



BNPB

CARBON EMISSION MANAGEMENT OF THE GPDRR

Towards Sustainable
Resilience

20
23



This report presents the management of carbon emissions related to the organization of the Global Platform for Disaster Risk Reduction (GP2022). Implementation of the carbon offset and writing of reports are prepared collaboratively across line ministries or agencies as well as UNDRR using the BNPB budget.

DIRECTOR

Dr. Raditya Jati, S.Si, M.Si.
(Deputy for System and Strategy BNPB)

PERSON RESPONSIBLE

Dr. Ir. Agus Wibowo, M.Sc.
(Director of Disaster Management Strategy Development of BNPB)

DRAFTING TEAM

Tri Utami Handayaningsih, BNPB
Pratomo Cahyo Nugroho, BNPB
Novi Kumalasari, BNPB
Rifa Rafika Imania, BNPB
Hari Wibowo, KLHK
Fifi Novitri, KLHK
La Ode Wahid, BRIN
Yasrif, Kemenko PMK
Kurnia Utami, Kemenko PMK
Anggit Cisantra, Kemenko PMK
E. Riris Wusananingdyah, Kemlu
Emilia Wahlstrom, UNDRR
Laura Nijssen, UNDRR

EDITOR

Pratomo Cahyo Nugroho, BNPB
Tri Utami Handayaningsih, BNPB
Elina Palm, UNDRR
Suparlan, BNPB
Seki Mulatsih, BNPB
Diah Rahmawati, BNPB

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Executive Summary

Indonesia hosted the 7th Global Platform for Disaster Risk Reduction (GP2022) from 23 to 29 May 2022, organized by a collaboration between the Indonesian GPDRR national committee and the United Nations Office for Disaster Risk Reduction (UNDRR). As a United Nations activity that is held in Indonesia, there was a requirement to ensure that the GP2022 emissions are well-managed. Moreover, the substance of the GP2022 itself, as the main global event on global disaster risk reduction (DRR), is very closely related to environmental protection as well as climate change mitigation and adaptation. Thus, not only is it a requirement to consider the sustainability of events, but it is also inherently related to the topic of DRR. Therefore, the Government of Indonesia is proud to document carbon emissions management to establish the GP2022 as a sustainable event.

Carbon emission management was carried out by reducing carbon emissions during the planning stage and the GP2022 event, and by offsetting the residual emissions (Carbon Offset). Bali Province was chosen to host the GP2022 event due to its relevance to sustainability, which has already been established there. In addition, other technical aspects were considered, such as providing refillable water, digital information displays, two types of seminar kits that are practical and made from local and environmentally sustainable materials, recommending hotels that are committed to sustainability, and favouring public transportation for participants and

committee members. These considerations were put in place to support the goal of making the GPDRR as sustainable as possible.

The total carbon emissions produced were estimated based on international methodologies for carbon accounting. The total emissions were estimated at 6500 tons of CO₂ (rounded off from 6438.44 tons of CO₂). The calculation included major aspects, including accommodation (757,33 tons of CO₂), venue electricity and additional energy infrastructure (337,27 tons of CO₂), local transportation (10,36 tons of CO₂), and air transportation of staff and participants (5.333,49 tons of CO₂). The calculation and decision-making process for implementing the carbon emissions and resulting offset was done by a team consisting of the national committee, with assistance from the GHG Methodology Panel. UNDRR provided advice to the process.

Out of the total carbon emissions, the Government of Indonesia chose two mechanisms to implement the carbon offset of the emissions resulting from the organization of the GP2022. The first mechanism was the purchase of carbon credits in the form of Carbon Reduction Certificates/ *Sertifikat Pengurangan Karbon* (SPE) from providers registered in the National Registry System/*Sistem Registri Nasional* (SRN) for 1,000 tons of CO₂, while the other 5,500 tons of CO₂ were offset through climate change mitigation actions taken by the PMK Coordinating Ministry and

the Ministry of Environment and Forestry. The purchase of SPE is also a pilot implementation of Presidential Regulation 98 of 2021 and is expected to set an example for future Carbon Offset practices by Indonesian government authorities. The climate change mitigation actions referred to for the GPDRR Carbon Offset were tree and mangrove planting carried out by the Coordinating Ministry for PMK through the

Planting of Ten Million Trees program and by the Ministry of Environment.

This good practice of managing GPDRR carbon emissions sets an example for other large-scale activities to better prepare for managing carbon emissions by developing plans, understanding underlying regulations, and providing data to track carbon emissions.

Remarks from the Head of BNPB

The Global Platform for Disaster Risk Reduction (GP2022) is an international conference that focuses on addressing disaster risk reduction issues. Initiated by UNDRR, this meeting is held every three years (previously every two years). The conference is usually hosted at the UNDRR headquarters in Geneva, Switzerland, and was held for the first time in Mexico in 2017. After returning to Geneva in 2019, the GPDRR was conducted for the first time in the Asia Pacific Region, specifically on the island of Bali, Indonesia.

In 2022, Bali hosted not only the 7th GP2022 but also the Minamata Convention and the G20 summit. These events were held consecutively before and after the 7th GP2022, demonstrating Indonesia's readiness to host international-scale activities despite the ongoing Covid-19 pandemic. Preparations for these events began well in advance and were made highly adaptable to accommodate the global pandemic situation. The Indonesian government is proud to have served as a role model in managing the response to the Covid-19 pandemic and hosting these significant meetings.

Despite the presence of global disaster risks such as the COVID-19 pandemic, which requires preparedness, states also face national-scale risks that sometimes require worldwide attention, such as earthquakes, tsunamis, floods, volcanic eruptions, hurricanes, and others. The risk of disasters is exacerbated by climate change, and it is proven that climate-induced disasters have an increasing trend. Apart from discussing disaster risk reduction, the phenomenon of climate change is also one of the closely-related issues being discussed in the 7th GPDRR. Therefore, the attention of the UN bodies to ensure sustainability during the preparation and the event is very high. Indonesia also has an interest in contributing to the global community in slowing down the pace of climate change.

Despite the world's challenges, the success of the 7th GP2022 is expected to serve as a reminder that all those engaged in humanitarian action will continue to take steps to maintain cooperation in dealing with disaster risk. Indonesia welcomes the world's attention to return and continue the efforts that were halted due to the global pandemic of Covid-19 and the unfavorable geopolitical situation, to achieve sustainable development goals and meet the SFDRR target by 2030.

The Government of Indonesia also expresses its gratitude to all parties who helped organize the 7th GP2022, including those who have helped make the GP2022 an environmentally friendly activity. Hopefully, with the GP2022, steps to further suppress climate change can be continued.



HE. Lieutenant General TNI Suharyanto, S.Sos., M.M.

Foreword

Deputy for Systems and Strategies

The 7th GP2022, conducted on 23-28 May 2022 in Bali, has published an outcome document, Bali Actions for Resilience (BAR). It is hoped that UN member states will follow up on BAR by using the Midterm Review to enhance the integration of disaster risk reduction into the development process. In addition, the innovations shared and commitments made on the Global Platform provide valuable input for the implementation of the United Nations Secretary-General's (UNSG) vision for "Our Shared Agenda" and other global agendas that ensure risk reduction is integrated across key intergovernmental agreements focused on the most vulnerable countries. On the same occasion, the President of Indonesia proposed the concept of sustainable resilience, which emphasizes how all stakeholders collaborate in dealing with potential systemic risks.

The legal basis for hosting the 7th GP2022 refers to Presidential Decree Number 20 of 2021, regarding the National Committee for the Organization of the GP2022. Besides their relation to disaster issues, the regular duties and functions of the line ministries/agencies within this decree are considered relevant to make collaboration possible in hosting the 7th GP2022. The Deputy for System and Strategy at BNPB is assigned as the coordinator of the Secretariat of the GP2022 National Committee.

Organizing the 7th GP2022 activities together with a UN Agency, led a strong commitment to make the event sustainable as the UN strongly committed to fighting climate change following the Paris Agreement. With this background, UNDRR invites the Government of Indonesia to ensure that carbon offset is also implemented properly to balance the 7th GP2022's unavoidable carbon emissions. Apart from that, coincidentally, disaster risk reduction issues as the main discourse of the 7th GP2022 are closely related to climate change mitigation and adaptation.

We hope that by making the event of the 7th GP2022 sustainable, as a pilot in government activities organization, it can be a benchmark for the commitment of all stakeholders to support all efforts in slowing down climate change. Any limitations during the process will be anticipated, and the methodology used will be better developed when all parties follow up on this step. Hopefully, replication would be made for other activities. It is expected that conducting sustainable events (including carbon offset mechanisms) can become a new strategy developed by BNPB to build an environmentally friendly commitment through the implementation of sensitive-to-climate change activities.



Raditya Jati

List of Terms

3R	reduce, reuse, recycle
AMDAL	<i>Analisis Dampak Lingkungan</i>
BAR	Bali Actions for Resilience
BAU	Business as Usual
BICC	Bali International Convention Center
BKF	<i>Badan Kebijakan Fiskal</i>
BMKG	<i>Badan Meteorologi, Klimatologi, dan Geologi</i>
BNDCC	Bali Nusa Dua Convention Center
BNPB	<i>Badan Nasional Penanggulangan Bencana</i>
BRIN	<i>Badan Riset dan Inovasi Nasional</i>
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CH4	Methane
CO2	Carbon Dioxide
COP	Conference of the Parties
DIPA	<i>Daftar Isian Pelaksanaan Anggaran</i>
DPR	<i>Dewan Perwakilan Rakyat</i>
EF OM	Emission Factor - Overrating Margin
EPA	Environmental Protection Agency
ESDM	<i>Kementerian Energi dan Sumber Daya Mineral</i>
G20	Group of Twenty
GBCI	Green Building Council Indonesia
GDP	Gross Domestic Product
Gg	Total Greenhouse Gas Emissions
GHG	Green Gas Houses
GPDRR	Global Platform for Disaster Risk Reduction
HEESI	Handbook of Energy & Economic Statistics of Indonesia
IATA	The International Air Transport Association
ICAO	International Civil Aviation Organization
IGRK	<i>Inventarisasi Gas Rumah Kaca</i>
IPCC	The Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
ITDC	Indonesia Tourism Development Corporation
Menko PMK	<i>Menteri Koordinator Pembangunan Manusia dan Kebudayaan Indonesia</i>
KLHK	<i>Kementerian Lingkungan Hidup dan Kehutanan</i>
kWh	kilowatt-hour
LED	Light Emitting Diode
LHK	<i>Lingkungan Hidup dan Kehutanan</i>
MICE	meetings, incentives, conferences, and exhibitions
MPV	Monitoring, Evaluation, Reporting, Verification
MtCO2	Megatonnes of Carbon Dioxide
MW	Megawatt
N2O	Nitrous Oxide
NCV	Nett Calorie Value
NDC	Nationally Determined Contribution

NG GAIN	Notre Dame Global Adaptation Initiative
Parekraf	<i>Pariwisata dan Ekonomi Kreatif</i>
KPDPT	<i>Kementerian Desa, Pembangunan Daerah Tertinggal, dan Transmigrasi</i>
PLN	<i>Perusahaan Listrik Negara</i>
RPEK	<i>Rencana Pengelolaan Emisi Karbon</i>
SFDRR	Sendai Framework for Disaster Risk Reduction
SIDRAP	Sidenreng Rappang Regency
SPE	<i>Sertifikat Pengurangan Emisi</i>
SRN	<i>Sistem Registri Nasional</i>
SRSG DRR	Special Representative of Secretary General for Disaster Risk Reduction
tCO ₂	tonnes Carbon Dioxide
THK	<i>Tri Hita Karana</i>
TPA	<i>Tempat Pembuangan Akhir</i>
UKL UPL	<i>Upaya Pengelolaan Lingkungan dan Upaya Pemantauan Lingkungan</i>
UN	United Nation
UNDRR	United Nation for Disaster Risk Reduction
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNSG	United Nation Secretary General
Watapri	<i>Perwakilan Tetap Republik Indonesia</i>



INTRODUCTION

1. Introduction

1.1. Background

The 7th Global Platform for Disaster Risk Reduction (GP2022) took place in Bali on May 23-28, 2022, and was organized by the Government of Indonesia and the United Nations Office for Disaster Risk Reduction (UNDRR). The event was co-chaired by the Coordinating Minister of Human Development and Culture (Menko PMK), Prof. Muhadjir Effendy, and the United Nations Special Representative for Secretary General for Disaster Risk Reduction (SRSG DRR), Ms. Mami Mizutori. The Indonesian Minister of Foreign Affairs and the Head of the National Disaster Management Agency (BNPB) acted as deputy chairmen of the national organizing committee for the 7th GPDRR. The legal basis for this activity is Presidential Decree Number 20 of 2021. The President of the Republic of Indonesia, Mr. Joko Widodo, opened the event, which was also attended by Ms. Amina J. Mohammed, Deputy Secretary General of the UN, and Mr. Abdulla Shahid, President of the UN General Assembly.

The GP2022 was held in a hybrid format, with close to 5,000 participants attending from 185 countries. Gender balance was achieved during the event, with half of the panelists and 40% of the participants being women. Of all registered participants, over 60% had never participated in a Global Platform before, indicating an increasing demand for disaster risk reduction topics and issues from various sectors and stakeholders. Additionally, more than 200

people with disabilities actively participated in panels and discussions, doubling the number from the Global Platform 2019 held in Geneva, Switzerland. At least 29 VVIP and VIP level officials attended the 2022 GP2022, both physically and virtually.

GP2022 began with four preparatory meetings on May 23 and 24, 2022, all of which were held at the Bali International Convention Center (BICC). These meetings included the Multi-Hazard Early Warning Conference III, World Reconstruction Conference V, Local Leaders' Forum, and Stakeholders Forum. The main activities of the 7th GPDRR took place on May 25-27, 2022, with formal and informal agendas held at the Bali Nusa Dua Convention Center (BNDCC), as well as three field trips to several locations in Bali on May 28, 2022. The output document for GPDRR 2022 is the Co-chairs' Summary titled "Bali Agenda for Resilience".

Several Indonesian and global high-level officials from line ministries and institutions attended and participated as co-chairs and speakers, including the 5th President of the Republic of Indonesia; the Chairman of the People's Representative Council (DPR); the Deputy Minister of Environment and Forestry (Wamen LHK); the Deputy Minister of Tourism and Creative Economy (Wamen Parekraf); the Head of the Fiscal Policy Agency (BKF), the Head of the Meteorology, Climatology, and Geophysics Agency (BMKG); the Head of the National Research and Innovation Agency (BRIN); the Indonesian Permanent Representative

(Watapri) in Geneva-Switzerland; as well as the Director-General of Multilateral Ministry of Foreign Affairs and the Director-General of Village and Rural Development of the Ministry of Villages (PDRT). The ministers and deputy ministers of the Republic of Indonesia who attended the opening ceremony were the Coordinating Minister for Human Development and Culture; the Coordinating Minister for Politics, Law, and Security; the Cabinet Secretary; the Minister of Home Affairs; the Minister of Foreign Affairs; the Minister of Law and Human Rights; the Minister of Women's Empowerment and Child Protection; the Chief of Police of the Republic of Indonesia; the Indonesian Permanent Representative (Watapri) in New York-USA; the Head of BNPB; the Head of the Meteorology, Climatology, and Geophysics Agency; the Deputy Minister of Environment and Forestry; the Deputy Minister of Tourism and Creative Economy; as well as the Chairman and Deputy Chairman of Commission VIII DPR RI. Meanwhile, RI officials who attended the closing ceremony were the Head of BNPB; the Head of BMKG; the Governor of Bali; the Indonesian Permanent Representative (Watapri) in New York-USA; the Indonesian Permanent Representative (Watapri) in Geneva-Switzerland; and the Head of BNPB for the 2019-2021 period.

UNDRR and the Government of Indonesia were committed to organizing the GPDRR as a sustainable and environmentally friendly event. This principle entails the commitment of the organizers, in this case

the UNDRR and the Government of Indonesia, to manage carbon emissions from planning and implementation to balancing the unavoidable carbon emissions during the preparation and the event itself (carbon offsetting). The event organizers recognize the relationship between disaster risk reduction and sustainability, particularly with the presence of climate change.

The GP2022's focus on disaster risk reduction and combating future risks is aligned with the goal of conducting a sustainable event. To calculate and offset carbon emissions, UNDRR used guidelines issued by UNEP¹, ISO 20121, and notes from previous events. Additionally, the Government of Indonesia's Presidential Regulation Number 98 of 2021 serves as a reference for implementing Carbon Offset, which can be done by purchasing standardized carbon emission reduction certificates. The organizers were motivated to build a commitment related to carbon emissions for the GP2022, recognizing that a successful event today could become a disaster in the future.

To calculate how much carbon emissions were produced during the implementation of the GP2022, the GP2022 national committee collaborated with the Green House Gases (GHG) Methodology Panel coordinated by the Ministry of Environment and Forestry, which consisted of various stakeholders from both Government, Academics, and Practitioners. The GHG Methodology Panel oversees the calculation of several aspects of carbon

¹ Pedoman dapat diunduh melalui <https://uist.acm.org/uist2019/sustainability/SustainableEventsGuideMay302012FINAL.pdf>

emissions, which are: accommodation, Venue electricity and additional energy, local transportation, and air transportation.

Publishing the results of carbon emission management in the GP2022 event is part of public accountability. Combining standard references and regulations that apply in Indonesia, the GP2022 national committee documents the entire carbon management process in a sustainability report. This report will be published on the BNPB and GP2022 websites.

The GP2022 Sustainability Report consists of seven parts. The first part contains an Introduction which outlines the GP2022 activities and its commitment to sustainability. The second part explains how carbon emissions are managed, starting from the detailing of commitments, the applied carbon offsetting methodology and calculations, references, and limitations. Part three discusses the calculation of carbon emissions. In this section, it discusses the baseline, mitigation actions, emission reductions, and exemptions. In part four, how the practices for Climate Change Adaptation are presented, especially for the existing efforts taken place in the GP2022 venue. The Offset Strategy is then continued in part five, while part five covers the Implementation Mechanism, followed by challenges in implementing sustainability. The report concludes with a general statement that the GP2022 has made efforts to reduce emissions and is therefore a suitable example when considering carbon emission reductions of future events.

1.2. Stakeholders

Main stakeholders in this report are GPDRR National Committee, UNDRR, and Methodological Panel for Green Gas Houses Inventory of Ministry of Environment and Forestry (Panel Metodologi IGRK KLHK).

- **GPDRR National Committee**

This committee was legalized through Presidential Decree Number 20 of 2021 regarding the GPDRR National Committee. This committee is chaired by the Coordinating Minister for PMK, along with the Head of BNPB. With the carbon management mandate, the National Committee which consists of various lines Ministries/Institutions carries out this effort (carbon offset) starting from planning, implementation, to offsets. The entire process was conducted through collaboration with the UNDRR and under the assistance of the GHG Inventory Panel, KLHK and financed by BNPB (DIPA). To support in offsetting some of the carbon, Coordinating Ministry incorporate its program by planting trees and mangroves.

- **UNDRR**

UNDRR is the focal point for disaster risk reduction within the UN system. It oversees the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 and convenes and organizes the Global Platforms for Disaster Risk Reduction. As a member of the United Nations family, UNDRR is committed to reduce its environmental footprint and to lead by example. This includes a commitment to organizing environmentally sustainable meetings. To this end, UNDRR

draws on UN guidance for sustainable event management, aiming to minimize negative environmental impacts and leaving a beneficial legacy for the host community and all involved. The UNDRR cores GP2022 team included a person with responsibility of environmental sustainability elements of GP2022 organization. Throughout the process, the sustainability focal point provided guidance to its Indonesian counterparts on the application of UN guidance for sustainable events in the GP2022 context.

- **GHG Inventory Methodical Panel KLHK**

The GHG Inventory Methodology Panel (IGRK) is a team initiated by the Ministry of Environment and Forestry (KLHK). This team comes from various line ministries/agencies with scientific fields that are technically specific related to the management of carbon emissions. This team provided technical support in the carbon emission calculation process carried out by the 7th GP2022 National Committee, and then communicated to UNDRR. In the end, these three main stakeholders will agree on a GP2022 carbon emission management mechanism.



CARBON EMISSION MANAGEMENT

2. Carbon Emission Management

The management of carbon emissions is a key commitment for Indonesia leading up to the 7th GPDRR event, with the aim of ensuring it is a sustainable event. This report outlines the stages of ideal carbon emission management and provides references. An overview of carbon management in general is provided. Finally, this segment is concluded with a discussion on the methodology used to calculate emissions.

2.1. Commitment

The event organizers were committed to building a sustainable event for the GP2022. One of the key principles for achieving this goal is to reduce the potential for carbon emissions during the event's preparation and execution, as well as offset any unavoidable emissions. Several efforts were initially made to minimize event emissions, including:

1. **The GP2022 is hosted in Bali Province**, which has taken various steps to support national policies in managing carbon emissions. The Governor of Bali has committed to reducing greenhouse gases, as specified in the Governor of Bali Regulation Number 45 of 2019 concerning Bali Clean Energy, and the MICE business sector in Bali has also supported this policy.

Moreover, Bali is a popular location for international conferences and renowned for international tourism, with adequate infrastructure and conference facilities.

Seminar kits utilize local materials and decorative materials with low emissions and avoiding plastic. Bali's international recognition eliminates the need for extensive venue promotion, allowing promotion budgets to be directed toward other activities, which has a positive impact on reducing potential carbon emissions.

2. One effort to reduce plastic consumption by the GPDRR participants and committee was to **provide refilled water during the event**, rather than disposable drinking water containers. The drinking bottles used were glass bottles. This initiative aimed to promote sustainable consumption and reduce plastic waste.

3. To reduce paper usage, the GP2022 committee, UNDRR, and BNPB **displayed digital information instead of printing it**. Additionally, information was disseminated via electronic mail and the official websites of the GP2022, UNDRR, and BNPB. These measures aimed to reduce paper consumption and promote sustainable practices.

4. To promote sustainability, **two types of seminar kits (VIP and regular) were provided, consisting of long-lasting and useful goods produced locally**. These kits also used minimal plastic materials. The aim of providing seminar kits was to showcase Indonesian culture, allowing participants to document their impressions of being part of the GP2022, and providing useful objects that can be used long after the seminars.

5. Ensure the use of environmentally friendly materials for decoration, promotion, and additional temporary construction. Decorative, promotional, and construction materials were selected based on their low-emission characteristics

surroundings that are still within walking distance of the main venue of the GP2022. This will reduce the use of fossil fuel vehicles for the mobility of participants and the committee.

6. Recommend as official hotels those located within the ITDC area or its

Box 1.1 Tri Hita Karana

The province of Bali has the Tri Hita Karana (THK) philosophy which makes people live in harmony with nature and be wise in carrying out economic activities. Lexically, Tri Hita Karana means three causes of well-being, namely Parahyangan (God), Pawongan (human), and Palemahan (land/nature). Meanwhile, GPDRR aspires to become a sustainable event. That is, this local philosophy is very much in line with the GPDRR sustainability principles.

Taking into account the elements of Palemahan, this philosophy emphasizes the importance of humans living in an environment, obtaining benefits and livelihoods from the environment, and emphasizes the need to always pay attention to environmental situations and conditions. The environment must be maintained so that it is not damaged. The environment that has been damaged must be restored so that it is beautiful, clean and tidy. Benefits from the environment should be obtained wisely for human activities.

This philosophy is very relevant to the sustainability principles whereby people are encouraged to carry out economic activities while still protecting nature.

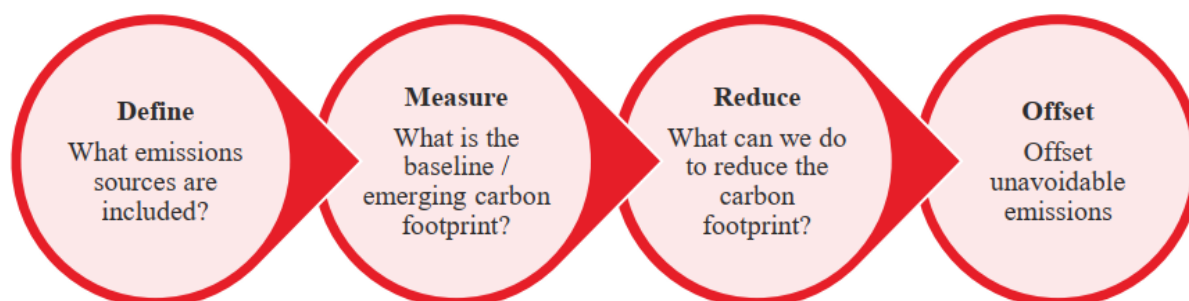
One manifestation of the implementation of this THK culture is the Tukad Bindu community action which begins by taking care of the river and providing added value to the river as a source of education on disaster risk reduction and climate change mitigation. The community lives on the Tukad Bindu river basin. Tukad Bindu itself is a section of the river that flows in the heart of Denpasar. The river which was previously dirty and around it was inhabited by a slum area, by the young people around it, it was transformed into a clean river and healthy area. Not only that, public spaces and parks for public education and entertainment facilities were built. Young children are taught how to protect the river as part of their way of living and the positive consequences of protecting the river are reducing disaster risk and even mitigating and adapting to global climate change. What is emphasized is that simple actions on a small scale but carried out on a massive scale by many groups are far better than large actions that are not sustainable or even detrimental to protecting nature.

7. As the chairman of the organizing committee for the 7th GP2022, the Coordinating Ministry for PMK initiated a 'Plant 10 million Trees' program, which later became part of the implementation of the GP2022 carbon offset. This program is aimed at mitigating climate change and can effectively reduce GHG emissions during the implementation of the GP2022.

8. **Local transportation will be provided for both the committee and participants** to encourage the communal use of vehicles. This transportation is specifically provided for mobility from the airport to the venue, and for hotels that are located too far to be reached on foot. With the provision of local transportation, the carbon emissions produced can be calculated. Furthermore, some of the vehicles used will run on biodiesel to reduce carbon emissions.

2.2. Steps

The steps followed to conduct a sustainable event are shown below:



Source: COP26 Carbon Management Documents

Figure 2.1 Carbon Offset Outline

The first stage is to define the sources of carbon emissions in an event organization. The second stage is to calculate the baseline or initial conditions for potential carbon from sources that are defined as carbon emission parameters/aspects. The third stage is to reduce carbon emissions with mitigation actions or other technical efforts, as described in Chapter 2.1. Commitment. The last stage is to offset all the carbon emissions that cannot be avoided (and there will be) from certain parameters, such as accommodation for participants and committee and air transportation.

This process was also used by the UNFCCC in collaboration with the British Government in achieving a sustainable event for conducting COP26 last November 2021. The Indonesian committee and the UNDRR committee agreed to use the same pattern in efforts to manage carbon emissions in the GP2022, starting from planning and organizing the event itself, until purchasing carbon credits if necessary (Carbon Offset). Nonetheless, in the planning stage, defining the parameters was still limited, and a detailed baseline was not calculated in advance.

2.3. Methodology References

The GP2022 Committee was assisted by the Indonesian Government's Green House Gas (GHG) Methodology Panel in the calculation process. Several reference documents were studied and applied, including "Organizing Sustainable Events" published by UNEP (2012), Number 98 of 2021 regarding the Implementation of Carbon Economic Value to Achieve Nationally Determined Contribution Targets and Control of Greenhouse Gas Emissions in National Development, the Handbook of Energy & Economic Statistics of Indonesia (HEESI) 2021 document, published by the Energy and Mineral Resource Ministry (Kementerian ESDM), and ISO 20121 Sustainable Event Management.

The GHG Methodological Panel, the Indonesian Ministry of Environment and Forestry's Greenhouse Gas Emission Reduction (IGRK) Inventory Methodology Panel, and/or Increasing Carbon Sequestration of the Government of Indonesia validated the methodology and calculation results. These teams review methodologies related to reducing GHG emissions and/or increasing carbon absorption from various local initiatives, individuals, agencies, or institutions, and the private sector. They also provide justification as material for recommendations for national agreements. After the GHG Methodology Panel Team validation process, the GHG emission

calculation methodology was declared feasible.

The national committee and UNDRR divided the tasks to calculate the emission sources. Chapter 3, "Calculating Carbon Emissions," shows the details of the division of tasks and the translation of this methodology.

2.4. Perspective

This chapter explains the perspective of the GP2022 Carbon Emissions compared to global conditions and the actions taken by Indonesia in combating climate change.

Climate change is already happening and has an impact on all sectors globally. Climate change is caused due to uncontrolled human activities and the impact is very detrimental to nature and humans, such as increasing the frequency and scale of disasters related to natural hazards, social crises, economic crises, and others. The urgency of attention of world leaders to climate change and its consequences is analogous to the urgency of the Covid-19 pandemic, which has taken place since early 2020 worldwide.

According to Climatewatch data, global carbon emissions were 19.65 Gt CO₂ in 2017, and 19.71 in 2018 and 2019. Meanwhile, from the same reference, Indonesia produced emissions of 1447.22 MtCO₂e in 2017, 1692.36 MtCO₂e in 2018, and 1959.71 MtCO₂e in 2019.



Source: Interface Website www.climatewatchdata.org²

Figure 2.2 Indonesian Carbon Emission

Indonesia is one of the countries that agreed to and legalized the Paris Agreement, a global agreement that was signed by countries around the world in 2015 in the city of Paris. The main substance of the agreement is to slow down the rate of global warming by no more than 1.5 to 2 degrees Celsius. The Paris Agreement mandates countries committed to contributing to emission control in the form of a progressive Nationally Determined Contribution (NDC). This mandate is renewed every five years. Each country reports mitigation actions (reducing greenhouse gas emissions) to achieve the goals of the Paris Agreement as outlined in the annual NDC.

To support this agreement, the Government of Indonesia published a policy in the form of a 2021 Presidential Regulation regarding the Implementation of Carbon Economic Value for Achieving Nationally Determined Contribution Targets and Controlling Greenhouse Gas Emissions in National

Development. Indonesia's NDC target is a 29% reduction with business-as-usual efforts and 41% with international assistance compared to conditions without action until 2030. Indonesia's NDC includes mitigation actions, actions, and resource support (funding, capacity building, and climate change technology transfer).

Indonesia's Greenhouse Gas (GHG) Inventory and Monitoring, Evaluation, Reporting, Verification (MPV) Report for 2021 (published in March 2022) states that the level of GHG emissions in 2020 from various sectors is: Energy, 584,284 Gg CO₂e, Industrial Processes, and Product Use 57,194 Gg CO₂e, Agriculture 98,703 Gg CO₂e, Forestry and Peat Fires 183,435 Gg CO₂e, and Waste 126,797 Gg CO₂e.

The actual GHG emission rate in 2020 is 1,050.4 million tons of CO₂e. Without any mitigation efforts (BAU), the reduction reached 948.4 million tonnes of CO₂e, or 47%

²Interface means that

https://www.climatewatchdata.org/countries/IDN?end_year=2019&start_year=1990

Meanwhile, in 2020, the number of Indonesia's emission reductions is 573,951,814 tons of CO₂e, which are produced in detail from several sectors: (1) Energy is 75,522,359 tons of CO₂e, (2) Industrial Processes and Product Use is 2,730,564 tons of CO₂e, (3) Agriculture is 20,982,200 tons CO₂e, (4) Forestry is 473,357,044 tons CO₂e, and (5) Waste is 1,359,647 tons CO₂e.

To put it in an individual scale, the World Bank recorded Indonesia's per capita carbon emissions as 1.8 tons of CO₂ in 2016, 2 tons of CO₂ in 2017, 2.2 in 2018, and 2.4 in 2019.

The emission reduction achieved in the GP2022 activities is not significant compared to the national emission reduction target. The amount of carbon offset also cannot meet the annual national carbon emission reduction target, but of course, it is taken into account in Indonesia's GHG inventory. What is important in this GP2022 carbon offset is the piloting of bringing carbon emissions matters in the MICE sector. It is expected that further events would continue this step forward. In addition, the Carbon Offset methodology and process that has been carried out in the GP2022 is a minimal step so further steps, development, and improvement can be carried out by all parties.

2.5. Boundary

2.5.1. Accuracy

To calculate how much carbon is emitted or absorbed, a Greenhouse Gas Inventory (IGRK) is carried out. In IGRK, there is a term

for accuracy called scope. To determine the accuracy (scope), activity data related to the number and type of human activities for specific GHG emissions is applied.

There are three levels of accuracy (scope), those are:

Scope/Accuracy 1: Emissions and removals calculation methods use basic equations and default emission factors or IPCC default values (i.e. emission factors provided in the IPCC Guideline) and the activity data used is partly sourced from global data sources.

Scope/Accuracy 2: Emissions and absorption calculations use more detailed equations, for example, reaction equations or material balances, and use local emission factors obtained from direct measurement results and activity data derived from national and/or regional data sources.

Scope/Accuracy 3: Emissions and absorption calculation methods use the most detailed method (with a modeling and sampling approach). With a modeling approach, local emission factors can be varied according to the diversity of existing conditions so that emissions and absorption will have a lower error rate.

The calculations of carbon emissions related to the 7th GPDRR Committee uses Scope/Accuracy 2 emission factors. The carbon emissions estimate covers Scope 2, namely indirect GHG carbon emissions associated with the purchase of electricity, steam, heat, or cooling. The Scope 2 emission reference factors are provided by the Ministry of Energy and Mineral Resources in the HESSI Document and is

based on assistance from the GHG Methodology Panel. However, although Tier 2 emissions physically occur at the facility where they are generated, they need to be accounted for in an organization's GHG inventory because they result from the organization's energy use.

2.5.2. Exceptions

Some emissions aspects are not quantified due to data barriers. These are:

- Catering. Catering is provided by several providers for the committee and participants. However, the accuracy remains poor and has potential bias.
- Carbon emissions from AC and refrigerators. Data for this aspect is not available.
- Detailed decoration and exhibition materials. Data for this aspect is not available.

2.5.3. Waste Management

Organizing large events often results in significant waste generation, which can have a negative impact on the environment and contribute to carbon emissions. According to the methodology outlined in SNI19-3964-1994, the GPDRR event with 4006 in-person participants and committee members produced an estimated 2,804 tons of waste per day, based on an assumption of 0.7 kg/person/day. However, research conducted by the World Bank³ suggests that the estimated waste generation in Indonesia is actually 0.87 kg/person/day, which would result in a

waste production of 3,485 tonnes/day when applied to the GPDRR event.

In accordance with law No. 18 of 2008, waste is defined as the solid residue of daily human activities and/or natural processes. Everyone generates waste, and these waste-generating activities and natural processes are collectively referred to as waste-generating waste. Waste management, on the other hand, is a systematic, comprehensive, and continuous activity that includes reducing and handling waste. The waste management hierarchy involves reducing waste by limiting/avoiding, reusing, and recycling, as well as handling waste through sorting, collecting, transporting, processing, and final processing.

According to the IPCC (2006), waste is the fourth sector that contributes to greenhouse gas emissions. Waste management processes generate CH₄ (methane), CO₂ (carbon dioxide), and N₂O (nitrous oxide) emissions, which are major contributors to GHG emissions. Based on the 2022 Greenhouse Gas Inventory (IGRK) report, waste contributes 44,533 GgCO₂-e. CH₄, CO₂, and N₂O emissions are primarily generated from waste management processes at Final Disposal Sites (TPAs), with CH₄ gas being the main contributor. The waste management model at TPA by dumping causes most waste decomposition to occur under anaerobic conditions, resulting in the production of CH₄ gas.

³ Source: <https://documents1.worldbank.org/curated/en/983>

[771527663689822/pdf/Indonesia-Marine-Debris-Hotspot-Rapid-Assessment-Synthesis-Report.pdf](https://documents1.worldbank.org/curated/en/771527663689822/pdf/Indonesia-Marine-Debris-Hotspot-Rapid-Assessment-Synthesis-Report.pdf)

The GPDRR was held in Bali Province, where waste generation is a significant issue. According to the Provincial Government of Bali, only 67.27% of waste generation is managed, while the remaining 32.73% is unmanaged, indicating that the Jakstranas Waste Management target has not been met (the intended target is 75% managed and 30% reduced). However, the calculation of the GPDRR's contribution to the increase in waste generation in Bali Province and the extent of the emissions generated has not been carried out.

The carbon emissions from waste in the 7th GPDRR were not calculated or included in the Carbon Offset due to data limitations. At least data on the waste generated, including its composition and characteristics, is needed to estimate GHG emissions and to determine the appropriate waste management to reduce the generation of

methane gas (CH₄). The amount and composition of gas produced depend on the characteristics of the waste.

Despite this limitation, efforts to reduce emissions through waste management were made by the venues and hotels, including:

- Providing organic and inorganic waste bins at the venue and in some hotel rooms.
- Managing carbon emissions in buildings with automatic air conditioning and electricity.
- Implementing the Governor of Bali Regulation related to waste management by not using plastic and encouraging the use of other materials that can be reused.
- Having centralized waste management in the area.





Source: Komunitas Tukad Bindu

Figure 2.3 Gallery of Tukad Bindu community activities that are in line with Tri Hita Karana



Source: Interface Website www.climatewatchdata.org

Figure 2.4 SRSG UNDRR, Mami Mizutori visited and communicated with the head of the Tukad Bindu community during the preparation for the 7th GPDRR



CALCULATING CARBON EMISSIONS

3. Calculating Carbon Emissions

The Indonesian government is committed to reducing greenhouse gas (GHG) emissions in line with its Nationally Determined Contribution (NDC) targets. The NDC sets a goal of reducing emissions by 29% by 2030, which translates to 834 million tons of CO₂e for all sectors, with the energy sector responsible for reducing 314 million ton of CO₂e.

There are two ways to measure emission reductions. The first involves calculating the difference between baseline GHG emissions under Business as Usual (BaU) conditions and actual emissions data, which can be used to track historical emission reductions. The second method involves calculating emission reductions resulting from specific mitigation actions.

To accurately measure emission reductions using the first method, a complete and accurate inventory of emissions data is required, which can be achieved through regular data collection and the use of appropriate methodologies in line with international guidelines.

To achieve sustainable events, we must quantify the various aspects of carbon emissions. The second step is measuring the aspects (known as emission contributing parameters) that contribute to

carbon emissions, based on data availability and supplemented with assumptions and estimates as needed.

Several aspects that emit or absorb carbon are considered as the baseline for carbon emissions, including Accommodation, Venue Power and Additional Energy Infrastructure, Local Transportation, and Air Transportation. Open areas such as empty grassy land, yards, or mangroves on bare land have the potential to absorb carbon.

In the Greenhouse Gas Inventory process, the National Committee are responsible for calculating emissions, with assistance from the Ministry of Environment and Forestry's IGRK Methodology Panel. The National Committee calculates emissions from Accommodation, Electricity, Additional Electrical Infrastructure, and Local Transportation with the help of the Methodology Panel. Meanwhile, UNDRR applied the Sustainable UN methodology and International Civil Aviation Organization (ICAO) tools to calculate emissions from air transportation. The formula used is derived from various references, decided by the National Committee and in consultation with UNDRR.



Source: Documentation Kemenko PMK

Figure 3.1 Open Area for Tree Planting

3.1. Accommodation

Emission from the accommodation is calculated with the formula below:

$$N \times Est. D \times Est. CO_2$$

Source: National Committee and IGRK Methodological Panel Analysis

N = Number of people (participants + committee)

Est. D = Estimation of the Duration of Stay for GPDRR Participants

Est. CO₂ = Estimation of Daily CO₂ Emissions by Hotels, Based on EPA Report Data. Midscale hotels, defined as those with rates below 4, produce an estimated 20 kg of CO₂ emissions per day, while upscale hotels, defined as those with rates of 5 or above, produce an estimated 30 kg of CO₂ emissions per day. These estimations are based on the hotel's energy consumption and data from the US Environmental Protection Agency⁴.

Assumptions:

- All attendees will stay in Bali for 7 days.
- 30% of participants will stay in midscale hotels, while 70% will stay in upscale hotels. It is also assumed that all hotels are located within the ITDC area.
- The local committee members are assumed to stay in their own houses.

Using the aforementioned assumptions, the estimated total CO₂ emissions was 757.33 tons.

⁴ Laporan dapat diunduh melalui https://www.epa.gov/sites/default/files/2018-12/documents/indirectemissions_draft2_12212018_b_508pass_3.pdf

3.2. Electricity and Additional Energy

Electricity from the venue and the additional ones is calculated with the following formula:

$$\frac{(Electricity (KwH) \times Emission Factor)}{1000} \times (1 - 10\%)$$

Source: National Committee and IGRK Methodological Panel Analysis

Notes:

- The electricity consumption data for the GP2022 is derived from the electricity bills of the BNDCC and BICC venues, and includes any additional electricity consumed during the event. The unit used for electricity is Kilowatt Hour (kWh).
- The emission factor (EF) used in the calculation is 0.8 kg CO₂ per kWh (EF OM - Overrating Margin, year 2019). This EF value is calculated based on upstream electricity generation and is sourced from the "Emisi Jawa Bali"⁵ report for the year 2019. As data on fossil fuel consumption is unavailable, the emission calculation is based solely on the amount of electricity consumed.

Based on these assumptions, the estimated total CO₂ emissions from this aspect are 337.2654222 tons.

3.3. Local Transportation

Two types of cars are provided for transportation, fueled by Pertamina and Biosolar respectively. The cars fueled by Biosolar can contribute to a reduction in emissions. The formulas used to calculate both types are as follows:

$$\text{Carbon Emission (Pertamax fueled)} = \frac{\text{Consumption} \times \text{NCV} \times \text{Density} \times \text{FE}}{10^9}$$

$$\text{Carbon Emission (Biosolar fueled)} = \frac{0.7 \times \text{Consumption} \times \text{NCV} \times \text{Density} \times \text{FE}}{10^9}$$

To determine the fuel consumption for the transportation, the following formula is used:

$$\text{Consumption} = \frac{\text{Number of unit} \times \text{distance} \times \text{number of days}}{\text{fossil fuel consumption}}$$

Source: National Committee and IGRK Methodological Panel Analysis

Notes:

- The term "Consumption (l)" refers to the amount of fossil fuels required for transportation.

⁵ Emission factor can be downloaded in this link: https://gatrik.esdm.go.id/assets/uploads/download_index/files/96d7c-nilai-fe-grk-sistem-ketenagalistrikan-tahun-2019.pdf

- NCV, or Nett Calorie Value, is a measure of the energy content of a fuel in TeraJoules per GigaGram. The NCV for Pertamina is 44.61 Tj/Gg, and for Biodiesel it is 42.63 Tj/Gg.
- Density (kg/m³) refers to the mass per unit volume of the fuel. The density of Pertamina is 748.4 kg/m³, and for Biodiesel it is 843.1 kg/m³.
- FE, or Emission Factor, is the amount of methane gas produced per unit of energy used in the combustion of the fuel. The FE for Pertamina is 33 kg CH₄/Tj, while for Biosolar it is 3.9 kg CH₄/Tj.
- The factor 0.7 for Biosolar indicates that it has an emission reduction factor. The calculation of CO₂ emissions from Biosolar assumes that only 70% of the fuel is counted, since the remaining 30% is derived from Biodiesel. As per IPCC, emissions from biomass are assumed to be absorbed by plants and thus counted as 0.

Based on these calculations, the estimated CO₂ emissions from local transportation during the event are 10.356334 tons. The reduction in emissions from the use of Biosolar is estimated to be 2.588 tons of CO₂.

3.4. Air Transportation

The CO₂ footprint for travel to the GP2022 was calculated using the International Civil Aviation Organization (ICAO) calculator. The ICAO calculator is used by the United Nations entities as part of calculating their annual greenhouse gas emissions.⁶ The calculator requires a travel itinerary based on airport codes, which were known for UN staff, Host Country Staff, and Media. For the other GP2022 participants, itineraries were estimated. Special consideration was given to the surplus emissions caused by business class travel, and 20% of participants were assumed to have traveled business class. Following the calculations, the total CO₂ footprint for travel is **5,333.5 tonnes** for 4,006 passengers who traveled over 43 million kilometers.

Additional information

The calculator requires the insertion of a travel itinerary based on airport codes and

an indication of the class traveled in (Economy or Business). Four categories of travel itineraries were considered: UN staff, Host Country staff, Media, and Participants. For the first three categories, the exact itineraries, as well as theses traveled in, were known and thus used, making the calculations fully accurate.

For the participants, the itineraries were determined individually based on the city where each participant's office was located. The assumption is that passengers made a round trip to Bali (airport code: DPS) from this location. For example, for a participant whose office was in Amsterdam (airport code: AMS), the itinerary became AMS-DPS-AMS. For some remote locations, an airport of departure was chosen based on a combination of proximity and available connections. The calculator does not work for a trip with more than 1 connecting airport, so for some routes, a connecting airport had to be estimated, based on the most likely connection, to allow the

⁶ See 'the UN and Sustainability': <https://www.un.org/en/about-us/un-and-sustainability>.

calculator to function. For example, for the itinerary Tegucigalpa (airport code: TGU) to Bali and back the large regional hub of Panama (airport code: PTY) was added, so the final itinerary became TGU-PTY-DPS-PTY-TGU.

All CO2 in the following calculation is in tonnes and is considered 'net CO2', as the calculator has subtracted the CO2 offset by airlines (where relevant).

Table III.1 CO2 Emissions from Flight

Final GP2022 travel CO ₂ emissions based on ICAO Calculator					
	Passengers	Total km	Total CO ₂	Low uncertainty ⁷	High uncertainty ⁸
UN Staff	301	7,027,549	801.32	669.98	1,040.48
Media	113	1,030,883	121.82	103.51	173.97
Participants UN	160	2,224,300	250.77	206.62	339.39
Participants	3,305	32,650,326	2,323.39	2,045.80	3,056.46
Host Country	127	249,428	27.89	27.89	27.89
Surplus business class, 20% ⁹			1,808.3	1,808.3	1,808.3
Total	4,006	43,182,486	5,333.49	4,862.1	6,446.49

Source: UNDRR analysis with ICAO tools

Business class surplus

The above calculations do not include additional emissions made by participants traveling in business class. Considering that business class seats take up more space in the aircraft and that business class passengers have a higher luggage allowance, a business class flight has a considerable emissions surplus. To calculate these emissions, assumptions had to be made as well. The percentage of total participants (excluding UN, media, and local staff) that traveled in Business class was estimated at 20%, based on data from earlier UN conferences.

Calculations were also made for 15% and 25% business class to create a range. The average travel distance was determined for all participants (excluding UN, media, and local staff) to be 9,879 km, which corresponds to the sample itinerary PNH-DPS-PNH.

However, for this itinerary, the ICAO calculator showed business class emissions as only a little less than twice as high as economy class, which is lower than the industry standard. To compare, IATA considers business class emissions to be x4 economy class for long-distance flights.¹⁰ In addition, participants with

⁷ The ICAO Calculator provides a range of CO2 emissions, based on uncertainties around the itineraries. The low uncertainty value represents the emissions if all participants with a multiple-stop itinerary chose the most efficient connection.

⁸ If participants with a multiple-stop itinerary chose inefficient connections with longer flights.

⁹ See below for an explanation on the business class surplus considerations.

¹⁰ See the IATA Carbon Offset Guidelines: <https://www.iata.org/en/programs/environment/carbon-offset/>.

longer itineraries would be more likely to choose the business class. To calculate the business class surplus, it was thus

decided to multiply the economy class emissions of the sample average itinerary by 4.

Table III.2 Passengers in business

Percentage of total passengers in business	Extra CO ₂ in kilos	Extra CO ₂ in tonnes
15%	1,356,907.2	1,356.9
20% (used for final calculation)	1,808,297.7	1,808.3
25%	2,259,688.2	2,259.7

Source: UNDRR

Summary

Aspect	Emissions (Tons CO ₂)
Accommodation	757.330
Power and Additional Infrastructure	337.265
Local Transportation	10.356
Air Transportation	5333.490
Total	6438.441

Of all the aspects calculated, the total carbon produced during the GP2022 was 6438.44 tons of CO₂ (rounded up to 6500 tons of CO₂).

To date, the price of carbon in the market varies widely, as well as the price in carbon taxes. However, the relationship between carbon prices and issued emissions is not relevant for discussion, as long as the Carbon Offset activity can immediately pay for the emissions issued during the GP2022.

From several calculated aspects to reduce carbon emissions, the Government of Indonesia contributed to reducing greenhouse gases through GP2022 activities of 2.588569 Tons of CO₂. This reduction was achieved by efforts to use Biodiesel in several types of local transportation provided to the committee and participants during the GP2022.



CLIMATE CHANGE MITIGATION

4. Climate Change Mitigation

Climate Change Mitigation Action refers to a series of activities aimed at reducing greenhouse gas emissions to mitigate the impacts of climate change, which is caused by carbon emissions. Although organizing the GP2022 contributes to carbon emissions, efforts to manage carbon emissions are part of climate change mitigation actions.

During the organization of the GP2022, several actions were taken, such as providing vehicles for participants and committees with various types of vehicles, some of which use energy sourced from biodiesel. Biodiesel is known to have smaller emissions from the point of view of its life cycle. One gallon of biodiesel can reduce 2,661 grams of CO₂ when burned, and driving a vehicle powered by biodiesel energy for one mile can suppress 404 grams of CO₂¹¹.

The second action is part of the follow-up to the GP2022 and is a real campaign for changing behavior through the National Movement for Mental Revolution, which encourages planting 10 million trees in all provinces. This tree planting movement promotes collaboration and cooperation among all elements of society in adapting

climate-conscious behavior and an environmentally friendly lifestyle, building food self-sufficiency, and being consistently responsible for maintaining the sustainability and preservation of nature, both now and for future generations. As of November 1, 2022, 748,304 fruit trees and other productive plants had been planted in 29 provinces, according to the national monitoring dashboard. The GP2022 itself is an international conference that aims to strengthen commitments between countries in disaster risk reduction efforts that are in line with the principles of nature-based disaster risk reduction. This principle can help Indonesia in strengthening disaster management, which is dominated by hydrometeorological disasters and climate change.

The venue and hotel managements also make efforts as a sustainability routine, which can add value to the GP2022's sustainability. Some of the actions taken include using LED lights, low-emission air conditioners, and eco-mode computers, eliminating plastic items, using electric cars for guests, sorting and managing waste, doing the 3R (reduce, reuse, recycle) on waste produced by both managers and hotel residents, planting trees around the hotel, and maintaining the beach area.

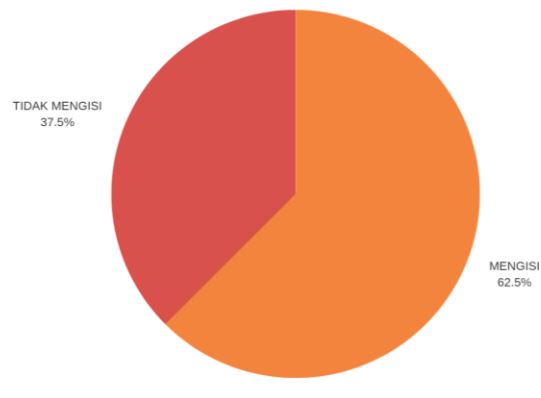
¹¹ [https://impactful.ninja/the-carbon-footprint-of-biodiesel/#:~:text=Depending%20on%20the%20source%2C%20biodiesel%20can%20be%20an%20effective%](https://impactful.ninja/the-carbon-footprint-of-biodiesel/#:~:text=Depending%20on%20the%20source%2C%20biodiesel%20can%20be%20an%20effective%20alternative,and%20diesel%20fuel%20when%20burned.)

[20alternative,and%20diesel%20fuel%20when%20burned.](https://impactful.ninja/the-carbon-footprint-of-biodiesel/#:~:text=Depending%20on%20the%20source%2C%20biodiesel%20can%20be%20an%20effective%20alternative,and%20diesel%20fuel%20when%20burned.)



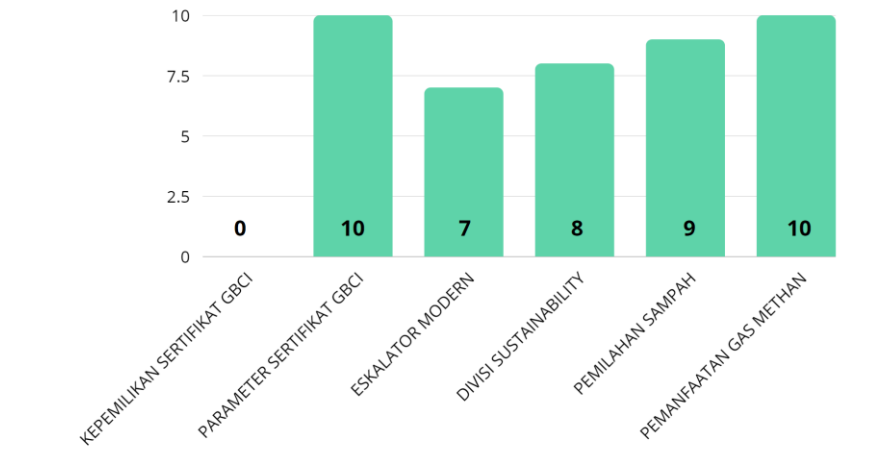
Source: BNPB Public Relations

Figure 4.1 Mangrove planting implementation



Source: Analysis

Figure 4.2 Sustainability survey results



Source: Analysis

Figure 4.3 Chart of Mitigation Actions by Venue and Hotels

Summary

The GP2022 National Committee conducted a sustainability survey of GPDRR accommodation venues and hotels. This survey is to identify what efforts have been done by the management. Of the 16 respondents, 10 filled out the survey.

Looking at the Green Building Council Indonesia (GBCI) certification, not a single building in Bali has received this certificate. However, the venue and all 5-star hotels have met the parameters in the GBCI certification, which are the building is by the land use planning, has an (environmental impact assessment) AMDAL and/or UKL UPL, fire safety standards, earthquake resistance standards, and meets disability accessibility standards.

Five out of ten who filled out the survey have received the Tri Hita Karana award. 70% of hotels have used modern escalators and 80% have had a sustainability division. More than 80% of respondents have conducted waste sorting and management and used low-emission freon, but none of them have used methane gas from the results of their liquid/organic waste management.



CARBON OFFSET

5. Carbon Offset

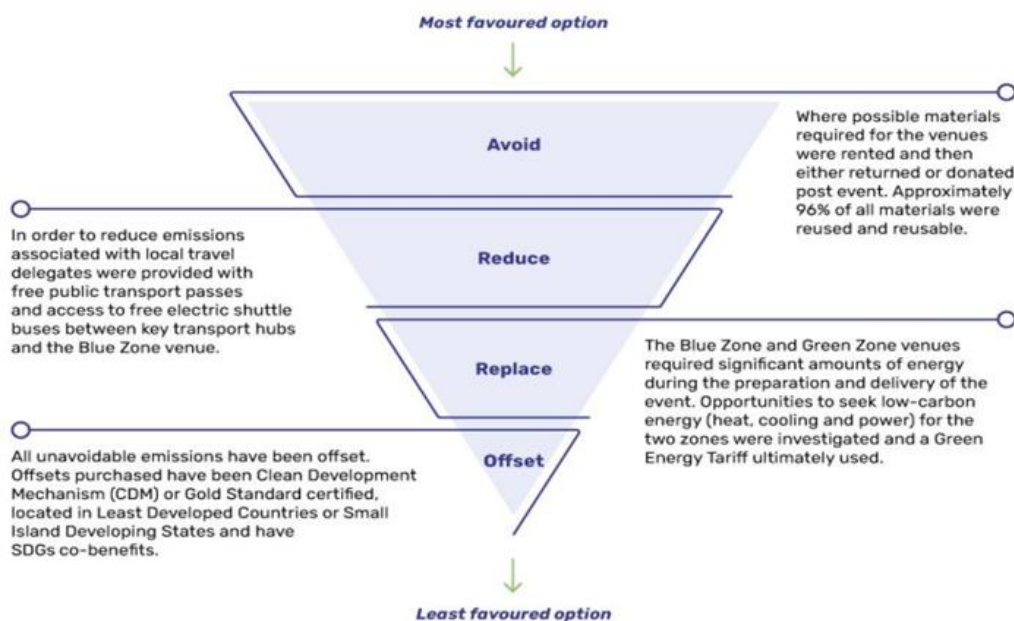
5.1. Offset Strategy

Aligned with standard and guideline documents, carbon reduction is the primary measure adopted, and offsets are used to balance for any unavoidable residual emissions (carbon emissions).

The UNFCCC provides educational resources on Carbon Offset through this link

<https://offset.climateutralnow.org/about/offsetting>. According to the information provided, Carbon Offset is a climate action that enables individuals and organizations to offset the emissions they are unable to avoid by supporting viable projects that reduce emissions elsewhere.

There are several methods for conducting Carbon Offset, such as planting trees or mangroves, building wind farms, promoting sustainable farming for small farmers, waste management, and more. The reduction of greenhouse gas (GHG) emissions through offsets is measured in UN Certified Emission Reductions (CERs), which are generated by Clean Development Mechanism (CDM) projects located in developing countries. Each metric ton of GHG emissions that is reduced or avoided earns one CER, which is measured in CO₂ equivalents (CO₂-eq). These CERs can be purchased by individuals and organizations to offset their unavoidable emissions or as a contribution to global climate action. To ensure that there are no double claims in the registry system, the CER recognition process must be ensured.



Source: ARUP Document (ARUP, 2022)

Figure 5.1 Stages for Carbon Offset

The Indonesian government has implemented a policy to reduce carbon emissions through Presidential Regulation Number 98 of 2021, but a detailed regulation for implementing carbon trading is still being drafted. In light of these circumstances, the GP2022 National Committee has agreed to pursue a Carbon Offset Strategy by using the GP2022 budget to purchase carbon emission reduction certificates (CERs) from proponents who are ready to sell carbon and have been internationally registered. These certificates will then be transferred to a Carbon Emission Certificate (SPE) registered in the National Registry System (SRN). This approach is fully supported by the Ministry of Environment and Forestry and complies with the UNDRR's Carbon Offset process.

5.2. Carbon Offset Mechanism/ Implementation

After a series of coordination and decision-making, carbon offset will be conducted through two mechanisms: purchasing carbon credits and acknowledging climate change mitigation actions taken by the Coordinating Ministry of PMK and the Ministry of Environment and Forestry.

The purchase of carbon credits was carried out by the National Committee, using the BNPB budget for implementing the GPDRR, for 1000 tons of CO₂ in the form of an Emission Reduction Certificate (SPE) from the UPC Renewables service provider with the SIDRAP (wind power plant) project. The total transaction amounted to IDR

430,125,000.00 (approximately USD 26.000) with an agreed value of USD 25 per ton, which was taken from the carbon capture of a wind power plant planted in the SIDENRENG RAPPANG Regency of South Sulawesi Province. This transaction is a pilot in the implementation of Presidential Regulation 98 and is realized by proactive steps for service providers to register their carbon captures in the National Registry System (SRN)¹². The SRG is a data and information platform for trading SPE.

Meanwhile, in 2022, the Coordinating Ministry of PMK launched a program to plant 1 million trees. The Ministry of Environment and Forestry (KLHK) also has routine activities to mitigate climate change, and even the carbon absorption from the trees has been calculated. To balance 5550 tons of CO₂ carbon emissions, these two achievements will be included.

As of December 2022, 824,678 trees have been planted in critical land areas that are also disaster-prone areas. This program involves communities, academics, stakeholders, the business world, and the media. The progress of planting 10 million trees can be monitored through the website <https://aksinyata.kemenkopmk.go.id/data-dinding>. Currently, several domestic private companies, including PT. Astra Group, have claimed to have planted 266,719 trees. The Coordinating Ministry for PMK will continue this planting action until it reaches the target of 10 million trees in 2023.

¹² Dashboard SRN dapat diakses melalui <https://srn.menlhk.go.id/>

5.3. Open Area

The Coordinating Ministry for PMK has implemented the Million Trees Movement program, which is aligned with the goals of the GP2022. However, it is currently not possible to calculate how much carbon is

being absorbed through the program as it is relatively new, and carbon absorption can only be calculated once the trees are between 5 to 10 years old. Nevertheless, the trees planted through the program can serve as a carbon baseline for the GP2022.



Source: Kemenko PMK Public Relation

Figure 4.4 Deputy Secretary General of the United Nations participated in planting mangroves

5.4. Baseline for Hydro Generators Project SIDRAP

As previously mentioned, the baseline refers to the situation before any intervention. In the case of the SIDRAP project, the intervention is providing low-carbon emission electricity. Without the SIDRAP project, electricity would be supplied by the national grid or from PLN's fossil-fueled electricity. Given that PLN's

power grid is mainly supplied by fossil fuel power plants, which are expected to continue operating in the coming years, the greenhouse gas emissions per unit of electricity produced would continue to increase.

According to the methodology ACM0002, version 17.0.0, used for the SIDRAP project, the project activity involves constructing a grid-connected renewable power plant, and the baseline scenario is defined as follows:

“Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

Aligned with this methodology, the GHG emissions taken into account in the baseline scenario are the CO₂ emissions from electricity generation from power plants that use fossil fuels, which are

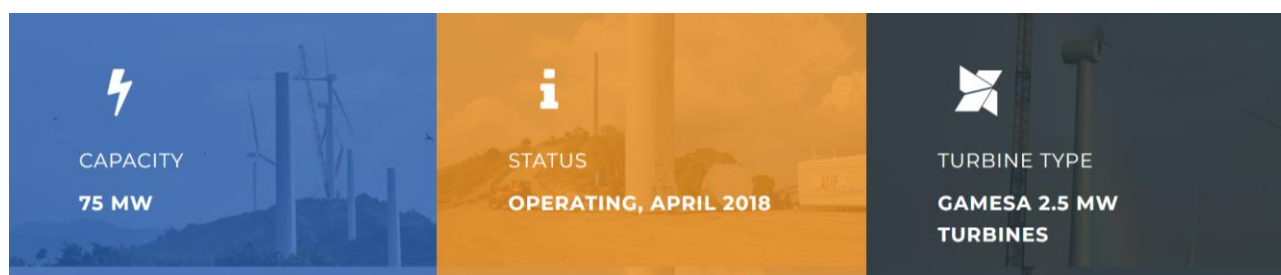
offset due to the implementation of the SIDRAP Project.

Box 4.1 SIDRAP Project

The Sidrap wind power plant (PLTB) project is located in Wattang Pulu District, Sidenreng Rappang (Sidrap) Regency, South Sulawesi Province, Indonesia (the "Project"). The project has a turbine capacity of 75 MW.

The project was developed by PT UPC Sidrap Bayu Energi ("UPC") using 30 wind turbines with a capacity of 2.5MW each and a total installed capacity of 75 MW. The power generated by the Project is supplied to the PT PLN (Persero) ("PLN") network through a double phi tapping connection to the 150 kV high voltage electricity transmission network owned by PLN Sidrap in the city of Pangkajene, Sidrap. The annual net power supply to the grid is 220,700 MWh on average.

The aim of the Project is to generate electricity from power plants using clean and renewable wind resources. The project is expected to become a source of clean and renewable energy for Indonesia, a country with high demand for electricity, as well as help reduce Indonesia's dependence on consumable fossil fuels, most of which are also imported, for power generation, and make the electricity sector more sustainably efficient. The project is estimated to reduce an average of 141,248 tCO₂e of greenhouse gas emissions annually.



The SIDRAP baseline needs to be discussed in this report. The relevance of this project to the GP2022 carbon offsets is discussed in Chapter 5.2 Carbon Offset Mechanism/Implementation.

Table IV.1 Comparison of COP and GP2022 carbon emissions

COP	GHG Emission tCO ₂ e (per delegate)
COP15	72,374 (2.16)
COP21	43,000 (0.64)

CARBON EMISSION MANAGEMENT OF THE GPDRR

Towards Sustainable Resilience

COP23	49,966 (2.26)
COP25	51,101 (2.21)
COP26	131,556 (3.42)
GPDRR	6,438 (1.61)

Source: COP26 SUSTAINABILITY REPORT¹³

Disclaimer

The assumptions used are based on the expert-judgments as provided by the National Secretariat and the GHG Methodology Panel in consultation with UNDRR and related stakeholders.

Carbon emission management (reduction) has been done but was not documented in advance in a Carbon Emission Management Plan (RPEK) document. Therefore, an explanation related to the management of carbon emissions is discussed in this report.

The calculation of emissions produced may not be the most correct, but has taken into account various references and calculations that are available. The results of the calculations are compared with the COP Report (<https://ukcop26.org/cop26-sustainability-report/>) to see the range of emissions from international events. GP2022 emission calculations are considered reasonable.

¹³ This report is published here <https://ukcop26.org/cop26-sustainability-report/>



CHALLENGES

6. Challenges

Organizers of events in Indonesia are encouraged to prepare a Carbon Emission Management Plan (RPEK) before the event to manage carbon emissions. Carbon Offset for the GP2022 was considered a breakthrough and could serve as a pilot for other events. However, RPEK documents were not prepared beforehand, and it is hoped that future organizing committees will prepare them to monitor emissions.

There is still a need to develop awareness of carbon management for events in Indonesia, and there is no consensus on the price of carbon in the market. Decision-makers play a crucial role in addressing this challenge. The mechanism for conducting Carbon Offset has not been discussed earlier by line ministries in Indonesia, and the GP2022 has taken a good step by conducting various discussions in the decision-making process.

One of the challenges faced by the committee in implementing Carbon Offset was the lack of stakeholder awareness regarding the environmental consequences of the event, making it difficult to obtain important data for tracking carbon footprints. The data that was successfully obtained still required expert assistance to filter. Additionally, the understanding that Carbon Offset is a series of activities ranging from carbon emission management planning, emission calculations, decision-making on Carbon Offset strategy, and carbon registry is not yet widespread. Therefore, it is important to disseminate and document the good practices of GP2022 Carbon Offset to become an institutional memory for stakeholders.



CONCLUSION

7. Conclusion

Organizers of events in Indonesia are encouraged to prepare a Carbon Emission Management Plan (RPEK) before the event to manage carbon emissions. Carbon Offset for the GP2022 was considered a breakthrough and could serve as a pilot for other events. However, RPEK documents were not prepared beforehand, and it is hoped that future organizing committees will prepare them to monitor emissions.

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BNPB

Badan Nasional Penanggulangan Bencana (BNPB)

Jl. Pramuka Kav.38 Jakarta Timur 13120

(021) 29827793

www.bnpb.go.id