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Climate and Environmental Financing at Regional Level: Amplifying and Seizing the Opportunities

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Executive Summary

The establishment of national climate policy targets has forced the local government to set ambitious climate goals supporting the national government to achieve its proposed target. Besides low awareness of climate change and environmental risk impacts, the biggest challenge faced by the local governments to exert climate actions lies in the financing of the programs. This paper aims to analyze the current local government budget on climate and environmental activities and identify available potential financing sources to finance local government climate and environmental initiatives. We found that the local budget allocation for environmental spending increased from 1% in 2016 to 3% in 2020, yet it is still relatively low and insufficient for achieving the climate target. With a limited budget, local governments must find additional potential financing sources for financing their climate actions. Through case study analysis, insights from several regions that have gained harness of potential from various climate and environmental financing initiatives to overcome environmental issues in their areas and reach climate and environmental goals were attained. To address local budget shortages problem for climate and environmental activities, several strategies for the local government are proposed: (1) optimizing and improving the quality of spending from intergovernmental fiscal transfer; (2) adopting Climate Budget Tagging (CBT); (3) increasing local-own source revenue from natural resource and environmental based activities; (4) valuing regencies and/or cities with high ecological value with more fiscal support through TAPE and TAKE schemes; (5) optimizing the role of SOEs and private sectors through CSR and PPP; (6) optimizing multilateral financing; and (7) utilizing other financings from the central government such as through environmental fund management agency (BPD LH), disaster pooling fund, ICCTF, and SDGs Indonesia One.

JEL Classification: H72; Q54; R11

Keywords

climate change — environmental risk — climate and environmental financing — local budget

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1. Introduction

Widespread and rapid changes particularly on environmental degradation globally are exacerbated by climate change that has occurred during the decades. The Sixth Assessment Report published by the Intergovernmental Panel on Climate Change has recorded that global surface temperature was 1.09°C higher in 2011–2020 than 1850–1900 (Masson-Delmotte et al., 2021). Meanwhile, the global mean sea level increased by 0.20 m between 1901 and 2018 (Masson-Delmotte et al., 2021). Moreover, the World Meteorological Organization/WMO (2021a) has indicated that, globally, there were more than 11,000 reported disasters attributed to weather, climate, and water hazards from 1970 to 2019. This number of disasters has increased five fold over the span of 50 years (WMO, 2021a). Indonesia is also vulnerable to the adverse impacts of climate change. During the last 10 years, the frequency of disasters in Indonesia has increased more than twice from 2,004 disasters recorded in 2010 to 4,886 disasters recorded in 2020 and are dominated by hydro-meteorological disasters such as floods, landslides, cyclones, as well as forest and land fires (*Badan Nasional Penanggulangan Bencana* [BNPB], 2020).

With the dramatic rise in climate change-related events during the decades, it is unequivocal that it has caused a significant amount of economic and environmental welfare losses. WMO (2021b) estimated that weather, climate, and water hazards-related disasters have resulted in 2.06 million deaths and US\$3.64 trillion economic losses during the

last 50 years from 1970 to 2019 globally. In terms of GDP losses, under the 3.2°C global warming scenario, it is estimated that the impacts of climate change could wipe off up to 18% of global GDP by 2050 (Swiss Re Institute, 2021). Meanwhile, in Indonesia, an estimate from the World Bank & Asian Development Bank (2021) indicates that the impacts of climate change could cost between 2.5% to 7% of Indonesia's GDP. While Bappenas (2019) estimates that the economic losses caused by the impacts of climate change could reach IDR115 trillion by 2024. Moving on to the environmental standpoint, climate change presents new challenges to species richness and diversity. Few studies show that primary forest degradation and conversion can result in declines in species richness up to or above 50% (Astiani, 2016). Furthermore, the increase in sea surface temperature will have an effect not only on the migration pathways of fish and other sea creatures, but also on coral bleaching, mangrove and seagrass ecosystems damages, as well as imbalance of marine mammal populations (UNFCCC, 2021a).

To tackle the adverse impact of climate change, through the 2015–2019 National Medium-Term Development Plan (RPJMN), Indonesia started to set several climate mitigation and adaptation targets, which the provincial government translates into domestic targets for climate action (Chryso-lite et al., 2017). Then, Indonesia has also officially inserted the climate change agenda to become the sixth out of seven national agendas in the 2020–2024 RPJMN (UNFCCC, 2021b). Recently, Indonesia has also submitted its Long-

Term Strategy for Low Carbon and Climate Resilience 2050 (LTS-LCCR 2050), in which Indonesia sets 2060 net-zero ambition (UNFCCC, 2021a). However, although progress has been at the national level as suggested by a reduction in overall national-level climate vulnerability in Indonesia, such as the ND-GAIN Country Index, World Bank & Asian Development Bank (2021) shows that Indonesia poses a high level of variability in the potential impacts of climate change, especially, at the regional level. In this case, without well planned adaptation and disaster risk reduction efforts at these levels, significant loss and damage as a result of climate change impacts will likely occur with the poorest and most marginalized communities bearing the biggest burden (World Bank & Asian Development Bank, 2021).

Even with a plan in place, efforts for climate change adaptation and mitigation will not be unchallenging for Indonesia. The cost for carrying out the NDC is huge, whilst the government has limited financing alternatives. In 2019, Indonesia carried out the latest estimation of the financing needs for the implementation of NDC and found that about IDR4,520 trillion (~USD322.86 billion) will be needed. However, the Climate Budget Tagging (CBT) data reveals that the capacity of the national budget can only cover 34% of the financing needs (Fiscal Policy Agency, 2020a; Ministry of Environment and Forestry [MoEF], 2021). Hence, the remaining 66% of financing needs must be met by funding from various stakeholders, such as private and international sources. The Government of Indonesia (GoI) has developed a number of green financings such as green sukuk, green bond, SDGs-One Indonesia, and Indonesia Climate Change Trust Fund (ICCTF). GoI also initiated the results-based payment under REDD+ program and is preparing the carbon pricing instrument to leverage revenue (DGCC MoEF, 2021).

Being an archipelagic state has required solving environmental and climate issues in Indonesia to be a collaborative effort between the national and regional governments. Different geographical conditions and characteristics between regions forcing an active role of the local governments to focus on achieving climate resilient and environmental quality targets in their regions. Moreover, the typical assumption in decentralization is that all subnational governments have similar levels of technical and administrative capacity. This is not the case for all countries. The central government tends to attract more qualified people than does the local government and there may be vertical information asymmetry between them (Bardhan, 2002). However, up to now there is still no specific legal basis that regulates their authority and obligation regarding climate change mitigation and adaptation. According to Law No. 23 of 2014, the local government's authority is only limited to environmental preservation and disaster mitigation.

Under the Indonesian fiscal decentralization framework, local governments have the discretion to determine their spending while still following regulations from the central government. However, the revenue side of the local budget is not decentralized and hence the local governments have a limited fiscal space to finance climate action since they mostly rely on intergovernmental fiscal transfer as a large source of revenue. The evidence lies in the calculation of the fiscal capacity index that is calculated by deducting

mandatory spending from revenue. Using the index, it is shown that on average, 60% of the local budget revenue comes from the intergovernmental fiscal transfer. Yet, these transfers come with pre-determined targets, hence the lack of spending flexibility (Desdiani et al., 2021). Besides low awareness of the climate change impacts, low capacity and knowledge to develop well-implementation programs, the biggest challenge faced by the local governments in exerting climate actions lies in the financing of the programs.

Therefore, this study aims at addressing two main research questions: (1) given the authority and responsibility to reach climate and environmental targets, how local governments optimize the current source of climate change and environmental-risks related financing, and (2) what kind of potential source of funding that is available for the local governments to finance climate change and environmental programs. The rest of the study is organized as follows: first, we discuss the methodology used for our qualitative analysis. Second, we highlight the recent development of the local government budget specifically for environmental and climate change issues. Third, we present the case studies of several best practices regions that implement climate and environmental financing initiatives. Fourth, we propose several strategies that should be taken by the local government to optimize the local budget and meet other potential alternative sources of funding to support climate mitigation and adaptation as well as environmental preservation programs at the regional level. Last, in the concluding part, we draw out implications of our findings for realizing the potential source of climate finance in achieving climate and environmental targets in regions.

2. Methodology

In addressing the research objectives, we conducted literature review and in-depth interviews with seven local governments officials ranging from provincial, regency, and city level to draw upon knowledge regarding recent development of the local government budget allocation and expenditure for environmental and climate change issues. The variety of government levels that we present in this study allows us to learn more on dynamics that each government faces in handling environmental and climate change issues, especially considering differences in terms of fiscal and administrative decentralization among selected local government officials. The seven regions have chosen, namely Banjarmasin city, Cirebon city, Gorontalo city, Sigi regency, North Kalimantan province, Gorontalo province, and West Kalimantan province. These seven regions are selected due to their best practices in handling environmental and climate change issues as shown by several innovative policies and programs that are being implemented in these areas. Moreover, these seven regions also present as best practices of how non-governmental and private actors as well as civil society can contribute together in carrying out climate-related activities. We discussed and verified findings with respective local government officials, facilitated by each region's planning agency (BAPPEDA) as well as environmental agency.

To attest on the climate and environmental-risks issues and how the local governments optimizing their planning and financing at regional level, four regions (Sigi Regency,



Figure 1. Map of Selected Local Governments

Source: Author

Gorontalo Province, North Kalimantan Province, and Cirebon City) were selected to be the area of interests. Delving into these four case studies will allow comprehension on the climate and environmental-risks financing initiatives at regional level. Key questions guiding the assessment in the case studies included:

- What are the environmental problems related to climate change that generally occurred in the region?
- What are the financing initiatives undertaken by the local government to fund activities or programs related to climate change and environmental conservation?

3. Development of the Local Government Budget for Environmental and Climate Change

Climate change and environmental issues hold a vital value in the life of human beings. The issues may vary, however the impact will be the same. From productivity to health condition, the problems that arise from climate change and environmental issues will affect and generate a cost that is by no means cheap. Data from Food and Agriculture Organization (FAO et al., 2020) in 2020 reported that approximately 690 million people are undernourished and mostly caused by food insecurity. Several climate-related disasters such as floods, drought, and storms have led to disruption in agriculture sector and affected crop-harvested quantity and quality. Furthermore, data from the United Nation in 2020 State of Global Climate Report also mentioned that several countries and nearly 50 million people bear a double loss caused by climate and environmental issues along with the Covid-19 pandemic. In Indonesia, data from Ministry of Finance and National Board for Disaster Management (BNPB) mentioned that disasters and environmental issues have cost in average IDR22.8 trillion of loss annually.

Given the importance of climate actions and the sustainability of the environment, Government of Indonesia (GoI) has specifically allocated budget for environment including several climate actions. Looking at central government

budget (APBN), overtime the amount of funds allocated for expenditure on environment has shown a gradual increase. In 2020 state budget, GoI allocated approximately IDR18.4 trillion for expenditure on environment compared to IDR12,1 trillion in 2016. However, the proportion compared to other spending, is rather limited. Moreover, since 2016, there has not been a significant increase in the proportion of expenditure on environment. Retrieved from Indonesia Second Biennial Update Report 2018 on ASEAN Green Future (2021) Report, to achieve its NDC targets, Indonesia financing needs is recorded at USD247.2 billion. Averaging the amount to the annual proportion from 2016, Indonesia in minimum requires IDR220 trillion (USD15.7 billion) of allocation. Unfortunately, both nominal amount and proportion of spending on environment will be cut down in 2021 state budget. The budget allocation of spending in 2021 will be targeted mostly to health and economic aspects to tackle the pandemic and its negative impact.

Looking deeper to the allocation in the local government budget (APBD), the pattern shown by the amount of proportion tells a similar story. Compared to spending on other aspects, spending on environment is rather small. However, since 2017, there has been a favorable increase both in nominal amount and proportion. Data from local government budget realization in 2019 recorded that spending on environmental purposes reached approximately IDR23,2 trillion. From all provinces in Indonesia, DKI Jakarta as the capital city recorded the highest amount for environmental spending with IDR5 trillion in 2019 or equivalent to 7.8% from its total spending. After DKI Jakarta, Riau followed as the second province with a high amount of allocation for environmental spending compared to other provinces with IDR148,6 billion or equal to 1.7% from its local government budget.

In 2020 however, the realization of expenditure on environment was slightly lower with nominal amount of IDR18,3 trillion. Covid-19 pandemic brought an unprecedented condition to health and economic aspects. The cataclysm has forced the local government to shift their budget to over-

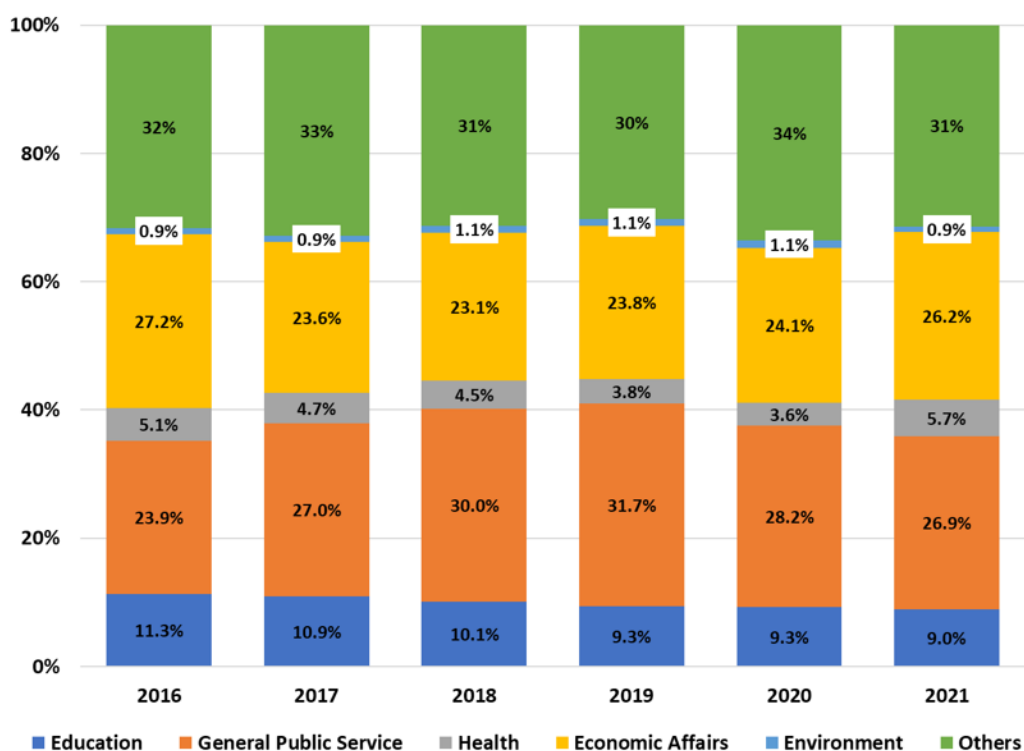


Figure 2. Spending Allocation in Central Government Budget (APBN)

Source: Ministry of Finance

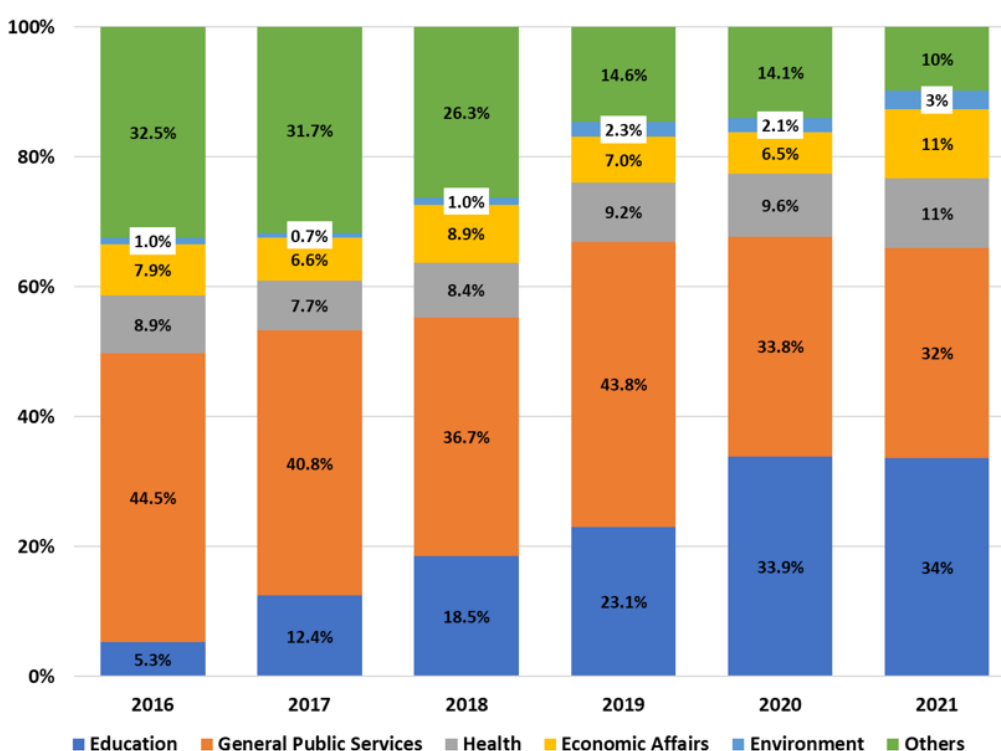


Figure 3. Spending Allocation in Local Government Budget (APBD)

Source: Ministry of Finance

come the negative impacts. The regarding action was in line with Presidential Instruction No. 4 of 2020. Unfortunately, on the other side, the refocusing budget also implies that the local government should focus to handle the pandemic and cut other inefficient and least priorities expenditures including spending on environment. Whereas climate action as well as environmental protection programs must con-

tinue to be carried out given the number of climate-related disasters and environmental issues are still existing. Take another note, the mitigation of environmental problems is also important to prevent double losses from environmental problem and the Covid-19 pandemic.

Aside from Covid-19, local government also faced another problem in maintaining the allocation of spending.

Since the decentralization system enacted in 2001, local governments have the power to manage their spending to capture local needs (Bardhan, 2002). On the revenue side, local governments have received several forms of transfer from the central government. Other than transfer, local governments have a limited source of income. Unfortunately, the implementation of such a policy has made the local governments rely heavily on the central government's budget in the form of intergovernmental fiscal transfers. The ratio of central government transfer over total revenue is still high with an average of 63% in the last three years (Desdiani et al., 2021). On the other terms, many local governments in Indonesia are classified to have a low degree of autonomy. That implies that any shock in the central government budget will eventually affect the local budget (Wolkoff, 1987). Limited fiscal space, as well as low autonomy, will affect the way local government allocates its budget for spending including spending on environment. A relatively low funding allocation for environmental programs causes local governments to rarely achieve climate and environmental targets.

Further to the decentralization system, other than financing, the distribution of rights upon several aspects also has become the highlight of the system. The top-down approach classified tasks and responsibilities from central to local government based on law No. 23 of 2014 on Regional Autonomy. In terms of environmental and natural resources, decentralization system is expected to generate a better outcome through local-communities participation (Ribot, 2003). Since the authority of spending allocation lies in local governments, the development of the process relies heavily on the local governments itself (Chambers, 1997). However, limited financing has curbed the ability of local governments to tackle the issue. A better financing strategy, as well as alternative financing resources, might be an appropriate way out for the local governments to overcome the climate and environmental issues.

3.1 The Implementation of Climate Budget Tagging (CBT)

The government has made a commitment to tackle the climate change issues in recent years, one of which is through the targets of environmental improvement stipulated in Nationally Determined Contribution (NDC) as well as the RPJMN and RPJMD. One of the breakthroughs made by the government is by implementing Climate Budget Tagging (CBT), which is a tool that supports the government in identifying and evaluating the climate-relevant expenditure in a government's budget system. This innovation is a specific manifestation of the Ministry of Finance's support for climate change mitigation and adaptation and low-carbon development by prioritizing the values of sustainable finance.

CBT can be applied to specific budgets used to finance outputs for climate change mitigation and adaptation strategies in which outcomes will be evaluated afterwards. The government has pushed the implementation of CBT at regional level by taking pilot projects in 11 regions across the country since 2017 until 2020. Each of these regions carries out CBT by making the budget funding in the budget system. After that, each region is required to record the performance

of GHG emission reductions and find out the contribution of their budget spending to achieving NDC targets.

Based on CBT at regional level, total allocation of climate budget by the local governments is an average of IDR3.01 billion per year which is used for the two main allocations. First, the funds for climate change mitigation programs are allocated around IDR1.19 billion per year and for climate change adaptation programs are allocated IDR1.82 billion per year. Broadly speaking, an average, around 61% of total funding is allocated for adaptation actions and the remaining 39% for the mitigation actions of the climate change issues.

Aceh province becomes the region that allocated the highest CBT in average from 2017–2020, which is recorded at around 40% of the total CBT from 11 pilot project areas. The CBT was mostly allocated in efforts to adapt to climate change. Aceh province is one region that can play a central role in environmental issues and climate change given the high conservation area and protected forest in this region. Based on Statistics Indonesia (BPS) data, the area of protected forest in Aceh is the fourth largest in Indonesia with an area of 1.8 million hectares in 2018. Despite having a protected forest area that is still lower than other provinces such as Papua, East Kalimantan, North Kalimantan, and West Kalimantan, Aceh province is the region with the lowest distribution of critical land compared to the other provinces. Therefore, the implementation of CBT in Aceh is expected to fulfil the government's expectation to reduce GHG emissions more quickly because its relatively wide protected forest can absorb larger amounts of carbon.

Based on the allocation of the CBT by sector, CBT for climate change mitigation programs is mostly allocated to the forestry sector at an average of IDR398 million per year or 34% of the total mitigation budget. The figure is in line with the government's determination to absorb more carbon from the protected forest to reduce GHG emissions. Meanwhile, for climate change adaptation programs, the largest budget is used for water security at an average of IDR789 million per year, food security of IDR629 million per year, and coastal and marine security of IDR389 million per year. The government is expected to maintain the CBT implementation to expand the allocation of funds for environmental issues and climate change. The government has also made efforts to increase the scope of CBT with the target of CBT implementation in several other regions such as DKI Jakarta Province, East Java Province, and DI Yogyakarta Province, as well as Surabaya City, Cirebon City, and Gunung Kidul Regency in 2021.

3.2 The Effectiveness of Local Government Budget to Tackle Climate and Environmental Issues

To evaluate the efforts that have been made by the government to deal with environmental and climate change issues, an analysis of environmental quality indicators needs to be conducted. An indicator that might directly reflect GoI's progress in tackling climate change is Greenhouse Gas Emissions (GHG emissions). In 2030, GoI has set the target to lower the GHG emissions by 29 percent from the business-as-usual (BAU) as stipulated on Indonesia's NDC. However, carbon emissions were likely to increase throughout 2000–2019 despite the volatility from year to

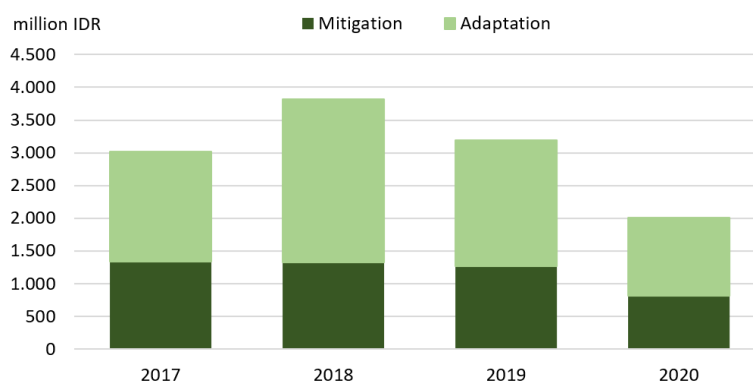


Figure 4. Climate Budget Tagging in 11 Regions 2017–2020

Source: Fiscal Policy Agency (2021)

Table 1. Allocation of Climate Budget Tagging in 11 Regions 2017–2020 in IDR Thousands

Province/Regency	2017		2018		2019		2020	
	Mitigation	Adaptation	Mitigation	Adaptation	Mitigation	Adaptation	Mitigation	Adaptation
Gorontalo Regency	20,944	57,549	20,371	59,347	18,336	43,983	18,800	39,004
Siak Regency	12,167	123	21,448	52,872	28,624	60,270	27,714	63,120
Sumedang Regency	5,415	166,011	4,594	74,845	8,349	63,866	-	10,030
Pekanbaru City	121,133	25,687	208,992	68,148	192,853	38,789	153,852	47,428
Aceh Province	140,497	695,046	216,863	1,499,449	152,912	906,579	240,814	556,544
Gorontalo Province	15,097	75,438	37,893	77,407	31,941	90,199	25,287	85,558
West Java Province	690,402	-	434,613	-	355,028	-	-	-
North Kalimantan Province	-	-	148,599	125,135	256,550	91,177	89,920	69,323
Papua Province	200,930	163,911	78,722	187,128	89,665	256,646	95,022	82,690
West Papua Province	47,567	229,601	53,231	194,904	67,807	181,492	57,906	204,179
Riau Province	83,868	269,924	101,711	150,786	67,316	196,435	104,274	37,772
Total	1,338,020	1,683,290	1,327,037	2,490,021	1,269,381	1,929,436	813,589	1,195,648

Source: Fiscal Policy Agency (2021)

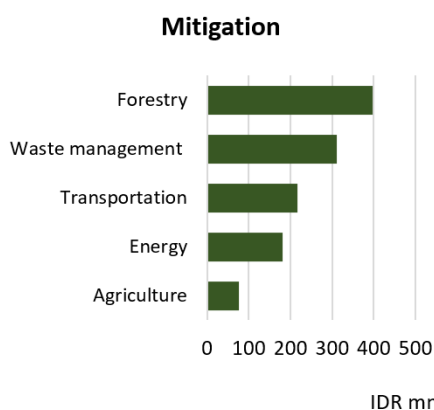


Figure 5. Average Allocation of Climate Budget Tagging for Mitigation by Sectors in 11 Regions during 2017–2020

Source: Fiscal Policy Agency (2021)

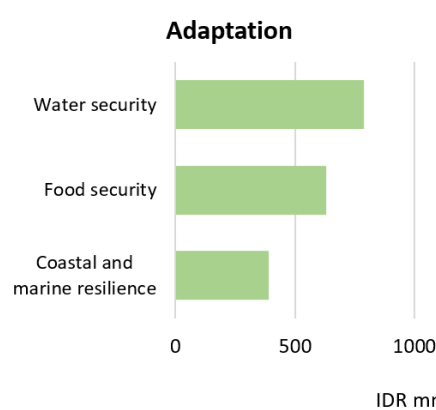


Figure 6. Average Allocation of Climate Budget Tagging for Adaptation by Sectors in 11 Regions during 2017–2020

Source: Fiscal Policy Agency (2021)

year. According to data from the Ministry of Environment and Forestry, Indonesia's carbon emissions rose, on average, by 78 gigatonne of carbon equivalent (Gg CO₂e) per year.

The higher GHG emissions realization was mainly due to an increase in the forestry sector and peat fires sector. GHG emissions contributed from the forestry sector and peat fires accounted for half of the total national GHG emissions in 2019. Emissions in this sector has jumped by three times compared to the previous year due to El Nino weather, the massive practice of land preparation by burning, and high amount of abandoned land. In addition, the second largest contributor to GHG emissions is the energy sector which accounts for 34 percent of total emissions in 2019.

Carbon emissions produced by the energy sector have not shown a declining trend since 2014. Other contributing factors to GHG emissions include waste (7%), agriculture (6%), and IPPU (3%). Based on the historical trend of GHG emissions, the GoI still needs to make higher efforts to take actions for tackling the climate change issues. Nevertheless, achieving GHG emissions reductions agenda in 2030 will highly depend on the commitment of the government and stakeholders to implement the strategies in the near future.

Further, another indicator that can be used as an assessment aspect in measuring the effectiveness of the allocation of funds related to environment and climate change is the environmental quality index (*Indeks Kualitas Lingkungan*

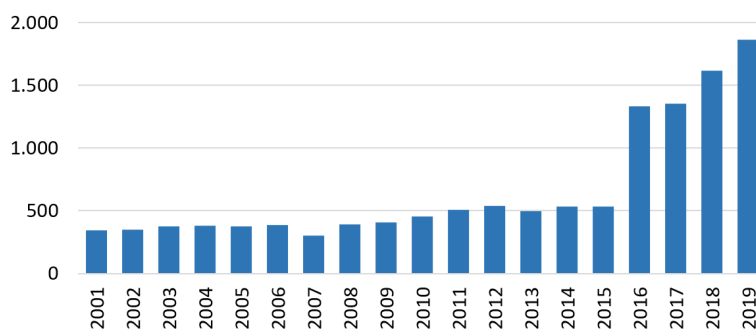


Figure 7. Greenhouse Gas Emissions (Gg CO₂e) 2011–2017

Source: *Laporan Inventarisasi Gas Rumah Kaca (GRK) dan Monitoring, Pelaporan, Verifikasi (MPV) 2020 Report*, Ministry of Environment and Forestry

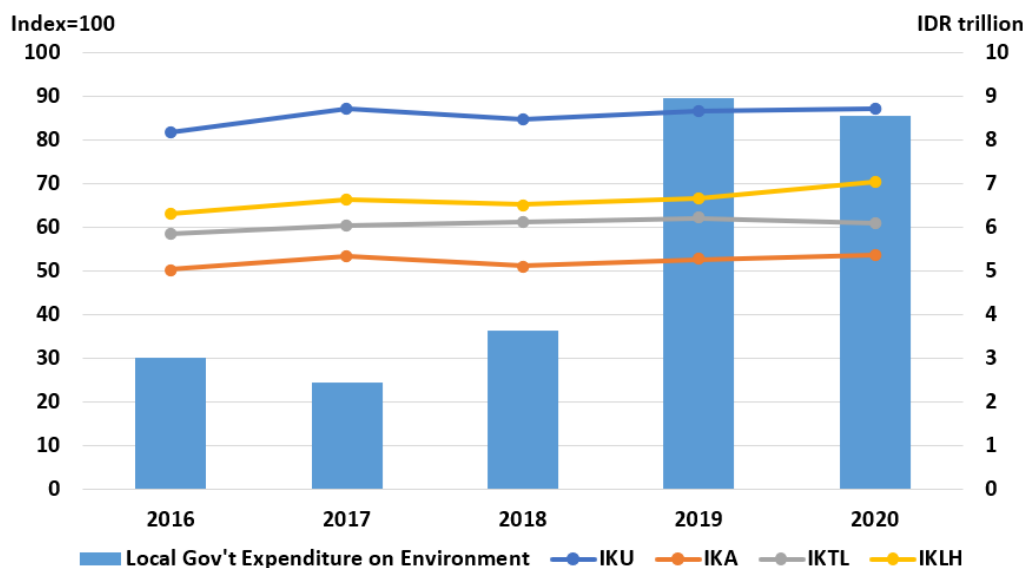


Figure 8. Environmental Quality Index (IKLH) by Category and Local Government Expenditure on Environment 2016–2020

Source: *Indikator Kualitas Lingkungan Hidup 2020 Report*, Ministry of Environment and Forestry, Ministry of Finance

Hidup or IKLH). Up to 2019, the calculation of the IKLH itself has considered various aspects starting from the quality of water, air, and land cover or known as Water Quality Index (*Indeks Kualitas Air* or IKA), Air Quality Index (*Indeks Kualitas Udara* or IKU), and Land Cover Quality Index (*Indeks Kualitas Tutupan Lahan* or IKTL).

Based on data released by the Ministry of Environment, the value of the IKLH continues to increase in the last five years from 64.8 in 2016 up to 70.3 in 2020. The IKLH achievement has exceeded the target set by the government at only around 68.7 in 2020. This improvement was mainly due to an increase in water and air quality when the quality of land cover contracted slightly. Massive implementation of social mobility restrictions and a number of industries that shut down their operational activities during the pandemic have been contributed to an improvement on water and air quality. The increase is also attributable with the higher spending allocations devoted by the local governments on environment. Based on the data from Ministry of Finance, the total expenditure allocated on environmental sectors from all the provinces in Indonesia has expanded from IDR3 trillion in 2016 to around IDR8 trillion in 2020. However, the significant increase in overall figure of IKLH in 2020 was also due to changes in the calculation method carried

out by the government. Based on the press release statement by the Ministry of Environment and Forestry, they added two new indicators in the IKLH calculation, namely peat land quality (*Indeks Kualitas Ekosistem Gambut* or IKEG) and seawater quality (*Indeks Kualitas Air Laut* or IKAL).

Overall, the IKLH score in 2020 increased the national environmental quality predicate from “quite good”¹ in the previous year to “good”. Meanwhile, to analyse the conditions in each province, the data provided by the government is available in the 2019 figure which shows that the environmental quality in each province is dominated by “good” and “quite good” conditions. 25 provinces fall into both categories, including Aceh, Gorontalo, West Kalimantan, Central Java, East Java, and others. Meanwhile, there are four leading provinces with “very good” IKLH predicates. Provinces that obtained a “good” indicator of environmental quality conditions above the national average are West Papua, Papua, East Kalimantan, and Central Sulawesi. Two of these provinces are the selected pilot project areas of the

¹The predicate for the IKLH indicator is categorized as “very good” with an IKLH score higher than 80; “good” with an IKLH score in the range of 70–80; “good enough” with an IKLH score in the range of 60–70; “poor” with an IKLH score in the range of 50–60; “very poor” with an IKLH score in the range of 40–50; “alert” with an IKLH score in the range of 30–40.

CBT implementation from 2017 to 2020, namely the West Papua and Papua. This may indicate that the government's efforts to improve the quality of the environment through CBT have shown the outcomes.

However, the environmental quality of the West Java Province which also becomes a CBT pilot project was still very worrying in 2019 with the IKLH being in the "poor" category. Improvements in environmental conditions are indivisible with the existing conditions of the quality of the environmental ecosystems in an area. Areas that are densely populated and industrialized, such as some areas on the Java Island, have relatively low IKLH indicators. More dangerous than West Java, DKI Jakarta and DI Yogyakarta are two provinces that categorized "very bad" in 2019. The existing low quality of the environment in DKI Jakarta has driven the very high spending for the environmental issues in this province compared to other provinces. Even though the environmental spending in DKI Jakarta was the highest among the other provinces in 2019, other strategies to improve the quality of the environment and mitigate climate change need to be carried out immediately for DKI Jakarta and DI Yogyakarta. The local governments can begin to implement sustainable finance and broaden sources of funding specified for the environment and climate-relevant issues, such as the implementation of CBT.

4. Study Case of Climate and Environmental Financing Initiatives

This section discusses relevant experiences in four regions with climate and environmental financing to achieve environmental targets through the role of local budget and from other stakeholders.

4.1 "Green Sigi (Sigi Hijau)" Program in Sigi Regency



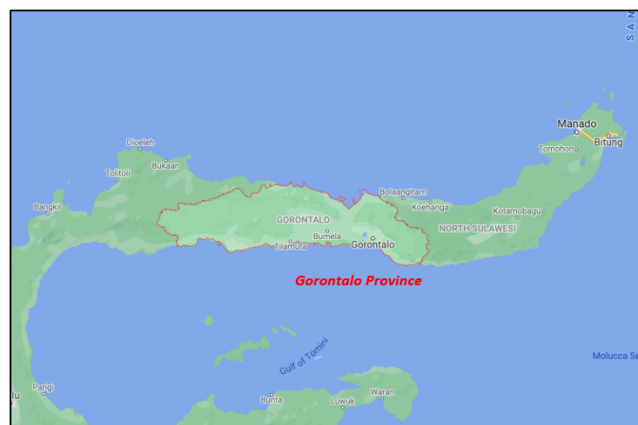
Sigi regency is an expansion area of Donggala Regency in 2008 which has an area of 5,196.02 km² or 8.40% of the total Central Sulawesi area, consisting of 15 sub-districts and 176 villages. Sigi regency is one of the regencies in Central Sulawesi whose forest accounted for more than 70% of the total area consisting of production, protected, and national park forest. However, this condition leaves the government challenges to maintain it. Based on Sigi Information on Environmental Management Document 2018, the forest cover

is declining due to land conversion into farming activities. This problem coupled with the climate change leads Sigi to experience more often disasters especially landslides and floods. On the other side, the unmanaged waste problem also contributes to the flood that frequently occurs in Sigi. The waste problem is not only caused disaster but also reduce water quality that threatens Sigi to experience clean water shortage.

Realizing Sigi's environmental and climate problem, the government initiated a program called *Sigi Hijau* (Green Sigi). *Sigi Hijau* is a guideline program for the local government with the focus is on environmental risks and climate change that should be tackled by the government outside the regional medium-term development plan (RPJMD) document. Among 9 priorities in the implementation area, the government of Sigi focused on climate change mitigation action in agriculture and farming activities, forestry, and waste management. In agriculture and farming activities, the government focused on developing low emission variety, organic fertilizer, and biogas for the household. In the forestry sector, the government focused on reforestation to maintain the forest cover in Sigi. In the waste sector, the government focused on improving waste management infrastructures with sanitary landfills and implementing the 3R concept (Reduce, Reuse, Recycle) to reduce waste and GHG emissions.

Sigi Hijau is a good illustration of how the local government prioritizing environmental and climate problems as one of its main programs. *Sigi Hijau* program also encourages the government to create action plans that focused on climate change mitigation and adaptation. Even though *Sigi Hijau* program is prioritized, the budget allocated for this program is relatively low compared to the other programs. The allocation for *Sigi Hijau* program is only 1% of their village funds (*Dana Desa*) or IDR148 billion. There is a financing gap to finance this program, hence the local government still relies on the private sector financing. Another problem of *Sigi Hijau* is the program only specify the activity that will be taken by the local government without given a clear target. Thus, the program seems difficult to be monitored and evaluated and the impact will be hard to be measured.

4.2 Climate Budget Tagging (CBT) in Gorontalo Province



Gorontalo is one of the provinces selected as the pilot area for the Climate Budget Tagging (CBT) program because it represents the types of landscape and seascape areas. Moreover, the APBD is included in the low category, while the climate change risk category is moderate to high. These indicators become important as the basis for choosing the location for implementing policies towards low-carbon development.

The development in Gorontalo is carried out towards the 2017–2022 vision. The focus of the development period was (a) the development of agriculture and marine fisheries for food security, (b) water and electrical energy security, and (c) forest conservation and environmental quality improvement and disaster mitigation. Efforts to achieve these goals are then translated into several missions. The missions that support the achievement of climate change management targets include:

1. Realizing the management of tourism and natural resources that are environmentally sound and sustainable;
2. Ensuring the availability of regional infrastructure; and
3. Improving the quality of human resources.

In each of these missions, there are local bureaucracies (*Organisasi Perangkat Daerah* or OPD) that are responsible and play an important role in the effort to achieve it. From the role of respective OPD, identification is then carried out using the Performance-Based Budgeting approach by making the outcome of climate change management as a development target. In total, there are 8 OPDs in Gorontalo who are encouraged to participate in supporting efforts to reduce GHG emissions through the CBT program.

The identification of climate budget tagging is carried out based on the integration of several data sources, namely: (a) RPJMD document of the Provincial Government of Gorontalo, (b) current year budget allocation from the Directorate General of Fiscal Balance (DJPK), Ministry of Finance, and (c) the results of the climate budget tagging carried out by the relevant OPDs. In the budget tagging process, every program that supports the climate change targets of each OPDs has been reviewed. From the results of the budget tagging, it can be seen that the number of activities for climate change mitigation and adaptation continued to increase from 2017 to 2020, which were carried out by 11 OPDs. The details of climate change financing in Gorontalo can be seen in the following table:

Funding for infrastructure in handling climate change adaptation has the largest proportion where this cannot be separated from the obligation to provide basic needs which are also mandated by the budget allocation regulations. The largest budget allocation is allocated for water security which is in line with reducing hydrometeorological disasters and providing clean water needs in achieving the targets of the Sustainable Development Goals (SDGs). To ensure that these activities support climate change adaptation, additional information such as climate information and measurable outcomes or outputs is required. The implementation of budget tagging in Gorontalo began with socialization, capacity building through training on budget tagging, and data collection, followed by validation and evaluation of the tagging results, which received quite serious attention from the provincial government of Gorontalo. The availability of APBD data and coordination between

related parties are important factors to provide an overview of funding for climate change management.

4.3 Ecological Fiscal Transfer (EFT) in North Kalimantan Province



North Kalimantan is an expansion province of East Kalimantan in 2012 which has a forest area of 6.4 million hectares or 90% of the total area of North Kalimantan. With an area of $\pm 75,467.70 \text{ km}^2$, consisting of four regencies and one city, North Kalimantan suffers high environmental and disaster risks, especially related to flood and forest and land fires. The Provincial Government of North Kalimantan itself has identified major climate and environmental problems, namely the land conversions, the non-optimal management of environmentally friendly waste, also water and air pollution. One of the main challenges faced by the government in efforts to overcome climate and environmental problems in North Kalimantan is limited funding which then has an impact on the less than optimal climate change mitigation and adaptation programs. Based on the local government programs in 2020, the average budget realization for program implementation is only about 70% of the total allocated funds (North Kalimantan's RPJMD and APBD, 2020).

Therefore, the North Kalimantan provincial government made several efforts in terms of mitigation and adaptation to climate and environmental issues, including:

1. Implement Ecological Fiscal Transfers (EFT) in the form of Ecological-based Provincial Fiscal Transfer (TAPE) for the provincial level, and Ecological-based Regency Fiscal Transfer (TAKE) for the regency level, which are listed in RAN-GRK² and RAD-GRK³;
2. Distribute DAK⁴ and DID⁵ for the prevention of carbon stock reduction (PPCK) program;
3. Implement a sharing cost for climate change mitigation and adaptation programs with international agencies;
4. Partnership with GIZ and GGGI to be able to access REDD+⁶ funds;

²National Action Plan for Green House Gas Emission Reduction.

³Local Action Plan for Green House Gas Emission Reduction.

⁴Special Allocation Funds.

⁵Regional Incentive Funds.

⁶Reducing Emissions from Deforestation and Forest Degradation program.

Table 2. Recapitulation of Climate Change Financing in Gorontalo Province

Year	Budget Cap in RPJMD (IDR)	Budget Allocation	Number of Activities	Budget Tagging (IDR)	Number of Activities
2017	94,228,000,000	105,744,101,750	88	42,856,230,900	16
2018	263,541,408,887	248,383,830,068	172	54,341,820,454	27
2019	297,987,820,444	248,629,467,047	154	48,151,114,641	34
2020	338,015,901,454	230,284,420,426	170	36,009,301,739	37

Source: Fiscal Policy Agency (2021)

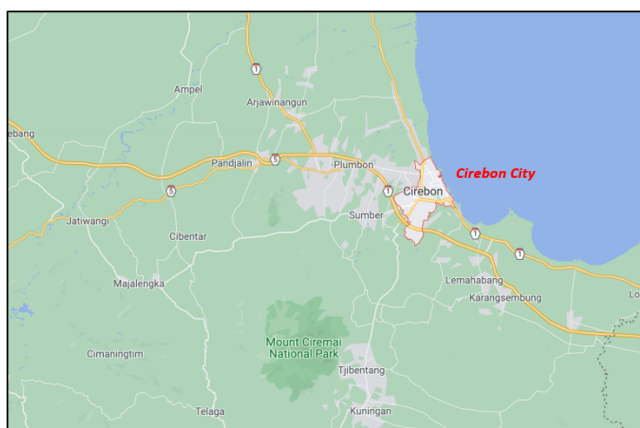
5. Develop RAD-GRK document as a reference in development planning;
6. Make a commitment to support climate change mitigation and adaptation actions in the regional vision and mission as outlined in the 2021–2026 RPJMD.

North Kalimantan is one of the pilot provinces implementing EFT through the TAPE and TAKE schemes. TAPE was developed as a form of financial assistance with a special designation (Special Financial Assistance, BKK) from the provincial government to the regency government and TAKE is financial assistance from the regency government to the village government with a specific purpose, providing ecological-based performance incentives. This is a special budget allocation policy in the APBD for mitigating risks related to climate, environmental issues, and disasters that was initiated in 2018 by the Provincial Government of North Kalimantan in collaboration with The Asia Foundation and Prakarsa Borneo which was followed by the issuance of Governor Regulation No. 6 of 2019 regarding the amendments of the Regulation of the Governor of North Kalimantan No. 49 of 2018 about the procedures for the provision, distribution, and accountability of special financial assistance for the Provincial Government of North Kalimantan. The new regulation regulates the use of ecological-based financial assistance, which is directed to 5 main activities, namely: prevention of forest fires in other use areas (*Area Penggunaan Lahan* or APL), protection and management of Green Open Space (*Ruang Terbuka Hijau* or RTH), waste management, protection of water sources, and prevention of air pollution. These schemes are expected to help regencies and/or cities to increase their contribution to climate change targets.

Cirebon area is a lowland with a small part of the city is a highland especially in the south part of the city. This condition leads to several disasters faced by Cirebon which are flood and rob flood. The flood occurs frequently especially in the rainy season because of the typological condition of the city and poor drainage system. The waste problem in Cirebon has been a main driver of severe floods. Currently, the landfill cannot support the waste generated in Cirebon leading to many wastes are unmanaged and caused puddles in several areas. On the other side, the rob flood that happens in Cirebon is mainly driven by a rise of sea level due to climate change. The rob flood causes several disruptions in the coast such as house damage, and damaged mangrove and animal habitat. The disruptions made by both disasters remain increasing every year.

Realizing their problem, the government of Cirebon has prioritized climate mitigation and adaptation actions in their RPJMD. However, the climate action is only mentioned in the RPJMD without any supporting documents and actions such as the RAD-GRK document, climate budget tagging, or TAPE/TAKE schemes. This condition happens because the budget allocated for climate change programs is limited. According to APBD of Cirebon, the allocation for climate change programs in 2019 is only 7% of their total budget or around IDR135 billion. The budget decreased significantly to IDR43 billion in 2020 due to the Covid-19 crisis. Yet, the climate action in Cirebon is also limited where it only focuses on the waste management problem.

4.4 Corporate Social Responsibility (CSR) Program in Cirebon



Cirebon is one of the cities located in West Java Province in the north coast of Java Island. Typologically, most of

The budget shortage problem leads the government of Cirebon to rely on the private sector to finance its climate action programs. Since 2012, the government of Cirebon established Environmental Social Responsibility Facilitation Team for ensuring private sector participation in climate action programs in Cirebon. Most of the private sector contributions in Cirebon are in the form of Corporate Social Responsibility (CSR). At least there are three programs that have sustainable funding, financed by private sectors in Cirebon which are (1) the “Clean and Gold” program which is an exchange of gold with waste, and this is a collaboration with PT. Pegadaian to strengthen the waste bank, (2) support of garbage dump mobile from Bank BJB and PT. Cinta Damai, and (3) development of Climate Resilience and Inclusive City (CRIC) program supported by The United Cities and Local Governments Asia Pacific (UCLG ASPAC). However, the current private sector involvement in Cirebon is not sustainable due to the nature of CSR program. Thus, another form to attract private resource mobilization is highly needed.

5. Strategies to Address Climate Change and Environmental-Risks Financing at Regional Level

Besides low awareness of climate change and environmental risk impacts and governance in climate actions at regional level, the main challenges for climate change mitigation and adaptation programs in regions are limited budget and the absence of long-term funding sources from formal financial institutions. Commonly, banks are often less interested in financing green projects or climate change action programs. Some of the reasons are because banking sectors are reluctant to finance new and high-risk projects and most of them do not have loan guarantees and have low rates of return. The other reason is due to the small value of the projects, or the project is considered as less viable in economic aspect.

Limited funding for environmental and climate change issues can hinder the implementation of sustainable economic and financial development programs. Meanwhile, the impacts of environmental degradation and climate change are increasingly visible and inevitable. To deal with environmental issues and climate change, responsive and preemptive fiscal policies are critically needed. The central government and local governments need to immediately prepare strategies to increase the funding allocated to deal with these issues. Strategies can be developed by increasing sources of funding from local government budget specifically on the budget allocation for environmental issues and increasing funding capacity through alternative sources of funds from other stakeholders. Below we propose several strategies for the local government to amplify climate and environmental financing in more detailed explanations.

5.1 Source of Funding from Local Government Budget

5.1.1 Optimizing and Improving the Quality of Spending from Intergovernmental Fiscal Transfer

Ecological fiscal transfer (EFT) policy in Indonesia has a significant role to play in assisting local governments to increase capacity and initiatives in implementing environmental programs and achieving its targets. Central government implements EFT policy to the local government through Special Allocation Funds for Environment and Forestry (DAK-LH), Revenue Sharing Funds for Reforestation Funds (DBH DR), Regional Incentive Funds (DID), and village funds. In 2020, DAK-LH is directed to reduce the pollution of waste, and both water and air waste pollution and to ensure the availability of continuous monitoring of water and air quality data parameters. While the forestry DAK is directed at reducing critical lands including mangroves and improving the quality of KPH management and forest parks (*Taman Hutan Raya* or Tahura). Even though the allocation of this funds is still relatively small, with average budget allocation for DAK for environment and forestry is around 0,3–0,4% from total DAK per year, thus the local governments should optimize their budget absorption and improve the quality of spending from DAK-LH.

DBH DR becomes a source of financing for the local governments for forest conservation. It is allocated from the state budget for timber-producing regions from natural forests for the purpose of reforestation and rehabilitation.

The allocation of DBH DR is 40% of the total receipt of reforestation funds, while the other 60% is provided by central government. The latest regulation PMK No. 230/PMK 07/2017 has given flexibility to local governments to utilizing DBH DR not only for forest conservation and land rehabilitation activities, but also can be used for forest management, forest fire prevention, and watershed protection through reforestation.

Although not all regions can utilize DID due to its eligibility criteria, and DID budget is relatively limited, local governments can take advantage from DID especially in terms of environmental conservation. Since 2019, the issue of waste management has been included as one criterion in the allocation of DID and has been distributed to 10 provincial and regencies/cities governments in 2019 and 14 provincial and regencies/cities governments in 2020. The last is village funds, that can be used for ecological preservation and environmental protection at the village level. One of the priorities for village funds in 2020 (Village Minister Regulation or *Permendesa* No. 11 of 2019) is for disaster preparation and management as well as environmental preservation where mitigation activities are from REDD+ (reducing emissions from deforestation and forest degradation), adaptation, and the climate village program (ProKlim).

5.1.2 Adopting Climate Budget Tagging (CBT)

The establishment of a far-reaching national plan on climate mitigation has pushed the local governments to set ambitious targets that supposedly guide both provincial and district governments to carry out low carbon development plans (Mutiarra et al., 2021). However, relying only on the local government budget is insufficient to reinforce Indonesia's NDC target of 29% emission by 2030. Given the authority and responsibility to reach climate targets, the local government are encouraged to utilize CBT as a public expenditure assessment tool. CBT offers a framework to understand how planning and budgeting are correlated to monitoring and tracking of climate-related expenditures in the budgetary system (Ellis & Moarif, 2017; Kissinger et al., 2019; Resch et al., 2017; UNDP, 2015). Climate tagging also can increase awareness of climate change issues in local governments, can help communicate a government's commitment to climate change action through identification of climate-relevant programs, and helps mobilize funding from external sources.

To date, there have been 34 provinces in Indonesia that already had RAD-GRK (Subnational Mitigation Plan) and there have been 11 local governments that had implemented CBT from 2017 to 2020 with the average climate change budget reached IDR3,01 billion per year. Around 61% of climate budgets at the regional level are allocated for adaptation programs, while 39% are for mitigation programs. In 2021, there are 6 pilot regions that will be implementing CBT. As CBT is an important tool to support climate budget preparation and climate-relevant expenditure reviews, therefore the local government should better adopt CBT to achieve their climate targets.

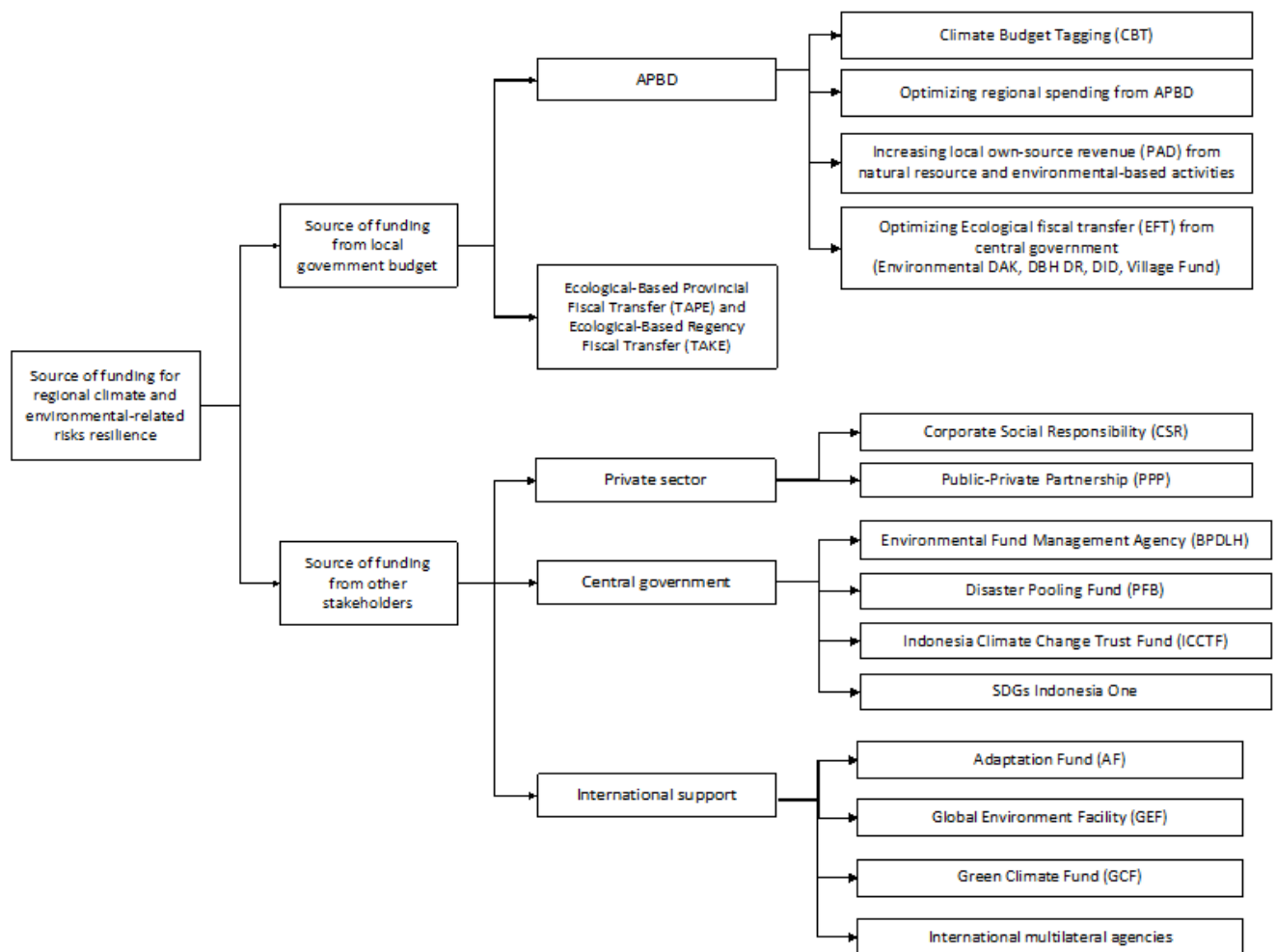


Figure 9. Source of Funding towards Climate and Environmental-Risk Resilient at the Regional Level

Source: Author

5.1.3 Increasing Local Own-Source Revenue (PAD) from Natural Resource and Environmental Based Activities

The major source of local budget revenue comes from intergovernmental fiscal transfer by approximately 60% on average in the last five years. While the rest 40% comes from local own-source revenue (PAD). Since transfers from central government have specific target and objectives which seems hard to allocate for particular spending, therefore local governments should increase its local-own source revenue to have higher fiscal capacity and funding for climate and environmental-risks resilient programs. In general, local taxing power in Indonesia is considered weak due to the absence of major taxes at local level (Poesoro, 2015). Based on the existing local tax law⁷, central government is still collecting and managing major sources of revenues from taxes while local government only receive certain parts of tax revenue, and they do not have the authority in setting tax rate and tax base. To increase local taxing power, the central government should amend the existing tax law and give the authority to the local government to collect revenues from tax bases that are related to natural resource and environmental-based activity. Several examples are forestry, plantation, and mining property tax (PBB P3) in which is

now still being collected by the central government and carbon tax. Optimizing other source of local revenues from surface water tax and waste retribution are also essential. According to Qibthiyyah (2017), local governments with abundance of natural resources, would be benefited from high stream of revenues and have higher resiliency on climate change and environmental issues if they can maximize their income.

5.1.4 Implementing Innovative Ecological Fiscal Transfer (EFT) Financing Schemes Such as Ecological-based Provincial Fiscal Transfer (TAPE) and Ecological-Based Regency Fiscal Transfer (TAKE)

Ecological Fiscal Transfer (EFT) policy in Indonesia has continued to develop in recent years. Ecological-based Provincial Fiscal Transfer (TAPE) and Ecological-Based Regency Fiscal Transfer (TAKE) are incentives schemes from EFT in the form of fiscal transfers from the provincial to regency or city governments, and from regency to village governments based on environmental performance. Until now, these initiatives have been adopted in six regions and are being discussed to be implemented in 39 other regions, covering 13 provinces and 26 regencies/cities.

There are two scenarios offered in this fiscal transfer scheme, the basic allocation and incentives-disincentives

⁷Law No. 28 of 2009 about Local taxes and levies.

Table 3. Summary of Financing Schemes

Relatively Easy to Implement	Rather Difficult to Utilize	Main Challenge(s)
Optimizing regional spending from APBD	Increasing local-own source revenue (PAD) from natural resources and environmental-based activities	- Require a binding regulation - Need more transparent and better tax administration systems
Optimizing the quality of spending from intergovernmental fiscal transfer	Corporate Social Responsibility (CSR)	- Lack of ethical or moral commitment of private sectors - Difficult to secure funding for CSR
Climate Budget Tagging (CBT)	Public Private Partnership (PPP)	- Need government responsibility (the implementing agency should be able to understand the PPP arrangements, to carry out its own obligations under the PPP agreement, and to monitor performance of the private sector and enforce its obligations) - Require a clear legal and regulatory framework - Given green projects may be politically and economically challenging to introduce and implement, therefore the governments need to give incentives such as tariff increase to make the project economically viable to attract the private participation - Given the long-term nature of these projects and the complexity associated, it is difficult to identify all possible contingencies during project development and events and issues may arise that were not anticipated
Ecological Fiscal Transfer (EFT) financing schemes such as Ecological-based Provincial Fiscal Transfer (TAPE) and Ecological-Based Regency Fiscal Transfer (TAKE)	Adaptation Fund (AF)	- Lack of sufficient human resources skilled in the areas of climate change and project development
Loan financing from BPD LH	Global Environmental Facility (GEF)	- Lack of basic information to support the request for funds
SDGs Indonesia One (SDGs IO)	Green Climate Fund (GCF)	- Complex processes in international organisations for government institutions
Indonesia Climate Change Trust Fund (ICCTF)	International multilateral agencies	- The need for national and/or provincial guarantees to obtain international funding - The characteristics or size of some cities and/or regencies, which alone cannot access such resources
	Disaster Pooling Fund (PFB)	Since local governments are expected to voluntarily participate in increasing PFB funds, starting with regions with a high disaster risk index and large fiscal capacity, hence for the regions that have lower fiscal capacity they may face difficulties to participate and take an advantage from this funding.

Source: Author

scenario or known as performance-based budgeting. For instance, regencies or cities will get a basic allocation in addition to incentives if the region succeeds in protecting their forest, and disincentive if their forest area decreased. However, in practice, the application of TAPE and TAKE schemes have been adapted to the contexts and needs of each region. As the first province that implements TAPE/TAKE in Indonesia, the provincial government of North Kalimantan stipulated Provincial Government Regulation No. 6 of 2019 to enact the initiative and to ensure the commitment of regents and mayors to implement this fiscal instrument. The indicators applied in TAPE in North Kalimantan Province are generally directed at maintaining green open spaces, reducing deforestation, protecting water sources, prevention air pollution, and waste management.

5.2 Source of Funding from Other Stakeholders

5.2.1 Optimizing the Role of Soes or Private Sectors Through Corporate Social Responsibility (CSR) and Public-Private Partnership (PPP)

Private sectors or State-Owned Enterprises (SOEs) play an important role in implementing climate actions. They have significant potential as sources of climate finance for three main reasons. First, private sectors voluntarily carry out corporate social responsibility activities and profit-making SOEs are subject to regulations. By law, all profitable SOEs operating in Indonesia are required to allocate up to 4% of their net profits to Community Development & Partnership Programs (*Program Kemitraan Bina Lingkungan* or PKBL)⁸. Second, private sectors or SOEs currently invest in climate-specific activities. In this situation, local government can take advantage of Public-Private Partnership (PPP) scheme, thus it can maintain regional fiscal sustainability

⁸State Owned Enterprise Minister Regulation No. PER-09/MBU/07/2015.

and have risk-burden sharing associated with the project. Last, state-owned banks and other financial institutions are also actively providing sustainable financing and programs to support green investment. Increased awareness on the importance of responsible development and global opportunities for green investment have pushed the implementation of sustainable finance. In this regard, Financial Services Authority (*Otoritas Jasa Keuangan* [OJK]) released the Sustainable Finance Roadmap Phase I (2015–2019) which aimed to increase the understanding and capacity of financial services sectors to move towards a low-carbon economy. In 2021, OJK has been published the Sustainable Finance Roadmap Phase II (2021 - 2025), which has become an integral part of the blueprint for future development of Indonesia's financial services sector (OJK, 2021). In the Sustainable Finance Roadmap Phase II, there are five main priorities which include: (i) development of a green taxonomy, which aims to classify sustainable financing and investment activities in Indonesia, (ii) implementation of Environmental, Social, and Governance (ESG) aspects into risk management with the aim of increasing resilience and mitigating environmental and social risks that may affect financial industry's business processes, (iii) real program development that is intended to present success stories of innovative green scheme development to be replicated so as to enhance the role of the financial industry in sustainable financing, (iv) the innovation of sustainable financial products and services to accelerate financial industry's transition towards sustainability by developing innovative schemes of sustainable project financing, and (v) a national campaign for sustainable finance that aims to build an understanding of the importance of activities that take into account ESG aspects.

Our analysis found that private sectors, SOEs, and financial sectors have been involved actively to support climate mitigation and adaptation in their surrounding areas. In Sigi Regency, the private sectors support the sustainable development program by carrying out an action plan with the local government through “Green Sigi” program. The private sector plants trees on critical lands and areas prone to landslides, river borders and water catchment areas, as well as waste management activities. Then, Bank Sulut-Go, Pertamina, and Telkomsel have participated in CSR programs for environmental management in Gorontalo Province every year. In Cirebon City, private sectors are involved in several government programs, including (1) the “Clean and Gold” program which is an exchange of gold with waste and is a collaboration with PT. Pegadaian to strengthen the waste bank, and (2) support of garbage dump mobile from Bank BJB and PT. Cinta Damai.

Besides issuing Sustainable Finance Roadmap Phase I and II, OJK also issued two regulations in 2017, the first one is regarding sustainable finance⁹, and another is about green bonds/Sukuk¹⁰ coupled with incentives in order to raise interest of the industry on sustainable finance. The regulation has been utilized through the issuance of numer-

ous green bonds amounting to USD3.72 billion. Despite the sustainable roadmap and regulations, on the other hand, the policymakers could leverage private sectors' interest by revising policies or providing incentives to help them to support climate-resilient programs through CSR more effectively or increase the level of climate-specific investment in the future. For instance, the central governments can provide “PROPER” assessment¹¹ criteria to private sectors that implement CSR programs that specifically focus on activities related to climate change adaptation and mitigation. In addition, learning from other incentives provided at a regional level, private participation is strongly encouraged in West Kalimantan by stipulating Regional Regulation No. 6 of 2018 concerning Sustainable Land-Based Business Management and other related policies by implementing Production, Protection, and Inclusion through Green Growth (timber production that applies SMF-SLVK or RSPO/ISPO certified oil palm plantation). The provincial government of West Kalimantan also provides awards to businesses that build High Conservation Value (HCV) or High Conservation Value Forest (HCVF).

5.2.2 Optimizing Multilateral Financing on Loan and/or Grant Basis

Local government can obtain funding from international resources such as from agencies/institutions under the UNFCCC convention and non-UNFCCC convention, or bilateral and regional cooperation in the form of grants and/or loans. Institutions under the UNFCCC convention that provide climate resilience funding, especially for developing countries, including the Adaptation Fund (AF), Global Environment Facility (GEF), and the Green Climate Fund (GCF). AF and GEF are the trust fund that supports developing countries that are particularly vulnerable to the adverse effects of climate change. The difference is AF was established to specifically finance concrete adaptation projects while GEF aims to help countries to tackle environmental problems and the funding mechanism is incremental from the basic financing of recipient countries. Last year, the government of Pekalongan City in Central Java province has request financing of USD5,97 million from AF to build resilience to climate change impacts in Pekalongan City by implementing hard and soft adaptation interventions in vulnerable coastal communities.

GCF will finance the projects that have the potential for a large positive impact on climate and sustainable development through a flexible combination of financial support such as grants, concessional debt, guarantees, or equity. The current portfolio of GCF financing in Indonesia is USD273.3 million ranging for 10–20 years¹². One example of the GCF programs is the Geothermal Risk Mitigation (GREM) funded by GoI, GCF, and the World Bank. Exploration of geothermal energy sources requires a large cost and has a high risk of failure. With the availability of GCF as a de-risking financing tool, then other financial institutions will be more open to be involved in lending the project since they will face smaller risks.

Meanwhile, access to funding for climate resilience

⁹Financial Services Authority Regulation Number 51/POJK.03/2017 concerning the Implementation of Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies.

¹⁰Financial Services Authority Regulation Number 60/POJK.04/2017 concerning Issuance and Requirements for Green Bonds.

¹¹PROPER is one of the assessment criteria and requirements for the company's export activities (at least Blue rating).

¹²Retrieved from GCF's website as of October 2021.

outside the UNFCCC (non-convention) mechanism can be done through international multilateral agencies such as development financing partners (Development Finance Institution/DFI: i.e., Asian Development Bank (ADB), JICA, the World Bank, European Investment Bank (EIB), USAID, and others) and other UN agencies (UNDP, UNEP). Currently, several regions in Indonesia had joined with a few multilateral climate change initiatives especially the World Bank's initiative called Climate Investment Fund (CIF) and UN-REDD initiatives (UNDP, UNEP, FAO).

5.2.3 Optimizing Source of Funding from Central Government Through the Environmental Fund Management Agency (*Badan Pengelola Lingkungan Hidup/BPDLH*), Disaster Pooling Fund (PFB), Indonesia Climate Change Trust Fund (ICCTF), and SDGs Indonesia One (SDGs IO)

To gain the opportunity of climate change and environmental-related risk financing, the local government can optimize loans and/or grants from the central government. To achieve national climate change objectives, GoI established National Climate Finance Institutions (NCFIs), also called National Climate Funds (NCFs) to spearhead governance of climate change. NCFIs are mechanisms that enable countries to better assemble and direct financial resources towards climate change mitigation and adaptation programs (Grüning et al., 2012). One instance of NCFIs in Indonesia is the Environmental Fund Management Agency (*Badan Pengelola Lingkungan Hidup* or BPDHLH). The purpose of BPDHLH is to channel funds through a variety of instruments to specific projects that preserve the environment and prevent environmental pollution and degradation. The establishment of this agency is a breakthrough since it becomes an alternative source of financing that opens opportunities for all stakeholders to be involved in supporting Indonesia to achieve environmental and climate commitments. Cirebon city from West Java becomes one region that has taken advantage of loan financing from BPDHLH.

Another example of NCFIs is Indonesia Climate Change Trust Fund (ICCTF). Created by Bappenas and Ministry of Finance in 2009, it acts as a catalyst to attract investment and to implement a range of alternative financing mechanisms for climate change mitigation and adaptation programs. The ICCTF receives non-refundable contributions from bilateral and multilateral donors, thus it was intended to align and pool international financial resources with national investment strategies and domestic budgetary funds in an innovative, transparent, and accountable manner. It also aims to mainstream climate change priorities into national and local development planning and policies, as well as implement GHG emissions mitigation measures and adaptation to climate change initiatives.

GoI also established a financing scheme namely Disaster Pooling Fund (PFB) that was newly launched in 2021 to enhance a financial response to natural disasters and climate risks, with the use of risk pooling and a plan of transferring some or all the risks to the private insurance or capital market. This facility initially has more than USD500 million and is expected to become the main buyer of disaster insurance cover for all government buildings and those belonging to ministries or agencies, while also working with

local governments to secure risk transfer or insurance for regional assets as well. Another financing scheme that can be utilized is SDGs Indonesia One (SDGs IO) managed by PT. SMI. This is a combination of government and private funds with a blended financing scheme to be channeled into infrastructure projects related to supporting SDGs achievement in Indonesia. SDGs IO can also be used for infrastructure development in disaster areas such as reconstruction and rehabilitation in Palu, Sigi, and Donggala, as well as the development of green projects such as Mini-Hydro Power Plant in Bengkulu.

6. Conclusion

Based on our analysis, we find that spending on the environmental aspect in the local government budget has a relatively small amount of proportion in the last six years with an average of 1,6% from total expenditure per year compared to other expenditures. The refocusing budget during the pandemic period caused the local governments to deduct inefficient spending and least priorities expenditures including spending on environmental aspects. We also find that most of the local governments in Indonesia have a low degree of autonomy since they rely heavily on intergovernmental fiscal transfer and have a rather limited local-own source revenue. Besides low awareness of climate change and environmental risk impacts at regional level, limited fiscal space and the absence of long-term funding sources from formal financial institutions have caused local governments to rarely achieve climate and environmental targets.

Learning from case studies, several regions have gained harness of potential from various climate and environmental financing initiatives to overcome environmental issues in their areas and reach climate and environmental goals. These experiences reveal the challenges in aligning the needs of climate financing and domestic fiscal policies with climate finance objectives. To amplify climate and environmental financing and achieve a good target in the quality of environment and climate commitment compliance, the local governments can optimize source of funding from local government budget and other stakeholders. This includes valuing regencies and/or cities with high ecological value with more fiscal support through TAPE and TAKE schemes to perform climate mitigation and adaptation program such as in North Kalimantan as the first implementing region, adopting CBT for planning and budgeting specific programs, optimizing intergovernmental transfer from central government, increasing local-own source revenue from natural resource and environmental based activities, optimizing the role of SOEs and private sectors through CSR and PPP, optimizing multilateral financing, and utilizing other financings from the central government such as through environmental fund management agency (BPDHLH), disaster pooling fund, ICCTF, and SDGs Indonesia One. This way, amplifying existing and potential climate and environmental financing at a regional level can strengthen the implementation of climate-resilient development in order to prevent any potential for greater economic losses as a result of climate change.

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