **Figure 6** below. The Indonesia GPB Strategy shows that Indonesia places more emphasis on mitigation and environment than would be expected, given its status as a lower middle income country. This reflects not only the strong commitment of Indonesia to international collaboration on mitigation and the environment, but also the growing realisation that many of the options for reducing GHG emissions also have strong economic and adaptation benefits.

Figure 6. the Balance between Mitigation and Adaptation



2.2 Recent Strategic Direction: Nawa Cita and RPJMN

Indonesia's general election in July 2014 elected new members of parliament and in October 2014 changed the government from President S.B.Yudhoyono to the newly elected President and Vice President Joko Widodo and Jusuf Kalla. These governmental changes have brought about new changes in the strategic directions in the medium-term development plan (RPJMN) and in the priorities of development agenda for 2015 to 2019.

RPJMN 2015-2019: Vision, Mission & Strategy. The new Medium-term National Development Plan (RPJMN) for 2015-2019 has been approved as Presidential Regulation (Perpres) no. 2/2015. This new RPJMN has a vision statement which is adopted from President Joko Widodo's ideological concept of TRISAKTI which stipulates that Indonesia's national development vision is to build *'a sovereign and self-reliant/independent nation with distinct cultural character based on mutually cooperative (gotong-royong) principle'*. The above vision is translated into an 8 point mission statement of the RPJMN 2015-2019 which closely follows the *Nawa Cita* or the nine strategic priority areas of the new President.

This 2015 GPB Strategy update is to address three missions of the RPJMN's mission statement for 2015-2019 (Book 1, Chapter 2, paragraph 3) namely:

- To build a nation with high quality of human resources and competitive capacity among other Asian countries;
- To build a green and environmentally sustainable Indonesia where there is a balance between exploitation, sustainable use and conservation of natural resources by sustaining the function and carrying capacity of the environment for current and future generations; and
- To build Indonesia as an archipelago as a strong, independent, progressive maritime country based on national goals, by developing a maritime vision within government and society and to manage the marine resources and the economy sustainably on an integrated basis.

New National Development Strategy. RPJMN 2015-2019 has formulated a national development strategy which adopts *3 basic norms or standards* of development (Book 1, Chapter 5.2 & 5.3):

- Development is for building human quality of life and society;
- Efforts to increase social welfare and economic productivity should not be achieved by creating or widening inequality, unbalanced growth, and unsustainable development path; and
- Development activities should not damage or decrease carrying capacity of the environment or disturb the balance of the ecosystem.

The RPJMN also formulates *three dimensions* of national development strategy:

- Dimension of *human development*, especially in education, health, housing and mental/character;
- Dimension of *primary sector development*, with priorities on food security, security of energy & electricity, maritime and marine resources and tourism and industry; and
- Dimension of *equalization*, especially among income groups and among regions with priorities on village and rural areas, borders and remote periphery areas, outer islands of Jawa and the Eastern region.

Nawa Cita: Nine Agenda of Development Priorities. To implement its vision and mission statements, the RPJMN 2015-2019 formulated an agenda of nine development priorities which is called NAWA CITA to elaborate the new President's agenda of achieving the TRISAKTI goal of building an Indonesia to be sovereign in politics, independent and self-reliant in its economy and distinct in its cultural character. The nine agenda of priorities are as follows.

1. To renew the state's obligation to protect all people and provide security to all citizens through the free and active foreign policy, national security and the development of reliable national defence based on integrated national interests and strengthening national identity as a maritime nation.
2. The presence of the government through a clean, effective, democratic, and reliable governance, by giving priority and efforts to restore public confidence in democratic institutions and continue the consolidation of democracy through reform of the political party system, electoral and representative institutions.
3. To build Indonesia from its periphery; to strengthening the rural areas within the framework of a unitary state of Indonesia.
4. To reject a weak state by reforming the system through corruption-free dignified, and reliable law enforcement.
5. To improve the quality of Indonesians by improving the quality of education and training through a "Smart Indonesia" program and increasing Indonesia's social welfare and health through the "Healthy Indonesia" and "Prosperous Indonesia" programs. To encourage land reform and land ownership for the people in Indonesia by 2019.
6. To improve people's productivity and competitiveness in the international market so that Indonesian can move forward and stand up with other Asian nations.

7. To achieve economic independence by moving the strategic sectors to the domestic economy.

8. To revolutionise the nation's character through a policy of restructuring the national education curriculum with advanced civic education; to teach the history of the nation, the values of patriotism and to love the country, as well as to build the passion and character to defend the state through national education.

9. To strengthen diversity and social restoration of Indonesia by highlighting the policy of education for diversity and creating spaces of dialogue among citizens.

Looking for a green dimension in the Nawa Cita's development agenda, we can find the following (**Table 7**) green economy perspective of Nawa Cita as compared to GPB Strategy.

Table 7. Nawa Cita and the Green Economy

	Nawa Cita Development Agenda	**Green Economy Perspective**
1	Renew state obligation and security through active ***foreign policy*** and ***national security***, building identity as a ***maritime nation***.	GE will build alliances in SE Asia and wider. It will reduce migration pressures. Maritime focus needs to avoid exploitation of natural marine resources.
2	Restore public confidence in ***democratic institutions***.	Confidence in governance of natural resources is central to GE
3	Build from the ***periphery*** and strengthen ***rural areas*** and national integration.	Reduce hotspots of NR degradation/ pollution. Needs to be matched with sustainable system of Natural Resource Management (NRM).
4	Reform the state system through corruption-free, dignified and reliable ***law enforcement***.	Good law enforcement is essential in moving to reliance on incentives and government regulation.
5	Improve the quality of ***education***, increase ***social welfare***, ***health*** and ***land reform***.	Human capabilities are key in a GE. Land rights are critical for sustainable NRM.
6	Improve people's productivity and ***competitiveness*** in the international market.	Diversifying from primary sectors to modern high value sectors is key to GE.
7	Economic independence by promoting the ***strategic sectors*** of domestic economy.	Promoting strategic sectors will reduce reliance on extraction of natural resources.
8	Revolutionise the nation's character through the national curriculum and ***civic education***.	This should include strengthening national traditions of good NRM.
9	Strengthen ***diversity***, social restoration and dialogue among citizens.	This will help promote participation in green issues across Indonesia.

Thus, the GPB Strategy is to focus its policies and instruments primarily on the following development priorities: agenda no. 5 (quality of life and social welfare); no. 6 (productivity and competitiveness); and no. 7 (economic independence and promoting strategic sectors of the domestic economy).

In addition, 17 of the national targets relate to green economy issues in food, energy, water, environment and maritime. The post MDG Sustainable Development Goals are still being finalised, but the RPJMN reports on 17 SDGs, of which 9 are related to climate change and environment, including those relating to: water and sanitation; sustainable energy; sustainable growth; sustainable infrastructure/industry; sustainable settlements; sustainable consumption; climate change; marine resources; and terrestrial ecosystems.

Conclusions. In the Nawa Cita and RPJMN 2015-2019, green economy policies have been included in the strategy, although they are seen mainly as a supporting principle that is fully mainstreamed into national, sectoral and regional development plans. Green economy principles feature strongly in the natural resource sectors and especially focus on ***security*** in food, water and energy and in the ***enforcement*** of regulations controlling illegal forestry, fishing and mining. There are also some new arrangements for cross-sectoral coordination. The strong focus on infrastructure, especially for maritime-based development, does not yet contain clear guidelines for ensuring that green economy

principles are applied, to avoid the risks of marine natural resource over-exploitation. But the principles of making a balance between exploitation, sustainable use and conservation of natural resources have been introduced and the guidelines for infrastructure development that are being developed will need to take this into account.

The application of the GPB Strategy will also have to consider closer consultation and coordination with Bappenas, MoEF, OJK, Line Ministries and other Agencies, as some of them have also produced their own strategy and/or roadmaps.

2.3 Recent Changes in Institutions and Reforms

Institutional Reforms. The new government of President Joko Widodo has also made major institutional changes and reforms that may affect green planning and budgeting. They are:

- The abolition of DNPI (National Council on Climate Change) and of the BP-REDD (National Agency for Reducing Emissions from Deforestation & forest Degradation);
- The merger of the ministries of environment and forestry into one Ministry of Environment and Forestry (MoEF);
- Upgrading Land Administration Agency (BPN) into the Ministry of Agrarian & Spatial Planning;
- Additional new Coordinating Ministry for Maritime Affairs;
- Reorganisation within Bappenas that creates a new Deputy Minister of Maritime and Natural Resources, who is in charge of maritime-based development and natural resources , including the environment; and
- The merger of the Indonesian Climate Change Trust Fund (ICCTF) and the REDD+ Fund under Bappenas coordination.

The following list describes the new names of Ministries, which reflect their changed roles.

- Coordinating Ministry for Maritime Affairs (CMfMA);
- Coordinating Ministry for Human Development & Culture (CMfHDC) was CMSW;
- Ministry of Environment & Forestry (MoEF);
- Ministry of Marine and Fisheries (MoMF);
- Ministry of Rural, Left-behind Area Development & Transmigration (MoRLDT);
- Ministry of Public Works & Public Housing (MoPWH);
- Ministry of Education & Culture (MoEC), covering primary and secondary;
- Ministry of Research, Technology & Higher Education (MoRTHE);
- Ministry of Agrarian & Spatial Planning Affairs (MoASPA); and
- Ministry of State Apparatus & Bureaucracy Reform (MoSABR).

The ***Dewan Pengarah Pengendalian Perubahan Iklim Tingkat Nasional*** (National Steering Board on Climate Change Control/Management) is a multi-stakeholders advisory board established with Ministerial Decree no. 145/2015 by the new Minister of Environment and Forestry to provide general program direction, advisory and supporting role in the coordination and facilitation of climate change management issues at the national level. It has a three layer governance structure consisting of a Governing Board of 6 members, chaired by the Minister of Environment & Forestry, an Executive Board consisting of 34 multi-stakeholder members chaired by an ex-Minister of Environment, and six Working Groups operating under the Executive Board. Basically the National Steering Board is taking over the roles and format of DNPI and BP-REDD in the program coordination and policy guiding functions, by involving different units within the new MoEF, officials from other related Ministries, and representatives of academic and civil society organizations. However, due to its legal status and limited authority under one sectoral Ministry, the Board will have constraints in performing its inter-ministerial coordination role.

The 5 Working Groups (WG) of the National Steering Board are: (1) WG on program, research, donor forums and international agenda; (2) WG on Adaptation and Landscape based Mitigation; (3) WG on Energy based Mitigation; (4) WG on Waste-based Management; and (5) WG on Monitoring, Reporting & Evaluation. There is no working group on climate finance, and also there is no representative from the Ministry of Finance in the Executive Board, but the Minister of Finance is a member of the Governing Board, together with Minister/Chair of Bappenas, Minister of Foreign Affairs, Minister of State Secretary and Presidential Envoy on Climate Change.

With the abolition of DNPI and BP-REDD, inter-ministerial coordination on climate change and environmental policies for international negotiations are now mostly shifted to the ***Presidential Envoy on Climate Change*** *(Utusan Khusus/Utsus Presiden urusan Perubahan Iklim).* The responsibility of UTSUS will include issues related to climate finance and multilateral funds for financing climate change. The relationship between UTSUS and MoF/PKPPIM in relation to climate finance needs to be more clearly defined.

Overall, these institutional changes reduce the spotlight on climate change and natural resources and will mean that progress will have to rely more on the ***mainstreaming*** of green economy principles within sectors and agencies. The focus in Nawa Cita and RPJMN 2015-2019 on food/water/energy security and on reducing illegal forestry/fishing/mining, provides the basis for this mainstreaming of policies and hopefully also its implementation.

These changes and reforms in a way also increase the role of MoF in guiding and encouraging a green economy approach in the budget and in the formulation of policies that are approved by MoF. This will increase, in particular, the role of BKF and of PKPPIM and DG Budget with regard to climate change finance and environmental financing policy implementation issues.

The ***Indonesia Climate Change Trust Fund*** has a capitalisation of about IDR 150bn, plus a recent $5m commitment from the US. An ODI review of the ICCTF pointed out that it is still relatively small, in a crowded climate finance landscape in Indonesia. The REDD+ Fund (FREDDI) was still under preparation in late 2014, before the decision was taken to merge it with the ICCTF.

The ***OJK*** *(Financial Services Authority)* is expecting to take a more active role in promoting the green economy, by implementing its Roadmap for Sustainable Finance in Indonesia (see 2.5 below).

Institutional Responsibilities. The above institutional changes related directly with government agencies in charge of climate change, environmental management and the green economy. They will change the roles and responsibilities of those ministries and agencies in terms of their institutional responsibilities for green planning and budgeting for the government policies and instruments for 2015 and beyond.

Table 8. below summarises the institutional responsibilities, elaborating on Table 8. of the 2014 GPB Strategy.

Table 8. Priorities, Instruments and Lead Institutional Responsibilities

Priorities	Policy Instruments																		
	Direct govt expenditure			Govt to firms, SOEs, CSOs				Via finance institutions			Regulatory controls and promotion								
	Investment budget	Recurrent budget	Special allocations (Prov/Dist)	Gants (investment/services	Operating subsidies (e.g. VGF)	Data/information	Tax incentives	Interest rate subsidies	Loan guarantee	Loanable funds	Licenses	Price controls (incl. FITs)	Quotas	Regulating quality	Regulating practices	Regulating governance	Corp. social responsibility	Clarity/public awareness
Natural Resources Protection																		
Forest protection																		
Peatland rehabilitation																		
Coral & marine protection																		
Agriculture																		
CC adapted crops																		
Plantation crops (esp oil palm)																		
Irrigation																		
Energy and Industry																		
Energy and resource efficiency																		
Renewable energy																		
Resource efficiency																		
Fuel pricing																		
Large scale power																		
Sustainable mining																		
Corporate social responsibility																		
Transport and Urban Planning																		
Public transport																		
Waste Management																		
Climate proofing roads/bridges																		
Regional infrastructure																		
Education & Health																		
Green education																		
CC sensitive health services																		
Supporting Policies																		
Disaster reduction/management																		
GE coordination and M&E																		

= MOF
= Bappenas
= Line ministry/agency
= Province/municipal/local
= Private & CSOs

- MoF/DG Budget is responsible for approving the recurrent budget and budget allocations for special grants to the provinces, which are particularly important for natural resources and agriculture. MoF/BKF is responsible for designing incentives and instruments using the financial sector, in collaboration with line ministries and sector agencies. These affect many of the 21 priorities, but are particularly important for climate mitigation priorities. Because some of the institutional supporting actions are funded from the recurrent budget, MoF/DG Budget also have a role in ensuring that new regulations are enforced. MoF/BKF are also responsible for strategies affecting their policies and for collaboration with Bappenas on the expenditure implications thereof. The DG Treasury (BUN) will be responsible for preparing reports on actual climate related expenditures, using the budget tags entered by line ministries.

- Bappenas have a role in investment expenditure, along with line ministries, and this is particularly important in natural resource sectors, as well as for some infrastructure. They also have a role in preparing development strategies, in collaboration with BKF.

- Coordinating Ministries are important for defining, promoting and coordinating new cross-sectoral strategies and inter-ministerial synergy.

- Line ministries prepare sector strategies and budget submissions. They are also responsible for the development of regulations and for the enforcement of some regulations. The new budget coding system requires the main line ministries involved in climate change to classify expenditure using the budget tag.

- In addition to the normal sectoral responsibilities of a line ministry, MoEF has a supporting role to ensure that all government institutions have access to the best climate change and environmental information available.

- Sub-national or local authorities are particularly important for infrastructure development and programme implementation, but they also have a role in enforcing some regulations.

- The private sector respond to incentives and regulations, but are only involved in the formulation and implementation in a consultative manner (apart from any private financial institutions that may implement financial incentives). They have a lead responsibility for CSR programmes.

- There are a number of specialist institutions not covered by the figure that have special roles beyond the integration of climate change and environment in their normal operation. The ICCTF and REDD+ Fund (recently merged) are responsible for managing pooled resources for implementing projects that are strongly motivated by green economy objectives.

Update on the GPB 21 Priorities. The table below provides updates on the recent events and institutional changes affecting the top 21 priorities in the 2014 GPB Strategy.

Table 9. Update on the 21 GPB Priorities

Priority	Update
Forestry	The moratorium on new forest licenses was extended in May 2015. The government has announced a programme to clarify on land rights which will ensure an expansion of community forest management.
Degraded Peatland	This remains a high priority and was stressed again in the PKPPIM/MoF study on FPF-SDLBS.
Coral Reef & Marine	The strong focus on maritime development will need to be matched by higher commitment to control marine pollution and fuel efficiency in shipping transportation.
Cropping	A pilot programme of weather insurance for farmers has been started. It is still too early to learn lessons from this.
Oil Palm	Both the GGGI Roadmap and the MoF's FPF-SDLBS have stressed the importance of palm oil certification in agriculture development

Priority	Update
Irrigation	The FPF-SDLBS stresses both climate proofing and irrigation maintenance and the role of Water User Groups
Energy Efficiency	Both the GGGI Roadmap and the MoF's FPF-SDLBS have stressed clearer incentives for energy efficiency, including support for private sector lending
Renewable Energy	Both the GGGI Roadmap and the MoF's FPF-SDLBS have stressed clearer and better incentives for renewable energy, including feed in tariffs and associated regulations
Resource Efficiency	The GGGI Roadmap places a very high priority on improving resource efficiency, especially in the industrial sector.
Energy and Fuel Pricing	In November 2014, the new government increased fuel prices and, combined with the lower world fuel prices, this resulted in the abolition of subsidies for gasoline. For diesel, a lower fixed subsidy of IDR 1,000 was retained. Prices for both petrol and diesel are now adjusted monthly, in line with world prices. This has resulted in a drop in public expenditure on fuel subsidies that expected to be about IDR 230tn.
Large Scale Power	The new government announced reforms to electricity prices in Jan 2015, aiming to link the price more clearly to market prices and to target subsidies, by avoiding price rises for the smallest consumers.
Sustainable Mining	Mineral exports declined markedly in 2014, with weaker demand. As a response to market challenges, there has been investment in processing and the Biennial Conference of the Indonesia Mining Associate will be held in Sept 2015, focusing on productivity and governance with decentralisation.
CSR Programme	The Global CSR Summit and Awards was held in Yogyakarta in March 2015. The interest in CSR in Indonesia was demonstrated by a strong field in the Sustainable Business Awards in 2014 and the PROPER Award programme of MoEF
Public Transport	The new government has made better policy and increased budget priorities for the development of railways, public sea transport & harbour, MRTs, etc. Public transport should benefit strongly from the doubling of expenditure on transport arising from the fuel prices reform of early 2015. This should help accelerate the USD 3 bn Jakarta Mass Rapid Transport Project and the 'Transit Oriented Development' Project in the Senen area of Jakarta.
Waste Management	Indonesia hosted the major Waste to Energy Asia Summit in March 2015. This considered, amongst many issues, the MEMR proposals for over 20 palm oil waste processing plants. Two waste related projects received awards in the 2014 Sustainable Business Awards.
Climate Proofing Infrastructure	The strong focus on infrastructure in the RPJMN 2015-2019 will need to be matched by commitment to ensure that all new infrastructure is climate proofed and that the law on Strategic Environmental Assessment is enforced.
Regional Development	The Nawa Cita and RPJMN 2015-2019 place a strong emphasis on national integration and development of isolated regions.

2.4 Other Green Development Strategy Initiatives

In addition to the national development strategy elaborated in the RPJMN 2015-2019, there have been some other recent initiatives from government institutions who have developed, or are in the process of developing green strategies. The following three strategic initiatives in supporting green development are worth particular attention: Green Growth Roadmap by Bappenas; the Roadmap for Sustainable Finance in Indonesia by OJK (Financial Services Authority); and the Fiscal Policy Framework for Sustainable Development of the Land-based Sectors by PKPPIM/MoF.

The ***Green Growth Roadmap*** has been prepared by Bappenas in cooperation with the Global Green Growth Institute (GGGI) since 2013. It was recently approved by Bappenas and is being printed for a public launch event. It was presented in the keynote address by the Secretary General of the Coordinating Minister for Economic Affairs at the

June 2015 Green Infrastructure Summit. The Roadmap describes the opportunities for green growth and presents the necessary conditions for mainstreaming green growth into national planning. The roadmap describes 50 priority actions, including 5 cross-cutting enabling actions for policy; 10 public investments; 1 subsidy policy; 4 incentive actions; 11 actions for market promotion and 19 studies, research and capacity building actions.

The Roadmap describes 17 sectors in four clusters: energy and mining; manufacturing; regional connectivity; and natural resources. These sectors closely match the 21 priorities in the GPB Strategy (see **Annex 3**, which provides a list complementary the actions identified in the Green Growth Roadmap and in the GPB Strategy). For each cluster, the Roadmap defines a few key themes and 4 to 1 'enablers' or policies. The key principles for mainstreaming green growth in planning are defined as: providing the right incentives and price signals; more effective public expenditure and leveraging; and addressing market failures. Suggested steps to achieve the mainstreaming include: more transparent spatial planning, with greater attention to a landscape approach; greater use of strategic environmental assessment in plans and appraisals; and use of a Green Growth Assessment Process (GGAP) based on extended cost benefit analysis (eCBA) that includes social and environmental benefits. The GGAP process is the same as the analysis of policy effectiveness promoted in the GPB Strategy and is at the heart of integrating green economy approaches into evidence based policy and investment appraisal.

The Green Growth Roadmap describes two scenarios, with the same levels of growth but with varying commitment to green policies.

- A slow change scenario involves a continuation of current trends in energy intensity and in carbon intensity (i.e. energy/GDP and emissions/GDP).

- A green growth scenario assumes that Indonesia will shift to become one of the highest ranked countries, in terms of energy and carbon intensity. This scenario also involves improvement in food, water and energy security, in environmental quality and social equity and in long term economic prospects.

The GPB Strategy is used and cross-referenced throughout the Green Growth Roadmap and the focus in the Roadmap on integrating green benefits into practices of evidence based policy appraisal is strongly complementary to the GPB Strategy. Therefore a closer and more effective Bappenas-MoF consultation and coordination needs to be developed for future implementation of both the GG Roadmap and the GPB Strategy.

A ***Roadmap for Sustainable Finance*** in Indonesia has been launched by the Financial Services Authority (OJK) in December 2014. This sets forth a work plan and goals for green and sustainable finance to be achieved by 2024, affecting the financial service industry as governed by OJK, namely on banking, capital market, and the Non-Bank Financial Services sectors. The Roadmap also provides the benchmark for improving financial services relating to sustainable finance and specifies the measures and recommendations for all financial service institutions that need to be adopted by OJK up to 2024.

The OJK roadmap adopted four principles of sustainable finance to implement its programs as follows: (a) Risk Management Principle which integrates environment and social protection aspects in the Financial Service Industry's (FSI) risk management strategy; (b) Sustainable Priority Economic Sector Development Principle which should include increasing financing activities in the prioritised sectors of infrastructure, industry, energy, agriculture and SMEs and also balancing its economic, social and environmental aspects; (c) Adopt Environmental and Social Reporting Principle by implementing robust and transparent environmental and social governance and public

accountability practices in the FSIs management and operational activities; and (d) Capacity Enhancement and Collaborative Partnership Principle by developing human resource, information technology and operational capacity of each relevant FSI institutions in implementing the principles of sustainable finance.

The work plan for strategic activities to implement sustainable finance for 2014-2024 will be focused on three areas: (1) increase supply of environmentally friendly financing; (2) increase demand for environmentally friendly financing products; and (3) increase oversight and coordination of sustainable finance implementation.

Using the RPJMN 2015-2019 as a benchmark, around USD 200 billion of annual investments is targeted, of which all investments must be "greened" and/or sustainable. The total annual capital spending will be used partly for climate change mitigation and it is expected that IDR 314 trillion (USD 25 billion) will be required to meet the RAN-GRK's emission reduction goals, of which government will provide half and the private sector the other half.

In the banking sector, currently Indonesia has a low level of green lending. Only 1.2% of overall bank lending in 2012 described as "green" according to a Bank Indonesia survey among 29 banks. The survey also reveals that the majority of the bank's green credits were for mini-hydro (26%) and geothermal (25%), another 20% for environmentally efficient industries, 19.5% for sustainable agriculture, about 5% for eco-label products, and only less than 3% for renewable energy other than mini-hydro and geothermal.

But there are some progress made in portfolio investments and securities at the capital market. In 2013, USD 1.14 billion of assets were invested using sustainability criteria (predominantly Shariah based), which is almost a doubling since 2011 (ASrIA 2014). The first Indonesian **green bond** was launched in 2014, supported by a partial credit guarantee from IFC and PT Ciputra Residence, a residential property developer. The company issued an IDR 500 billion (USD 44 million) bond based on green building standards on the Indonesia Stock Exchange (IDX). The most promising green development in the capital market happened in 2014, when PT Indo Premier Investment Management launched the **SRI KEHATI-ETF**, an exchange traded fund listed on the IDX that tracks the SRI-KEHATI's green investment index managed by the Indonesian Stock Exchange Agency (BEI/IDX) in cooperation with KEHATI - the Indonesia Biodiversity Foundation, and is expected to reach a value of IDR 1 trillion over two years.

The OJK's Sustainable Finance Roadmap is in line with the GPB Strategy. However, close consultation and coordination is needed with MoF, Bank of Indonesia, and Bappenas, to avoid unnecessary duplication of work and inefficient use of financial resources.

The ***Fiscal Policy Framework for Sustainable Development of the Land Based Sectors*** was prepared by PKPPIM of MoF in 2014 and identified the following 13 priority policy areas in forestry and agriculture.

- Controlling deforestation: regulations and royalty regime;
- Community forestry: regulations, land reform, technical support, marketing, information and financial services;
- Forest protection: moratorium, licensing/rights, mapping and information;
- Reforestation of degraded land: classification, land swaps and support for communities;
- Peatland restoration: regulations, classification, land reforms, support for communities;

- Payment for ecosystem services: promotion;
- Use of degraded land for agriculture: land tenure/swaps;
- Climate smart agriculture: research, extension services and support to farmer groups;
- Climate proofing irrigation: investment and support to Water User Groups (WUGs);
- Irrigation maintenance: clarification of state/WUG responsibilities and support to WUGs;
- Fertiliser reform: subsidy reform and promotion of organic fertiliser;
- Agricultural insurance: regulations and financial guarantees; and
- Biofuels: regulations on biofuel content and price, information and promotion.

For each area, the framework reviewed: the green dimensions; the policies involved; the coherence, effectiveness, impact and sustainability; the institutional responsibilities; and the budget implications. The framework then reviewed the aggregate impact on the budget, on GDP and food security, on GHG emission and on land use. The framework provides a set of policies that would meet the following objectives, with a roughly neutral impact on the budget:

- To ensure that forestry Green GDP was maintained in real terms, despite the loss of earnings from the reduction and eventual stopping of deforestation; and
- To increase the growth in agricultural GDP from recent levels of 3.5% to 5% (thereby ensuring self-sufficiency in rice production), whilst also stopping any degradation of soil resources.

2.5 Loss and Damage and GHG Emissions: Latest Evidence

The starting point for any strategy relating to climate change and the environment is the outcomes that are expected to occur without any public intervention. For climate adaptation and environment, these outcomes are mainly in the form of loss and damage as a result of changing climate and environmental degradation. For climate change mitigation, the baseline scenarios are the growth in GHG emissions that will occur without green economy policies.

Loss and Damage. Green economy policy is driven by the need to reduce the loss and damage that will be created by climate change if it is ignored. There have been some international developments in the work on loss and damage to natural resources and economic growth in the last 12 months, since the 2014 GPB Strategy was formulated. The following are examples of the work, which is described in more detail in **Annex 2**.

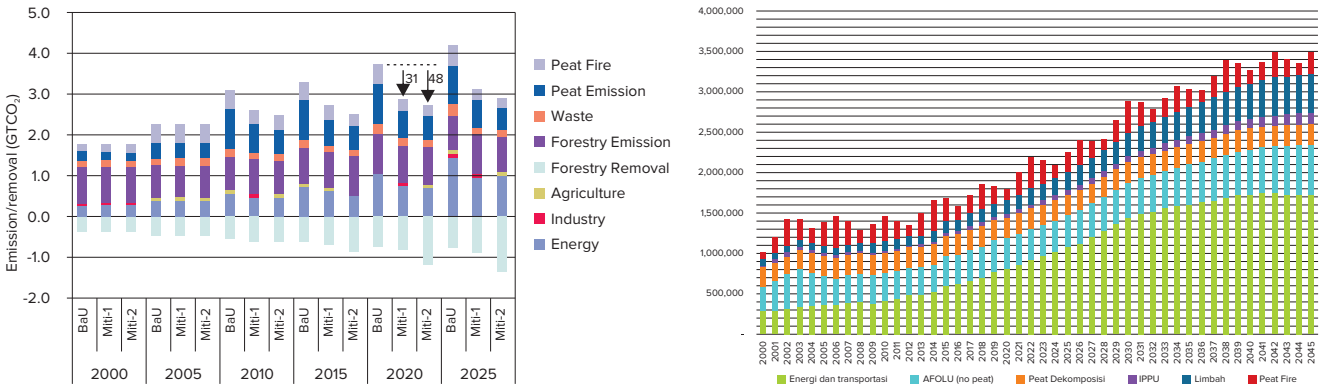
- ADB has completed a detailed modelling of the impact of climate change for South Asia, using a similar approach that was used for South East Asia in 2010. The South Asia study produced similar results, suggesting that impact on GDP will be between 2% and 7% by 2050 and that the sectors that are most affected are: agriculture, water, forestry, infrastructure and health. This work gives added confidence that the loss and damage estimates in the 2014 GPB Strategy are the right order of magnitude.

- There has been some international debate about the interpretation of the modelling results. These analyse current economic performance with the performance in 2050, assuming an instantaneous change. But the changes are cumulative and this means that GDP will be only about 3 times higher in 2050, rather than 5 times without climate change. This analysis provides important context for the interpretation of the Green Economy Gap, which changes over time, as both adaptation results and loss and damage evolves.

- There has also been some modelling of the impact of shocks in different sectors, including price shocks in the agriculture sector (e.g. Yusuf et al 2014). These confirm the concerns about the vulnerability of the poor to agricultural shocks caused by climate change and environmental factors.

GHG Emissions. The RAN-GRK was based on a Business as Usual (BAU) estimate that came from the Second National Communication (SNC) to the UNFCCC. More recent work has shown that the relative importance of energy and transport in BAU emissions will increase faster than suggested in the SNC, especially during the period after 2025, as shown in **Figure 7** below. This suggests that energy and transport should be given a higher priority in mitigation strategy.

Figure 7. GHG Emissions under BAU in 2010 SNC and Latest Estimates



SNC estimates (2010)

Latest Estimates (Bappenas 2015)

2.6 Effectiveness in Reducing Loss and Damage: Latest Evidence

PKPPIM in MoF are committed to building a strong evidence base for assessing the contribution of policies and instruments for the green economy. The followings are some of the new and latest findings/materials that could be used to produce such evidence.

The ***Green Growth Roadmap*** (Bappenas/GGGI - see section2.5) reported on a number of case studies on the green economy, including the following.

- An evaluation of landscape planning in East Kalimantan;

- Three case studies on Strategic Environmental Assessment for the Master plan for the Acceleration and Expansion of Indonesia's Economic Development (MP3EI), for Papua's Provincial Spatial Plan and for the Green Prosperity Programme; and

- A detailed extended cost benefit analysis (eCBA) of a Special Economic Zone in East Kalimantan.

The ***Fiscal Policy Framework for Sustainable Development of the Land Based Sectors*** (SDLBS - see section2.5) was prepared by PKPPIM/MoF and identified 13 priority policy areas in forestry and agriculture which taken a green economy approach. For each area, an estimate was made of the impact of the public policy on:

- Future public expenditure and revenue;
- Gross Domestic Product and food security;
- GHG emissions reduction; and
- Land use requirements.

The ***I-GEM*** model has been used by Bappenas to explore the impact of green economy policies in Kalimantan on forest area, GHG emissions and green jobs (Bappenas 2014). This is still in a pilot phase, but preliminary results suggest that green economy policies can have large impacts on key indicators, which tends to support the relatively optimistic views about effectiveness expressed by the core team in the expert opinion consultation for the GPB Strategy.

International experience with appraisal studies on green policies continues to grow. For example, in Thailand, the Ministry of Agriculture and Cooperatives has undertaken some rapid cost benefit analysis of the climate change implications for five policies (irrigation, soil stabilisation through vetiver use, improved shrimp farming, biogas from pig production and integrated pest management). Similar work is ongoing in Cambodia.

The strong focus in the RPJMN 2015-2019 on investing in integration, especially through infrastructure and maritime development, opens opportunities for the green economy, but also creates challenges.

- It will be important that all infrastructure is appropriately proofed against climate change. The GPB Strategy assumes that climate proofing will increase the costs of infrastructure by between 1% and 5%. Experience from Asia suggests that this varies widely from as much as 20% in extreme circumstances, such as in Bangladesh, where major road heightening is required to less than 1%, if the only proofing needed is to increase the size of culverts in new infrastructure (World Bank 2010, ADB 2011).

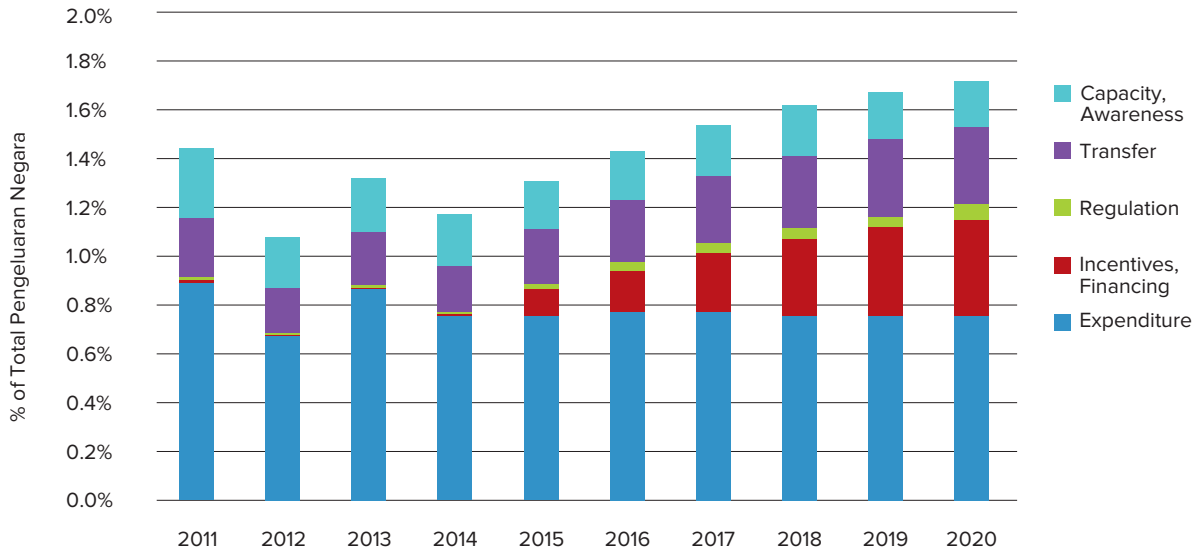
- The increased connectedness and integration will bring new opportunities to Eastern parts of the country. These will need to be realised through green investment and with sustainable management of natural resources, supported by enforcement of environmental legislation, and strategic use of mineral resources.

- The strong focus on maritime development should help limit the growth in energy use and GHG emissions. Studies on the carbon efficiency of different modes of transport show that shipping transportation has a carbon efficiency of up to 10 gCO2e/t-km, compared with about 80 for trucks and over 400 for air transport (IMO 2014). However, the technical efficiency of most ship engines is very low. The International Maritime Organisation (IMO) has reached an agreement by which all full members will reduce GHG emissions by 25% to 30%, compared with business as usual. Although Indonesia is not bound by this agreement, it could adopt comparable commitments on energy efficiency in shipping to ensure that maritime development is green and is perceived to be so.

2.7 Public Finance Supporting the Green Economy: Update

Expenditure by Type of Policy Instrument. The 2014 GPB Strategy analysed the type of policy instrument used, in broad terms, using an estimate of the share of each instrument, for each of the 21 policy priorities. The 2014 GPB Strategy did not estimate the policy instruments used in each budget item and the figure below attempts to do this for 2011 to 2014. The projections to 2020 assume a linear growth to the patterns assumed for 2020 in the first scenario of the 2014 GPB Strategy. It is assumed that transfers are 19% of green expenditure in all years.

Figure 8. Type of Policy Instrument for Green Economy Expenditure



APBN-P. The 2015 State Budget Amendment (APBN-P) was passed in February 2015 and reflects the early policy priorities of the new government. Total revenues and grants are budgeted at IDR 1,761 tr (which is IDR 33 tr lower than the original 2015 APBN). Total government expenditure is budgeted at 1,985 tr (of which central government is IDR 1,320 tr and transfers to sub-national governments IDR 665 tr) and is IDR 55 tr lower than the original 2015 budget. The APBN-P deficit is therefore IDR 223 tr, or 1.9% of GDP, down by IDR 23 tr compared with the original budget. The APBN-P identifies IDR 243 of domestic financing and IDR20 tr of foreign financing. The main changes in the revised budget are those associated with the fuel subsidy, as described above. This has resulted in a drop in public expenditure on fuel subsidies that is expected to be about IDR 230tn. The impact of the removal of subsidies was partly offset by a two month programme of welfare payments and by some expansion on education and health care. The majority of the savings (about 60%) from the fuel subsidy are being devoted to the major programme of integration and infrastructure identified in the Nawa Cita and the RPJMN 2015-2019.

Use of Budget Tags and Scores. The Low Emission Budget Tagging and Scoring System (LESS) was introduced by MoF for the 2015 budget for 7 ministries. In the first phase, it is limited to tagging for climate change mitigation and no scoring is yet being implemented. Climate Change (and also Green Economy) tagging related Output can be identified through following the stages of the budget process: in the trilateral meeting, budget ceiling formulation, and budget adjustment based on allocative ceilings.

The stages to be considered in applying climate change and/or green economy budget tagging are as follows: (1) Identify the national priority in the Medium-Term National Development Plan (RPJMN); (2) Define the budget themes, in line with national priority; (3) Recognize the core function for each Line Ministries & Agencies (K/L), in line with

national priority and budget themes; (4) Identify Outputs to be produced by each spending unit within K/L and related theme (for each output); (5) Tags the theme and budget for every single output. One output can be related with more than one theme; (6) All themes and budgets that are already tagged for its Output will be accumulated at the national level.

Sub-National Authority (SNA) Expenditure. The GPB Strategy reviewed only central government expenditure. SNA expenditure includes two main types: conditional grants, which are reserved for specific purposes; and other revenue, either from own sources or from unconditional grants. A CPEIR is currently being undertaken in Bangka Belitung Province. This will provide new evidence of the extent to which provincial level expenditure is contributing to climate change mitigation and adaptation. Early results suggest that between 3% and 4% of provincial expenditure is climate relevant. Total transfers to the regions accounted for about 28% of total public expenditure in 2014, which suggests that green economy spending in SNAs could be as high as 1% of total public expenditure, making it roughly the same scale as green economy spending by central government. However, further work is required because the Bangka Belitung CPEIR used higher weights than the GPB Strategy and did not consider expenditure on the environment.

Some early indication of the role of conditional grants was provided by the FPF-SDLBS, which identified IDR 8.6 tr of DBH and DAK expenditure in the 2014 budget, as shown in the table below. The green part of this expenditure was about IDR 3.4 tr, or 19% of central government expenditure on green economy activity. Since many of the conditional grants associated with the green economy are related to agriculture and forestry, this gives a good indication of the scale of conditional grants.

Table 10. Green Economy Conditional Grants to Sub National Authorities (IDR bn)

	2014 Budget	GE%	Budget xGE%	% total public expenditure
DBH SDA forestry: PSDH	1,447	50%	724	0.039%
DBH SDA forestry: IIUPH	137	50%	69	0.004%
DBH SDA forestry: DR	989	50%	495	0.026%
DAK forestry	558	50%	279	0.015%
DAK agriculture	2,580	33%	851	0.045%
DAK irrigation	2,923	33%	965	0.052%
Total	8,634		3,381	0.181%

Notes. DBH = Forest Revenue Sharing Fund.PSDH = Resources Provision (on timber licenses).
IIUPH = Forest license fee. DR = Reforestation Fund. DAK = Dana Alokasi Khusus (Specific Allocation Grant).

In addition to the conditional grants, SNA's also have substantial revenue either from their own sources or from unconditional grants.

Update on Instruments for Financing Green Economy. The GPB Strategy identifies a number of policies for promoting private financing for green economy investment. One example that has attracted interest in Indonesia is the use of green bonds. There is growing international demand for green bonds (Kidney 2015). In 2015, the market turnover for green bonds is expected to reach $70 bn, which is roughly 0.1% of total private investment. About 40% each is accounted for by corporate investors and development banks, with 13% from municipalities and other local government and the remainder from ABS. Over 80% are subject to independent review to validate their green credentials.

Climate themed bonds are even larger, with about $500 bn issued by mid-2014. The main sectors are energy (42%), green buildings (16%), water management (13%), agriculture (8%), water (7%) and public transport (7%).

Green bond markets are developing in China, India and Brazil. Green City Bonds are being planned in New York, Beijing, Paris and Johannesburg. Opportunities in Indonesia could include public transport, infrastructure and maritime, sustainable agriculture and housing. Although investment is from the private sector, government plays an important facilitating role, building interest and confidence and providing: demonstrations; risk-bridging (e.g. credit enhancement, tax incentives and regulations); and planning support.

2.8 International Context: Update on Recent Developments

At the global level, there have been many events and new developments taking place and making progress in terms of climate finance and sources of funds for financing the green economy. Indonesia needs to pay close attention to and take these international funding opportunities for the implementation of GPB Strategy and greening the Indonesian economy.

The ***Intergovernmental Panel on Climate Change*** (IPCC) produced its Fifth Assessment Report (AR5) in late 2014. This confirmed the evidence of the link between GHG emissions and climate change and provided more refinement on the nature of the links. It also included much new research on the way in which climate change is likely to influence economic activity and the environment.

The ***Green Climate Fund*** (GCF) of the UNFCCC has started to approve funding applications. The application process stresses the need to define co-benefits, including those associated with green economy benefits. This will therefore re-inforce the importance of encouraging line ministries to develop the capacity to define and estimate green benefits of policies.

G7 leaders in Germany in June 2015 confirmed their commitment to make the ***Green Climate Fund*** fully operational in 2015. The GCF is already receiving funding proposals from Nationally Designated Authorities, using the standard twostep process (first a Concept Note and then a full Funding Proposal), using standard formats available on the website. The GCF works through partner 'entities, of which 7 have been approved and 13 are under consideration. The GCF received $10bn in 2014 and is on track to receive a similar amount in 2015.

The ***Third International Conference on Financing for Development*** (FfD3), in Addis Ababa in July 2015 should be guided by an understanding of financing needs in major SDG investment areas, such as health, education, sustainable infrastructure, agriculture, climate change adaptation and ecosystem services.

The ***UNFCCC COP 21 in Paris*** in Nov 2015 will focus on Intended Nationally Determined Contributions (INDCs) of member countries on mitigation. However, there is also interest from many developing and middle income countries to define INDCs for adaptation. To date, few countries have declared adaptation INDCs and those that have (i.e. Mexico and Gabon) contain recorded summaries of national adaptation plans. There, however, growing interest in the possibility of using estimates of the Adaptation Gap as a basis for INDCs in adaptation. These estimates would follow a very similar approach to the analysis in the GPB Strategy.

The UNFCCC ***Standing Committee on Finance*** (SCF) held its tenth meeting in June in Bonn and has been strengthening work on the definition and monitoring of climate finance. The SCF acts as a forum for dedicated climate funds, as well as for governments and development agencies to promote consistency in climate finance practices. It also supervises the methodology behind the UNFCCC Biennial Assessment and Overview of Climate Finance, which builds on other work, such as that by OECD and CPI. As a result of the June 2015 meeting, the SCF issued a call for views on how to define climate finance. The results of this process should help to improve international consensus on defining climate finance.

The post 2015 ***Sustainable Development Goals*** (SDGs) should be agreed at a summit in September 2015. Current indications are that they will be very similar to those listed in Table 21 of the GPB Strategy.

Since the 2014 GPB Strategy, ***Climate Public Expenditure and Institutional Review*** (CPEIRs) have been completed in Vietnam, Pakistan and Philippines. Many others have been started, including in Latin America and Africa. These continue to highlight the need for objectivity in defining CC relevance. In addition to the CPEIRs, there have been some ***Climate Change Financing Frameworks*** (CCFFs), including in Bangladesh and Cambodia, and there is now some international guidance available. CCFFs apply a very similar approach to that used in the GPB Strategy: they define the loss and damage expected from climate change and then assess the extent to which current spending and policy will reduce that loss and damage to provide context for scenarios of future policy and expenditure.

There has also been some follow-up work in SE Asia on ***guidelines*** for climate related policy appraisal, to be used by line ministries in submitting budget requests (e.g. in Thailand and Cambodia). This work is still ongoing, but some preliminary findings are available.

3 FOLLOW UP AND NEXT STEPS

The 2014 GPB Strategy concluded with a chapter describing the institutional responsibilities and instruments for implementing the Strategy. This section identifies the five top areas where actions need to be taken to implement the GPB Strategy: a) changes to policy/programme appraisal in the budget cycle to give greater weight to green economy benefits in national, sectoral and regional development; b) development of new policy instruments to encourage private green investment in the 21 GPB priorities; c) implementing GE budget tagging and scoring, to embed green economy issues in the public budget process; d) capacity building to support the first three areas of Green Economy; and e) the production of a GPB Annual Progress Report shortly before the budget cycle.

The **Table 11**. below summarises the priority actions and institutional responsibilities for implementing the GPB Strategy starting from 2015.

Table 11. Actions and Institutional Responsibilities for Implementing the GPB Strategy

Institution	Responsibilities
MoF	• DG Budget insist on SEA/GGAP for all major fiscal policies related to GE • BKF &DG Budget agree funding greater use of incentives and financial instruments and regulations to lever private sector green investment • DG Budget respect line ministry requests for budgets to strengthen enforcement of regulations that leverage private sector green investment • DG Budget insist on budget tagging by 8 main GE line ministries • BKF-PKPPIM further develop methodology for budget scoring • Use tagging & scoring to produce GE tables, both in the Annual Accounts (BUN) and in real time budget negotiation documents (DG Budget) • Maintain new fuel pricing regime, if world fuel prices rise
Bappenas	• Insist on SEA and GGAP for all major expenditure related to GE • Ensure that GE approaches are included in all new policy documents in sectors related to GE
MoEF	• Implement the range of forestry policies in the GPB Strategy with special focus on KPHs, as defined in the Land Based Fiscal Policy Framework of BKF-PKPPIM • Introduction and enforcement of regulations for peatland restoration • Piloting Payment for Ecosystem Services (PES) schemes
All Line Ministries	• Introduce/enforce regulations to lever private sector green investment • Ensure adequate expenditure on enforcement capacity for implementing regulations
MEMR	• Work with MoF to refine and expand incentives and regulations for renewable energies and energy efficiency • Enforce and refine mining extraction regulations and royalty structures to eliminate contamination and ensure post-mining recovery
MoTrans	• GGAP and SEA of investment in road, railway& sea transport and maritime infrastructure
MPWH	• Enforcement of regulations on public building codes for energy efficiency • GGAP and SEA of investment in all new infrastructure development

Institution	Responsibilities
SNAs	• Invest in a range of green city policies and climate proofed municipal infrastructure • Stronger enforcement of environmental regulations (especially licensing) for green development, including greater political commitment, expenditure on institutional capacity and public participation • Implement GGAP and SEA for all investments in municipal infrastructure
Private Sector	• Build institutional cultures that respect environmental and climate proofed legislation • Expand green economy funding through Corporate Social Responsibility (CSR) programme
NGOs	• Engage in community-based programmes • Promote public awareness of the importance of green economy

Project/Programme Appraisal in the Budget. Line Ministries and Agencies will include stronger evidence based assessment in support of the programmes in their work plans and budget submission (i.e. in their RENJA-KL and RKA-KL) to Bappenas and MoF. Both the GPB Strategy and the GG Roadmap of Bappenas includes suggestions for what this should include.

The 2014 GPB Strategy stresses the importance of more rigorous and evidence-based appraisal of major new green growth policies and expenditure, building on the experience with Strategic Environmental Appraisal (SEA) and focusing on the way in which climate change affects benefits. The Green Growth Roadmap also calls for more substantial Green Growth Appraisal Process (GGAP), using extended Cost Benefits Analysis, where possible. Both MoF and Bappenas need to demand this appraisal activity as part of the justification of budget submission. Line ministries must devote the resources and time for this work and must develop the capacity to undertake this appraisal, either in-house or through use of external experts/ consultants.

The importance of applying GGAP and SEA procedures is further strengthened by the emphasis on building infrastructure in the Nawa Cita and the RPJMN 2015-2019. In particular, the line ministries involved in infrastructure design and construction will need to refine and adopt new practices and standards for climate proofing infrastructure. These should show the added benefits from improved proofing so that improved infrastructure will improve growth with less environmental loss and damage, but they should also show that there is a limit to the degree of proofing that can be justified and show how to estimate the optimum level of proofing.

Development of New Instruments with High Private Sector Leverage. The 2014 GPB Strategy defines a range of options for new instruments that could support the green economy. There should be continued search for new policy instruments and programmes, especially where these involve more engagement with the private sector and other non-government actors at national and international levels. This is likely to involve: new incentives (e.g. grants and tax incentives); greater use of financial sector instruments (e.g. loans, loan guarantees, bonds); and regulations on standard performance and incentives (e.g. licensing, standards, CSR). These new instruments should be subject to the same SEA and GGAP procedures as required for public expenditure and this appraisal should take a realistic assessment of the costs of the institutions required to manage the policies. The search for new instruments should include both reference to international experience and evolution of Indonesian solutions.

Apply Budget Tagging and Scoring. The budget tag and score is a key tool for consolidating recognition of the importance of the green economy in the state budget. The Ministry of Finance (MoF) introduced a 'Low Emission Budget Tagging and Scoring System (LESS) for climate change mitigation programmes in 2014 and issued a Minister of Finance's Regulation No.143/PMK/.02/2015 on Guidelines for Preparation and Review on Line Ministry's Work Plan and Budget (RKA-KL) and the Legalization of Budget Execution Document (DIPA) which has been applied in the 2015 state budget. The line ministry budget guidelines (PMKA) thus contain instructions about how to define the climate change mitigation tag in their development budget plan. The LESS system is based on the Presidential Degree 61/2011 on RAN-GRK, which defined mitigation expenditure as any action that contributed to GHG emission reduction or absorption, or carbon stock stabilisation. It distinguished between direct and indirect contributions to GHG emission reductions.

The experience of budget tagging for climate change mitigation in 2015 will need to be reviewed to gain experience about how to extend it to other areas of the green economy, including for adaptation and environment protection programmes. This should lead to clearer guidance to make the use of a green economy tag more objective. This guidance needs to be supported with capacity building and increased public awareness.

The review should also consider whether the thematic and budget classification system can be extended to include an element of scoring. There is growing experience with budget scoring for climate change, based on work on CPEIRs and on CCFFs. The basic principle of budget scoring involves determining the extent to which the public expenditure will contribute to green economy benefits, compared with conventional economic benefits. This can be measured either: a) by reference to the declared objectives in the documents for the programme or policy; b) through some form of structured consultation (e.g. expert opinion or participatory appraisal) over a range of criteria; and/or c) through more objective methods of estimating benefits, such as those used for Cost Benefit Analysis, undertaken either with detailed evidence or indicative evidence from easily available sources. These scoring methods will make the budget tagging easier and more objective.

Capacity Building. The GPB Strategy contains a number of priorities of actions for capacity building and information services, as part of the Supporting Activities cluster of Green Economy priorities. These are implemented by a range of institutions involved in delivering Green Economy, as described in the GPB Strategy. As the main source of technical expertise on climate change and the environment, MoEF plays a particularly important role in guiding the substantive areas of environment and climate change for these capacity building activities. Whilst BKF-PKPPIM could provide their technical guidance on fiscal and financial policy in the design and evaluation of green economy programmes.

Green Planning and Budgeting Annual Report. The 2014 GPB Strategy suggests that an Annual Progress Report (GPB APR) be produced by PKPPIM / MoF shortly before the beginning of the budget cycle, summarising the latest data and refining the budget tagging and scoring used in estimating public budget expenditure. The data analysis could include the following elements:

- Actual budget expenditure for 2014;
- Adding some elements not covered in the analysis of central government expenditure in the 2014 GPB Strategy (i.e. all allocations to sub-national levels and as many of the financing items as possible);
- Analysis of the APBN-P for 2015, estimating the total green economy expenditure and assessing whether it is changing in line with the GPB scenarios, both in terms of the total volume and the changes away from a

dependence on public expenditure and towards greater reliance on incentives and regulations to generate private sector's investments; and

- Assessment of the mitigation tagging in the 2015 budget.

The Annual Progress Report (APR) would also report on news on policy and institutional changes and other developments related to green development objectives. This 2015 GPB Update Report provides an interim step in producing a first 2015 GPB APR. The APR could include the following sections (**Table 12**).

Table 12. Possible Contents for 2015 GPB Annual Progress Report

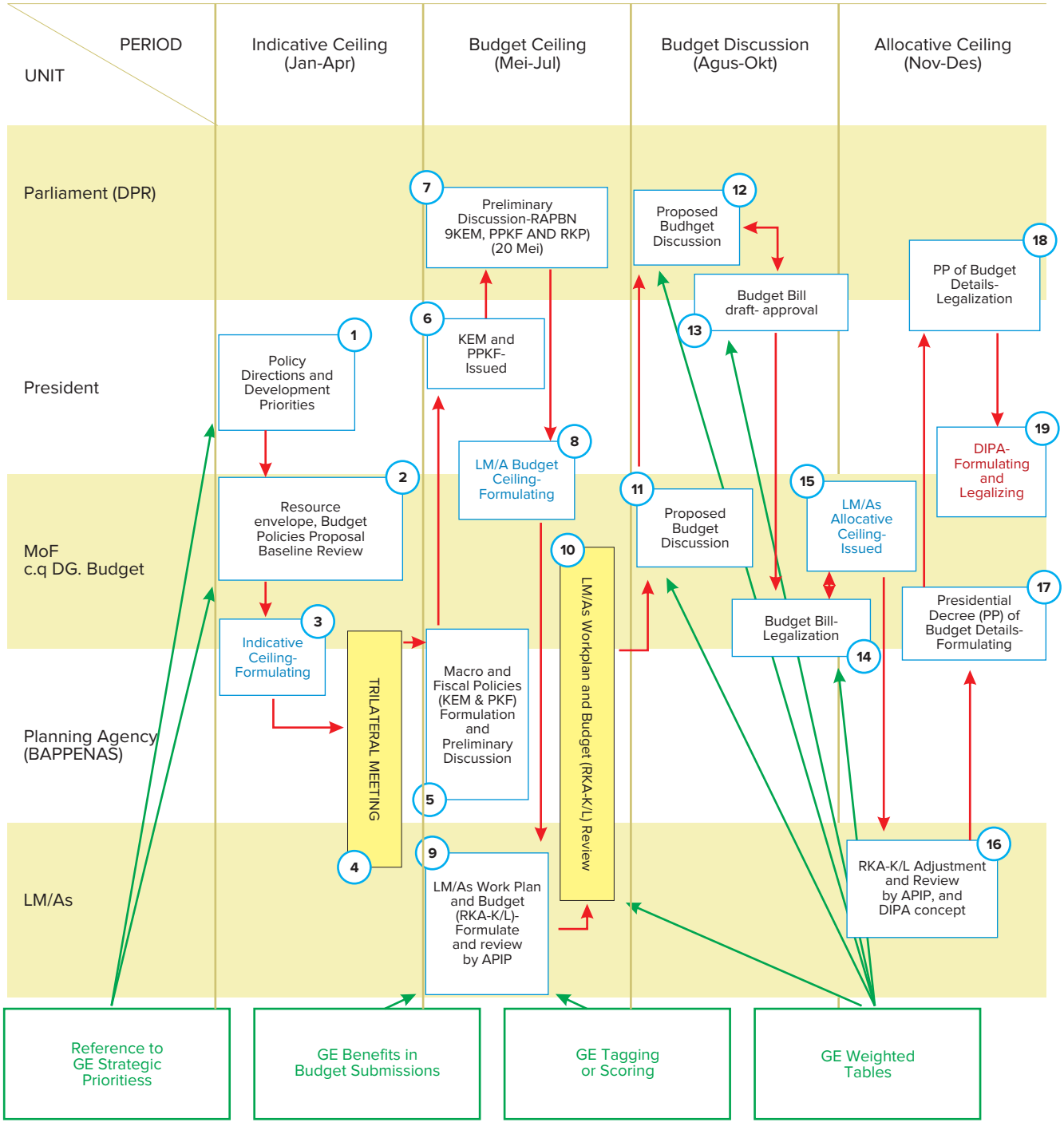
Chapter	Contents of Chapter on GPB Annual Progress Report	Pages
1	Introduction: purpose of the GPB Annual Progress Report	1
2	Summary 2014 GPB Strategy: brief version of section 1 of this 2015 GPB Update Report	4
3	News on Top 21 Policies: similar to the approach of this 2015 GPB Update Report	3
4	Latest tags and scores used for budgeting and for analysing GE expenditure	1
5	Latest Expenditure Data: actual for 2014 and APBN-P for 2015	3
6	Conclusions and Recommendations for 2016 Budget Process	3

Overview & Summary of Integrating the Green Economy in the Planning Cycle. The Green Economy cuts across many different sectors, programmes, ministries and regions and needs not only cross-sectoral and inter-ministerial budget coordination but also a medium to long-term budget planning approach. The GPB Strategy aims to guide the government, and MoF in particular, in this budget planning approach by using the Medium Term Expenditure Framework (MTEF) for planning a multi-year budget that responds to climate change, natural resource and environmental challenges, and applying a Performance Based Budget system which requires the indicators of performance for each programme to refer to the Green Economy benefits, where appropriate.

The GPB Strategy for green programme budgeting is based around 6 policy areas and top 21 priorities as described in **Table 9** and **Annex 1**. To identify, analyse and select those green budget expenditures in development programs is often complicated by the fact that the green economy policies are integrated with other mainstream development policies. The GPB Strategy addresses these policy challenges and priorities by defining Green Economy (GE) relevance that aims to indicate what proportion of public expenditure is dedicated to Green Economy objectives. This is related to the GE benefits, including in budget performance indicators.

MoF has introduced budget tagging, and will later consider a budget scoring system that is related to the extent to which Green Economy (GE) benefits will increase the total level of development benefits (GE%). The MoF will provide guidance and leadership in applying these new practices in the budget system, while Bappenas will require Line Ministries to ensure that the appraisal of policies and programs/projects takes climate change and natural resource degradation into account, and to use Green Economy (GE) benefits to tag and score their budget plans and submissions to MoF. Multiplying expenditure by the GE% gives estimates of weighted expenditure that will be presented in companion tables to the main budget tables. The Ministry of Finance will use the GE% budget score to monitor and evaluate the trends in GE weighted expenditure in the Annual Nota Keuangan that reports to the Parliament on the way in which the proposed budget contributes to greening Indonesia's economy. **Figure 9** shows a flowchart summarising the above process of integrating GE in the government budget cycle.

Figure 9. Overview of Integrating Green Economy in the Planning & Budget Cycle



Source: Modified from Agung Widiadi, Director of Budget System, Directorate General of Budget, Ministry of Finance Indonesia, "Budget Tagging System – Indonesia", paper presented at the Asia Pacific Regional Forum on Climate Change Finance and Sustainable Development (Jakarta, Sept. 2015).

Annex 1. GPB Priorities and Instruments in the GPB Strategy Update

Priority	Policy/Programme Instrument (and Lead Institutions)	Outcome Monitoring	2014 Budget and GE%
Forestry, Peatland and Marine Resources			
F1: ***Forestry***	• Enforcement and policing of licenses (SNAs, MoEF) • Strengthening of forest protection (MoEF) • Reforestation of degraded land (MoEF) • Nature/Biodiversity Conservation Trust Fund (MoEF/MoF) • Land swaps (SNAs) • REDD+ range of incentives (MoEF) • Effective measurement, reporting, verification (MoEF)	• Forest area, by type of forest and condition (deforestation rate halved by 2018 and zero by 2030) • Carbon measurement • Trust-fund establishment	• IDR 4.5 tr • 100% protection • 50% productive
F2: ***Degraded Peatland***	• REDD+ instruments (MoA, MoEF) • Rehabilitation of wet peatland canal system (MoA/MPW) • Some special policies and budget allocations (MoF) • Regulations to require local governments to fund peatland restoration (MoA/MoHA/MoASPA) • Matched by special funding, from local and/or national budget (MoF/SNA) • Local community resources (knowledge, labour, etc.) • Local government and project based costs (SNA)	• Hectares restored (increased to 0.1m ha in 2018 and 0.3m in 2030) • Local & additional matching funds • Numbers of rehabilitated peatland canals	• N/A • 100% restoration
F3: ***Coral Reefs & Marine Resources***	• Coral reef protection regulations (MoMF) • Inter-island shipping & dumping sludge regulation (MoMF) • Marine Resource and Coastal management (MoMF) • Enforcement on marine & maritime regulations	• Square Km protected (increased from 62,000km2 now to 150,000 in 2018 and 500,000 in 2030) • Coral tourism jobs	• IDR 0.7 tr • 100% protect. • 10-20% other
Agriculture			
A1: ***Cropping practices & varieties***	• Applied research for new varieties & green farms (MoA) • Improved agricultural extension programs (MoA) • Rural finance and insurance system for farmers (MoF) • Labelling and certification (MoA)	• Hectares using new crop varieties and new practices (up by 0.1m ha in 2018 and 0.5m ha in 2030)	• IDR 2.4 tr • 10% crop productivity
A2: ***Oil Palm***	• Land swaps (MoA/MoASPA/SNAs) • Phasing out oil palm production on peatland area (MoA) • More flexible biofuel contracts with Pertamina (MEMR) • Anti-dumping trade policies (MoTrade)	• RSPO up from 28% now to 35% in 2018 and 50% in 2030 • Oil palm area on degraded land • Palm oil yields • Biodiesel production	• IDR 0.7 tr • 10% crop productivity
A3: ***Irrigation***	• Maintenance, capacity building and Water User Groups (MoA) • Scheme rehabilitation/improvement (MPWH)	• Irrigated hectares managed by farmers (up from 6.7m now to 8.0m in 2018 & 10.0m in 2030)	• IDR 1.4 tr • 33%
Energy and Industry			
E1: ***Energy Efficiency***	• Incentives, revolving fund, loan guarantees (MoF) • Regulations (MEMR) • Pilot schemes & appropriate technology development (MEMR/MoF) • Public awareness &Govt pilot examples (MEMR)	• Energy intensity of GDP (down from 15.8 kWh/$ now to 15.5 in 2018 and 15.0 in 2030. • Energy use in Govt offices	• IDR 0.1 tr • 20%
E2: ***Renewable Energies***	• Licensing (MEMR) • FITs, tax incentives (MEMR/MoF) • Revolving funds and loan guarantees (MoF) • Reduced import duties (MoF) • Business awareness/networks (MEMR) • SME targets for financial sector (MEMR)	• Power generated for each RE technology (increased from 4.8% now to 8% in 2018 and 23% in 2030)	• IDR 1.8 tr • 20%

Priority	Policy/Programme Instrument (and Lead Institutions)	Outcome Monitoring	2014 Budget and GE%
Energy and Industry			
E3: ***Resource Use Efficiency in Industry***	• Incentives, revolving fund and loan guarantees (MoF) • Regulations (MoI) • Pilot schemes (MoI) and BUMN lead projects	• Physical input:output ratios, by sector • Value added I-O ratios, by sector	• IDR 0.4 tr • 100% green • 5-10% industry
E4: ***Energy & Fuel Pricing***	• Subsidy spending for fossil fuels and electricity reduced and phased out gradually (MoF/MoCEA) • Savings used for compensatory social welfare and public transport (MoF) • Savings used for energy efficiency funding and renewable investments (MoF/MEMR)	• % actual progress of subsidy reduction against planned (with subsidy eliminated by 2018)	• IDR 282.1 tr •N/A
E5: ***Large Scale Power***	• Regulations on clean technologies, high efficiency plants, carbon capture (MEMR/PLN) • Regulations and carbon market incentives (MEMR/MoF) • Regulations/incentives on transmission (MEMR/PLN) • Smart grid to facilitate renewable connections (PLN)	• Carbon intensity of power generation	• IDR 6.2 tr •5%
E6: ***Sustainable Mining***	• Licensing requirements (MEMR) • Enforcement of clean-up deposit and land/site rehabilitation (MEMR) • Contracting revisions for non-tax revenue (MEMR) • Basing royalties on net income & resource use (MEMR) • Community engagement in post-mining activities, including PES (MEMR)	• % of mined area rehabilitated	• IDR 6.0 tr •100% green •5-20% other
E7: ***Corporate Social Responsibility***	• Awareness (companies, wider public) (MoI/MoEF/KADIN) • Database, annual sustainability report (MoI/KADIN/BUMN/MoEF)	• Expenditure on CSR activities • No. publicly listed firms up from 80 now to new KADIN target	• IDR 0.01 tr • 100%
Transport, Urban Planning & Regional Development			
T1: ***Public Transport***	• Energy savings in public transport (MoTrans/SNAs) • Increase investments and budget allocation for railway and sea-transportation system (Bappenas/MoF) • National Strategy covering all levels of Govt (Bappenas) • Transfers from central Govt to support SNAs (MoF) • Disincentives for private vehicles (MoTrans/SNAs) • Investment grants and price guarantees (MoF) • Traffic/parking schemes, alternative fuels (MoTrans/SNA)	• Number of rail journeys increased from 202m now to 250m by 2018 and 400m by 2030 • % of journeys using public transport • Travel times and accidents	• IDR 35.0 tr • 50% urban/rail • 5% marine • 0% aviation
T2: ***Waste Management***	• Increased budget allocation by local authorities (SNAs) • National campaign of awareness on recycling domestic waste (MoEF) • Incentives for waste to energy conversion (MoF)	• % waste in landfill	• IDR 3.1 tr • 100% pollution •20-50% other
T3: ***Climate Proof Infrastructure***	• Climate change included in road/bridge/infrastructure design standards (MPWH) • Regulation & budget for climate proofing (MPWH/SNAs)	• % projects using proofing standards	• IDR 41.2 tr • 5%
T4: ***Regional Development and Urban Planning***	• Inter-island/Regional connectedness infrastructure (CMEA/CMMA/Bappenas) • Incentives to relocate industry/retail from Jakarta (MoF) • Health, education in the East and changing attitudes towards the East (CMHDC) • Land Capping & Land Acquisition Fund to remove blocks in land availability for climate proofing (MoASPA/MoF) • Project Development Facility to support PPP infrastructure for Green Urban Development (MoF) • Bank guarantees for SOEs/private investment in green utilities (MPWH/MoF) • Studies on zoning, land use planning and climate proofing, especially in cities (MoASPA/MPWH) • Community participation in urban dev. plans (SNAs) • Climate proofing for power, water, waste (SNAs)	• Gini co-efficient of regional income inequality • Ratio of wages in richest region to poorest region falling from 1.6 now to 1.5 in 2018 and 1.2 in 2030 • Number of businesses in climate proof locations	•· IDR 4.1 tr • 50% equality • 10% other

Priority	Policy/Programme Instrument (and Lead Institutions)	Outcome Monitoring	2014 Budget and GE%
Education and Health			
H1: ***Education***	• Green Economy in curricula at all levels of education, esp. in science, technology, public awareness (MFC/MRTHE) • Increased funding for research and development in low carbon technologies (MoRTHE)	• Pupil/student numbers with Green Economy training • Spending on CC actions using 0.1% of all education spending by 2018, 0.5% by 2030	
H2: ***Health***	• Review budget allocation for climate sensitive disease prevention & treatment (MoH)	• % CC sensitive disease treated • Spending on CC actions using for 0.2% of all health spending by 2018 and 1.0% by 2030	
Other Supporting Priorities			
S1: ***Disaster Reduction & Management***	• Natural disaster insurance scheme (BNPB/OJK) • Inter-agency coordination in DRM (CMHDC/BNPB) • Local communities participating in DRM (SNAs)	• Communities with disaster management plans	
S2: ***Coordination, Capacity building, etc.***	• Capacity building across government (MoEF) • Improving governance at central & local levels (MoEF) • Public awareness for demand side changes towards green lifestyles (MoEF/CMHDC) • National MRV for mitigation and adaptation, including RAN/RAD-GRK and RAN-API (MoEF) • Use of Vulnerability Index (MoEF) • More evaluation studies (All)		• IDR 0.6 tr • 100%

Note :

The figures for the 2014 state budget in column 4 (i.e. the IDR figures) of the above Table refer to the expenditure of those items in the budget that are linked to each of the programme priorities. This is explained in the 'Budget' paragraphs for each priority in Chapter 4 of the original GPB 2014 Report, and the full assumptions are listed in Annex 1 of the same report.

GE% is the value of Green Economy benefits as a proportion to the total development benefits. The GE% figure is explained in Box 2 of the original GPB 2014 Report and the estimates of GE% for each of the items in the budget is also listed in Annex 1 of the original GPB 2014 Report.

Annex 2. Loss and Damage to Natural Resources and Economic Growth

Source of Damage	Potential Value of Damage, without Adaptation	% of GDP
Costs Related to Climate Change		
Losses in agricultural productivity arising from changes in temperature and more variable rain, including more damaging dry spells in the wet	The response of agriculture to CC is complex. As a result, detailed research relies on complex Integrated Assessment Models (IAMs), which combine biophysical modelling of crop response to CC with economic impact. The IAM modelling in the ADB 2009 study for SE Asia suggested crop yields in Indonesia could decline by 34% by 2100. Assuming a linear rise in this decline, and that crops contribute about 5% of GDP, would suggest losses of up to 0.85% of GDP. In practice, farmers will avoid a large part of this loss through their own adaptation actions, notably through changes in crop choice.	0,85%
Loss and damage to crops from floods and droughts.	A recent analysis of flood and drought impact on Indonesian agriculture suggested that, on average, between 2003 and 2008, flood damage on rice and maize was about IDR 3.5 tr (Lassa 2012). Additionally losses will have been incurred on other crops.	0,05%
Losses from pest attack on crops increased because of temperature and variable rainfall	Analysis of natural disasters between 2003 and 2008 (Lassa 2012) suggested that the number of pest plague events were only about 10% of the number of flood and drought events, but that the area affected by each attach was about 10 times that of floods and droughts. Pest outbreaks are often triggered by unseasonal weather and it a reasonable first estimate of CC impact would be that the losses will double, in line with the doubling in the frequency and severity of extreme weather.	0,05%
Livestock, forestry and fisheries will be affected by temperature and changes in rainfall patterns, but the nature and scale of this impact is not yet clear.	There is limited evidence on the impact of CC on livestock, fisheries and forestry. The SNC suggested that forest quality would decline by about 1% by 2050. This would have only a very small economic impact.	0,01%
Losses in the energy sector from higher losses in transmission and costs of cooling	Electricity production currently amounts to nearly 200 TWh/year, worth about IDR 200 tr. Total losses during transmission are about 10% worth IDR 20 tr and these are affected by storms and by temperature. Cooling costs typically amount to between 1% and 5% of generation costs, depending on how water is valued. Surprisingly, there is little international evidence of the potential magnitude of this damage. It is assumed that both distribution losses and cooling costs are increased by 10%.	0,02%
More rapid degradation of national and rural roads, irrigation, water, sanitation and other infrastructure. These losses can be reduced by higher	Investment costs are typically about 300,000 $/km for major roads (Collier et al 2013), 5,000 $/ha for irrigation and 400 $/person for full water and sanitation connections. Indonesia has about 500,000km of major roads, 7m ha of irrigation and 120m people with full water and sanitation connections. Total infrastructure asset value is estimate to be IDR 3200 tr (i.e. 1950 tr for roads, 450 tr for irrigation and 600 tr for water and sanitation, plus a further 200 tr for minor roads and partial water and sanitation. Rehabilitation costs are typically between 1% and 3% of capital investment per year. The most common cause of the need for rehabilitation is flooding and this is assumed to account for half the rehabilitation requirements and is projected to double by 2050. The total loss and damage, measured in terms of the extra costs of rehabilitation, is therefore about IDR 64 tr (i.e. 3200 tr x 2% / 2 x 2).	0,55%
Increased loss of life and injury, and damage to urban and rural property, arising from more frequent and severe storms.	An indication of the scale of flood damage is provided by the 2007 Jakarta floods, which caused property damage of IDR 8 tr, as well as leading to 80 deaths, displacing 500,000 people and leading to over 100,000 flood related illnesses. Major floods were also experienced in Jakarta in 2013 and 2014 at about 20% to 30% of the 2007 floods. Assuming that the average annual loss from floods in Jakarta is IDR 1 tr and that this reflects 10% of the national loss from floods, average annual loss is IDR 10 tr. This is expected to double by 2050.	0,09%
Flooding and salinization arising from sea level rise and abandonment of some coastal areas.	No estimates are yet available for the potential costs in coastal areas.	0,00%
Increased occurrence of diarrhoea and other climate sensitive diseases.	Evidence from other SE Asian countries suggests that climate sensitive diseases result is the loss of about 27 'Disability Adjusted Life Years' per 1000 people. WHO estimates that these could increase by 10% with CC. Indonesia does not yet have a planning yardsticks for the value of a DALY, but the WHO guideline is three times per capita GDP, which suggests that the extra health burden from CC would be about IDR 90 tr (250m x 0.027 x 10% x 45m x 3).	0,78%
	Total costs related to climate change	**2,40%**

Source of Damage	Potential Value of Damage, without Adaptation	% of GDP
Costs Related to Natural Resource Degradation		
Loss of GDP from reduced deforestation.	Forestry currently contributes about IDR 55 tr to GDP. There are no official estimates of the contribution of deforestation to this, but estimates suggest it is between one third and half. With green economy policies, deforestation will stop over the medium to long term and forestry GDP will rely on managed forests.	0,17%
Costs of soil erosion from changes in land use.	FAO suggest that degradation of soil and water resources typically reduces agriculture GDP by between 5% and 20% and that this can be even higher, in extreme cases. Agriculture provides 13.7% of GDP in Indonesia, of which about half is from arable land. This suggests that resource degradation is reducing GDP by about 0.68% of GDP (i.e. 13.7% / 2 x 10%).	0,68%
Health costs of increased pollution.	International evidence suggests that labour productivity in badly polluted cities is typically reduced by 1% to 4%. About half the Indonesian population live in cities and at least half of these will be badly affected by pollution. This suggests that pollution is reducing GDP by between 0.25% and 1% of GDP.	0,25%
	Total costs related to natural resource degradation	**1,10%**

Annex 3. Complementarily of Actions in Green Growth Roadmap and GPB Strategy

Green Planning & Budgeting Strategy (see Table 1)	Green Growth Roadmap (see GPBS Table 4.1)	Both the Roadmap and the GPB Strategy
Energy and Industry		
• Pilot schemes & appropriate technology development • Public awareness & government pilot examples • Regulations/incentives on transmission • Smart grid to facilitate renewable connections • More flexible biofuel contracts with Pertamina	• Attract the private sector to geothermal • Regional assessments for energy solutions • Investigate localised barriers to investment • Explore options for domestic gas	• Incentives (incl. FITs)/licenses for clean energy • Phase out subsidy for fossil fuels and electricity • Fiscal incentives for energy efficiency • Engage key industry players on energy efficiency • Implement carbon regulations, markets, pricing
Industry and Mining		
•· Reduced import duties • Mineral licensing requirements (incl, re clean-up) • Contracting/royalty reforms • CSR awareness and database	•· Sustainable mineral processing industries • Improve production methods in heavy industries • Responsible bioprospecting for biotechnology • Roll out ecotourism training and monitoring	• Support SMEs in the cleantech industry and financing
Transport, Urban and Regional Planning		
• Public transport incentives/private disincentives • Promote railway and sea-transportation system • Relocate industry/retail from Jakarta & to East • Land Capping and Land Acquisition Fund • PPP Development Facility & bank guarantees for GE utilities	• Stimulate investment in low GHG landfills • Establish new industries around waste • Pipeline for green infrastructure projects	• Incentives for waste to energy conversion • Systems for climate proofing infrastructure (eCBA, regulations, standards, guidelines ...) • Inter-island, regional, intermodal connectedness • Smart city planning
Agriculture		
• Rural finance and insurance system for farmers • Land swaps • Anti-dumping trade policies • Irrigation maintenance/rehabilitation/WUGs	• Address role of smallholders in production • Diversify staple foods	• Improve crop productivity (rice, palm oil ...), incl. applied research/extension & natural soil fertility • Strengthen domestic product certifications
Forestry, Peatland and Marine Resources		
• Reforestation of degraded land • Phasing out oil palm production on peatland area • Trust Fund for Nature/Biodiversity Conservation • Land swaps • REDD+ range of incentives and instruments • Local community (knowledge, labour, etc.)	• Address degraded peatland and peatland fires • Develop sustainable supply chains • New natural capital-based markets • Develop a prioritized pipeline of activities • Introduce PES governance	• Environmental law enforcement (incl. licensing) • Marine ecosystem protection • Peatland restoration policies/Regs/funding • Strengthen forest management/protection • Restrict industrial/shipping waste in coast • MRV, incl. One Map initiative
Education, Health and Supporting Areas		
•· GE curricula and R&D funding in education • Review budget for CC sensitive diseases • DRM capacity/coordination and insurance • Public awareness for green lifestyles (incl. waste)	• Scale up the sustainable programs in ministries • International debate on carbon pricing • Establish preferential long-term debt financing	• GE appraisal and evaluation studies • National MRV for mitigation and adaptation

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