BAPPENAS
Kementerian Perencanaan Pembangunan Nasional/
Badan Perencanaan Pembangunan Nasional

SIPA
Sustainable Infrastructure Programme in Asia

UNDP

ACTIVITY REPORT

ADVANCING RDF PRODUCTION AND UTILIZATION IN INDONESIA

Jakarta, 10th of September 2024

Supported by:

Federal Ministry
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IKI INTERNATIONAL CLIMATE INITIATIVE

OECD

National Public Policy Dialogue
"Advancing RDF Production and Utilization in Indonesia"

I. Background

In recent years, the global community has increasingly recognized the urgent need to address environmental challenges and promote sustainable development. In Asia, a region experiencing rapid urbanization and economic growth, the demand for infrastructure development is significant. Infrastructure serves as the foundation for long-term economic development but, in many cases, is also a major contributor to unsustainable greenhouse gas emissions. Infrastructure assets are responsible for about 60% of global emissions. Therefore, efforts to reduce the carbon footprint are essential for aligning with the *Paris Agreement targets*.

Recognizing the opportunities and challenges presented by these trends, the *Sustainable Infrastructure Programme in Asia* (SIPA) has emerged as a key initiative aimed at promoting sustainable infrastructure development in Asia. SIPA is a comprehensive program that seeks to integrate sustainability principles into the planning, design, construction, and management of infrastructure. It brings together government entities, the private sector, international organizations, and civil society stakeholders to collaborate in advancing sustainable infrastructure solutions across Asia. The primary goal of SIPA is to promote equitable infrastructure development that not only supports economic growth but also improves environmental quality, social equity, and resilience to climate change. SIPA represents a holistic approach to fostering sustainable development through infrastructure investment. By integrating sustainability, innovation, inclusivity, and resilience into the infrastructure planning and implementation processes, SIPA helps create a more sustainable and prosperous future for the people of Asia. Through collaborative efforts and strategic partnerships, SIPA strives to catalyze transformative changes in infrastructure development and contribute to the achievement of the *Sustainable Development Goals* (SDGs) in the region.

Indonesia, the largest archipelagic country in the world, is undergoing a significant transformation in its infrastructure landscape. With a growing population and rapid urbanization, the need for sustainable infrastructure is becoming increasingly urgent. In response to these challenges, Indonesia has embarked on an ambitious sustainable infrastructure program aimed at promoting economic growth while addressing environmental issues. The SIPA program is led by the Organisation for *Economic Co-Operation and Development* (OECD) and implemented by four development partners in Indonesia: the *International Institute for Sustainable Development* (IISD), the *International Transport Forum* (ITF), the *United Nations Development Programme* (UNDP), and the *World Wildlife Fund* (WWF). SIPA partners in Indonesia will carry out activities to support the achievement of two main priority pillars: **Pillar** I – Supporting Bappenas in developing the National Medium-Term Development Plan (RPJMN 2025-2029) and the National Long-Term Development Plan (RPJPN 2025-2045), and **Pillar II** – Strengthening the government's capacity to accelerate the transition to clean energy. Both the RPJMN and RPJPN include eight development agendas: (1) Social transformation, (2) Economic transformation, (3) Governance transformation, (4) Rule of law, stability, and diplomacy, (5) Social, cultural, and ecological resilience, (6) Fair and high-quality regional development, (7) Environmentally friendly and resilient infrastructure and facilities, and (8) Sustainable development. The implementation of SIPA in Indonesia will be carried out in alignment with RPJMN and RPJPN.

UNDP Indonesia, as one of SIPA's partners, will support the Indonesian government through Bappenas to achieve Pillar II by promoting and supporting sustainable and low-carbon infrastructure through *Refused Derived Fuel* (RDF). RDF can be a sustainable waste management solution in Indonesia, offering environmental, social, and economic benefits. RDF has emerged as a sustainable solution for waste management worldwide, including in Indonesia, where rapid urbanization and industrialization have led to increased waste production. RDF generates fuel by shredding and drying non-recyclable waste materials such as plastics, paper, textiles, and wood. The resulting material is then processed into pellets or fluff, which can be used as an alternative fuel source in various industries, including cement, power plants, and manufacturing facilities. RDF not only diverts waste from landfills but also reduces greenhouse gas emissions and reliance on fossil fuels, making it an environmentally friendly waste management option.

II. Purpose

This event aims to bring together stakeholders from various sectors to discuss the current conditions, challenges, and opportunities related to the utilization and implementation of RDF in Indonesia. The issues or topics that will be discussed in this public dialogue will focus on the policy framework, environmental impact, industrial application, and market dynamics to foster collaboration and push the RDF agenda forward.

III. Objectives

A. To understand the current policies and regulatory frameworks governing RDF in Indonesia.
B. To explore the environmental benefits and challenges associated with RDF production and utilization.
C. To discuss the role of industry and the energy sector in adopting RDF as an alternative fuel.
D. To facilitate dialogue between policymakers, industry players, and RDF stakeholders.
E. To identify potential areas for collaboration and investment in the RDF sector.

IV. Outputs

A. Increased understanding of environmental policies and regulations for RDF.
B. Identification of challenges and opportunities for RDF production and utilization.
C. Strengthened collaboration between the government, industry, and other stakeholders.
D. Concrete recommendations to advance the use and production of RDF in Indonesia.

V. Invitation List for the Event

A. Ministry of National Development Planning/BAPPENAS

1. Director of Electricity, Telecommunications, and Informatics.
2. Director of Planning and Development for National Priority Infrastructure Projects.
3. Director of Environment.
4. Director of Energy, Mineral, and Mining Resources.
5. Waste Management Team, Bappenas.

B. Ministry of Industry

6. Head of Green Industry Center, Industrial Services Standardization and Policy Agency (BSKJ)
7. Directorate of Cement, Ceramics, and Non-Metallic Mineral Processing Industries, Directorate General of Chemical, Pharmaceutical, and Textile Industries (IKFT)

C. Ministry of Finance

8. Head of Climate Change and Multilateral Financing Policy Center, Fiscal Policy Agency

D. Ministry of Public Works and Housing

9. Director of Institutions and Construction Resources, Directorate General of Construction Development
10. Director of Infrastructure Delivery Systems and Strategies, Directorate General of Human Settlements
11. Director of Sanitation, Directorate General of Human Settlements
12. Director of Public and Commercial Housing, Directorate General of Housing
13. Director of Housing Delivery Systems and Strategies, Directorate General of Housing

E. Ministry of Energy and Mineral Resources

14. Director of Energy Conservation, Directorate General of New, Renewable Energy and Energy Conservation (EBTK)
15. Director of Bioenergy, Directorate General of New, Renewable Energy and Energy Conservation (EBTK)

F. Ministry of Environment and Forestry

16. Director of Waste Management, Directorate General of Waste, Toxic and Hazardous Materials Management (B3)
17. Director of Waste Reduction, Directorate General of Waste, Toxic and Hazardous Materials Management (B3)

G. National Research and Innovation Agency (BRIN)

18. Center for Environmental and Clean Technology Research
19. Center for Energy Conversion and Transformation Research

H. Local Governments

20. Head of the Environmental Agency, DKI Jakarta Province
21. Head of the Environmental Agency, Banyumas Regency
22. Head of the Environmental Agency, Cilegon City
23. Head of the Environmental and Sanitation Agency, Denpasar City
24. Head of the Environmental Agency, Sleman Regency
25. Head of the Environmental Agency, Cimahi City
26. Head of the Environmental and Sanitation Agency, Bandung City

I. Non-Governmental Organizations (NGO)

27. Green Building Council Indonesia
28. Resilience Development Initiative (RDI)

J. Waste Management Associations

29. Forum for Waste Care Indonesia (FORPASI)
30. Indonesian Waste Management Association (APSI)

K. Industries and Private Companies

31. PT Indocement
32. PT Solusi Bangun Indonesia Tbk
33. Sustainable Waste Indonesia (SWI)

L. Academics and/or Practitioners

34. LPEM UI
35. Dr. Eng. Pandji Prawisudha, ST. MT – Faculty of Mechanical and Aerospace Engineering, Bandung Institute of Technology
36. Dr. Eng. Baskoro Lokahita, S.T., M.Eng. – Faculty of Engineering, University of Indonesia
37. Prof. Ir. Puji Lestari, Ph.D. – Faculty of Civil and Environmental Engineering, Bandung Institute of Technology
38. Ir. Ahmad Husein

M. Development Partners

39. Head of Environment Unit, UNDP CO Indonesia
40. Programme Manager for Energy Cluster, UNDP CO Indonesia
41. Project Coordinator, SIPA Project
42. UNV, SIPA Project
43. CEO, WWF Indonesia
44. CEFIM-OECD Team
45. USAID Indonesia
46. KfW Jakarta
47. Asian Infrastructure Investment Bank (AIIB) Team
48. GIZ Team
49. ISWMP Team - Bappenas
50. ISWMP Team - Ministry of Public Works and Housing
51. PT Layanan Pengadaan Indonesia

VI. Date/Time/Place

- Date : Tuesday, September 10, 2024
- Time : 09:00 – 13:00 WIB
- Venue : Denpasar Room, The Westin Jakarta
- Agenda : Attached

VII. Agenda and Event Schedule

The purpose of this event is to discuss the policy framework, environmental impact, industrial application, and market dynamics to foster collaboration and advance the RDF agenda. Below is an overview of the event:

Time (WIB)	Agenda	Notes
08.30-09.00	Registration dan coffee break	
09.00-09.15	*Welcoming remarks* **Gwyneth Ann Palmos** Programme Manager for Energy Cluster UNDP CO Indonesia	

09.15-10.00	*Opening Remarks* **Ervan Maksum, ST, M.Sc** Deputy for Infrastructure Affairs Ministry of National Development Planning/National Development Planning Agency (Bappenas)	
10.00-10.15	*Setting the context* **Nur Aisyah Nasution** Directorate of Housing and Settlement Areas, Bappenas **“Integrating RDF into the National Development Plan”**	
10.15-10.20	Photo Session	
10.20-10.30	Coffee Break	
Sesi Diskusi Panel Moderator: **Indira Sari** Tenaga Ahli Pendanaan ISWMP Bappenas		
10.30-10.45	Session 1: **Policy and Regulatory Framework** Topic: **"Environmental Policies Supporting RDF Production and it’s Utilization in Indonesia"** Speaker: **Arief Sumargi** **Head of the Monitoring and Evaluation Sub-Directorate,** **Directorate of Waste Management** (Ministry of Environment and Forestry)	**Key Questions** □ Overview of regulations and policies supporting RDF production and utilization. □ Alignment of RDF with national and international environmental sustainability targets. □ Positive impact of RDF on reducing landfill use and greenhouse gas emissions. □ Government incentives and support programs for RDF initiatives.

10.45-11.00	Session 2: **Energy Sector and RDF** Topic: **“RDF as an Alternative Fuel in Indonesia's Energy Mix”** Pembicara: **Moristanto, ST, M.Ec.Dev.,MA** **Coordinator of the Bioenergy Program** (Ministry of Energy and Mineral Resources)	**Key Questions** • How is RDF integrated into Indonesia's energy mix? • What role does RDF play in meeting Indonesia's energy needs and sustainability goals? • What are the advantages and potential drawbacks of using RDF as an alternative fuel in the energy sector? • What policies or strategies are implemented to encourage the use of RDF in energy production? • How does the Ministry of Energy and Mineral Resources support the development and application of RDF in the energy sector?
11.00-11.15	Session 3: **Implementation of RDF Initiatives at the Regional Level** Topic: **“Operationalizing RDF at the Regional Level”** Speaker: **Agung Pujo Winarko** **Head of Unit BLUD UPST DKI Jakarta**	**Key Questions** • What are the main operational challenges and successes in managing RDF facilities at the regional level? • How do regional-owned enterprises navigate local regulations and align them with national RDF policies? • What strategies are effective in ensuring the economic sustainability and operation of RDF in regional areas? • How can partnerships with local governments and industries be leveraged to enhance the production and utilization of RDF?

11.15-11.30	Session 4: **Market Dynamics and Offtake Agreements** Topic: **“Market Demand and Supply Chain Dynamics for RDF”** Speaker: **Muhammad Angga Kusuma** **Sr. Sourcing Manager AFAM Division** PT. Indocement Tunggal Prakarsa, Tbk RDF Offtaker Representative	**Key Questions** • What are the current market demand trends RDF? • How do supply chain dynamics impact the availability and cost of RDF? • What challenges are faced in the procurement and distribution of RDF? • How do RDF off-takers address issues related to supply chain efficiency and market fluctuations? • What strategies are implemented to enhance market absorption and stabilize the RDF supply chain?
11.30-12.45	Panel Discussion and Q&A	Moderator
12.45-12.50	Closing Remarks and Follow-up Discussion	Moderator
12.50-13.00	Catatan Penutup	**Dr. Evan Maksum, ST, MSc** (Deputy for Infrastructure Affairs Ministry of National Development Planning/National Development Planning Agency (Bappenas)

VIII. Welcoming Remarks

Opening and remarks by Gwyneth Anne Palmos as Programme Manager for the Energy Cluster, UNDP Indonesia.

It was stated that this meeting discusses the developments in the recycling material industry (RDF) in Indonesia. Some key points discussed are:
Targets agreed upon in the national long-term development plan (RPJPN), where approximately 90% of waste must be managed by 2045, with 55% processed through material recycling. Meanwhile, the potential contribution of RDF to achieve this target is estimated to reach 18% by 2030.

Several previous studies have shown the potential for RDF development in Indonesia, from technology standards, business models, to potential locations. The cement, paper, and pulp industries have been identified as key sectors that can utilize RDF. However, there are challenges that need to be addressed, such as the quality of RDF, which remains an issue from the supplier's side, the varying RDF specifications needed across industries, and the institutional and regulatory flexibility required.

IX. Opening Remarks

By: Ikhwan Hakim, ST, MSc, PhD
Director of Housing and Settlement Areas, Bappenas

He stated that this meeting would discuss the challenges and efforts to improve waste management in Indonesia. According to the latest SIPSN data, the total waste generated in Indonesia reached at least 38.6 million tons in 2023, but the percentage of managed waste is only 62.36%. The general issues faced in waste management include suboptimal access to household waste collection services, low waste processing rates, and weak regulations, funding collaboration, and governance supporting waste management.

The government has established integrated waste management reform from upstream to downstream as one of the 20 super priority or game changer issues in the RPJPN (National Long-Term Development Plan) 2025-2045. Meanwhile, waste processing has been established as one of the key indicators of development with a target of 90%, where 35% can be recycled and 55% processed into materials or energy. To achieve these targets, support for the development of appropriate technology is necessary, aligning with raising awareness and triggering behavioral changes in the community for waste reduction and sorting at the source, increasing demand and participation, willingness to pay fees, enforcement, and provision of performance-based incentive and disincentive schemes.

Waste processing technologies such as Refuse Derived Fuel (RDF) are considered to have the potential to support the acceleration of environmentally conscious waste processing. Additionally, various studies have shown that RDF is regarded as safer to implement from technological, financial, and environmental perspectives. However, the implementation of RDF in Indonesia still faces various challenges, including raw material security, investment and funding access, the expansion of supporting infrastructure, business model development, limitations of alternative incentives for the private sector, and product sales mechanisms.

X. Setting The Context

By: Nur Aisyah Nasution, ST, MS
Coordinator for Drinking Water and Sanitation, Directorate of Housing and Settlement Areas, Bappenas

Studies related to RDF have shown developments in Indonesia over recent years. At least four studies have been identified: (1) RDF Guidelines as an Alternative Raw Material for the Cement Industry - Ministry of Industry; (2) Preliminary Study on Incentive Scheme to Promote RDF from Municipal Solid Waste - UNDP; (3) Comparison of Final Waste Processing Technologies Using Cost-Benefit Analysis - Bappenas and GIZ; and (4) Analysis of RDF Off-taker Potential - Bappenas and GIZ.

Based on the processing of various findings from existing studies, the potential utilization of RDF is estimated to reach over 15,000 tons per day (potential direct use in industries and co-firing with coal from power plants). In the future, this demand needs to be further verified and supplemented with analyses of other potential uses.

There are several challenges for RDF in Indonesia: (1) Low RDF quality due to mixed household waste; (2) The large volume of RDF needed requires sustainable RDF feedstock; (3) Long-term contracts are needed with PLN or Processing Industries - Off-takers; (4) Regulatory and policy support for RDF standardization, quality management, and RDF product certification; (5) High investment costs for pre-processing facilities, collection, and RDF transportation; and (6) More concrete demand and supply data verification.

Policies and regulations need to be created to support the establishment of a conducive RDF ecosystem that can bridge the supply and demand sides, in terms of quality standards, price standards, technology standards, emissions control, green procurement, and others. Additionally, it is also important to look at the prospects for RDF products to be mass-produced and sold at retail to reduce product prices and increase the potential for product utilization.

XI. Presentation of Materials

- **Session 1** **: Policy and Regulatory Framework**

Topic **: "Environmental Policies Supporting RDF Production and Utilization in Indonesia"**

Title **: Implementation of Energy Recovery Principles in Supporting Waste Management**

Speaker **: Mr. Arief Sumargi**
Sub-Directorate for Monitoring and Evaluation, Directorate of Waste Handling, Ministry of Environment and Forestry

The unresolved global waste management issues will impact the triple planetary crisis: climate change, biodiversity loss, and pollution. In urban areas, it is recorded that at least 38% of global waste is not well managed, leading to environmental pollution. On the other hand, the amount of plastic waste entering aquatic ecosystems is projected to reach 23-37 million tons per year by 2040 without any intervention changes.

Mr. Arief Sumargi stated that the main challenges in waste management faced by Indonesia today are suboptimal waste governance and inadequate funding. These factors hinder Indonesia from building industrialization of waste processing into energy, fertilizer, animal feed, or using waste as raw material for recycling.

In the framework of supporting waste management for new and renewable energy, RDF is one strategy that can help achieve the targets of the Nationally Determined Contribution (NDC), renewable energy, and Jakstranas. RDF is considered to have good prospects for development in Indonesia, with the potential for processed waste reaching 3.64 million tons per year. This aligns with the results of an off-taker potential study conducted by PT SMI in collaboration with KLHK. According to the study, the current RDF off-takers in Indonesia are still limited to the cement and power plant industries. This means there is still a lot of off-taker potential that has not been explored, such as the fertilizer industry (5 provinces and 7 districts/cities), smelter industry (3 provinces and 4 districts/cities), iron casting industry (3 provinces and 8 districts/cities), paper and pulp industry (7 provinces and 31 districts/cities), textile industry (3 provinces and 34 districts/cities), and plastic industry (4 provinces and 6 districts/cities). According to Arief, there are several key factors in preparing optimal RDF implementation, namely regulations that attract investment and stricter product quality standards.

- **Session 2** : **Energy Sector and RDF**

  Topic : **“RDF as an Alternative Fuel in Indonesia’s Energy Mix”**

  Title : **RDF as an Alternative Fuel in Indonesia’s Energy Mix**

  Speaker : **Moristanto, ST, M.Ec.Dev., MA**
  Coordinator of the Bioenergy Program, Ministry of Energy and Mineral Resources

In his presentation, Mr. Moristanto stated that RDF is one of the activities supporting low-carbon practices that is part of the 5 main pillars of the energy transition *pathway*. The achievement of industrial biomass development, including RDF, reached 7.9 million tons in 2023 and is targeted to reach 8.4 million tons by 2025.

The utilization of RDF has become part of the policy framework and bioenergy development strategy carried out by the Ministry of ESDM. Within this framework, the RDF strategy is included in the policy of ‘utilizing biomass through co-firing in power plants and direct utilization’ and is derived through three strategies: (1) Utilizing biomass in the form of biomass waste/woody biomass/waste-based pellets (RDF/SRF) as a blend with coal through co-firing in power plants and direct/non-electric biomass utilization in industries; (2) Encouraging the implementation of biomass co-firing in power plants in accordance with Minister of ESDM Regulation No. 12 of 2023 on the Utilization of Biomass as a blend with coal; and (3) Encouraging the processing of municipal waste into RDF/SRF fuel.

Mr. Moristanto stated that currently, there are at least 10 projects implementing RDF/SRF programs for energy, whether still in the study phase, planning, or operational. This supports the optimization of biomass utilization potential in Indonesia, where through household waste, there is a potential generation of 68.5 million tons of waste that can be processed into 42,013,333 tons of SRF. To maximize this potential, the Ministry of ESDM is currently in the process of drafting SNI for RDF in the industry. However, this effort must also be supported by synergies and collaborations in other bioenergy developments involving the government, academia, state-owned enterprises, the private sector, media, and NGOs.

- **Session 3** : **Implementation of RDF Initiatives at the Regional Level**

  Topic : **“Operationalizing RDF at the Regional Level”**

  Speaker : **Agung Pujo Winarko**
  Head of Unit, BLUD UPST DKI Jakarta

In his presentation, Mr. Agung Pujo Winarko discussed various efforts made by the Provincial Government of DKI Jakarta in implementing RDF technology. The development of the RDF plant was driven by the lack of large-scale waste processing facilities in the city and the limited capacity of the Bantar Gebang TPST, which cannot keep up with the increasing waste generation. RDF technology was chosen due to its more affordable CAPEX costs, potential revenue from the sale of RDF products, environmentally friendly technology, and the easily managed and economically valuable processing residue.

The RDF plant in DKI Jakarta is designed with a processing capacity of 2,000 tons per day and can produce RDF output of at least 700 tons per day. This output is then absorbed by PT Indocement (625 tons per day) and PT SBI (75 tons per day). In 2024, the Bantargebang RDF Plant successfully delivered 25,957 tons of product to offtakers with sales valued at 5.6 billion rupiah.

According to Mr. Agung, operational challenges of the RDF plant lie in budgeting, human resources, the stability of input waste and product quality, and collaboration patterns with offtakers. Therefore, he mentioned that this RDF plant is only suitable for regions with significant fiscal capacity, as the sales revenue cannot cover CAPEX and OPEX costs. Additionally, the readiness of nearby offtakers must be considered, both in terms of distance and potential capacity for utilization.

- **Session 4** **: Market Dynamics and Offtake Agreements**

  Topic **: "Market Demand and Supply Chain Dynamics for RDF"**

  Speaker **: Muhammad Angga Kusuma, Sr.**
  Sourcing Manager, AFAM Division
  PT. Indocement Tunggal Prakarsa, Tbk

During this session, Mr. Angga provided comprehensive information about PT Indocement's role in supporting the use of alternative fuels in cement production. PT Indocement operates 16 kilns with capacities ranging from 200 to 2,500 tons per day, thus requiring a large amount of alternative fuel. In 2023, the utilization of RDF at PT Indocement reached 18.3% of the total fuel consumption.

From the offtaker's perspective, Mr. Angga highlighted several factors considered in absorbing RDF products: (1) a minimum supply continuity of 50 tons per day; (2) product quality must meet or exceed standards; (3) competitive pricing; and (4) efficient and practical logistics.

XII. Discussion Session

1. Bima - Solusi Indonesia

a. Logistics play a crucial role in RDF utilization due to the significant impact of supply demand distance on costs incurred by offtakers. Therefore, Java Island is the most potential area for implementing RDF.

b. Another important factor in promoting RDF utilization is the quality of input waste, including the level of heterogeneity and moisture, which affect pre-treatment costs.

c. There is a need for greater focus on industry-based waste management rather than relying solely on community-based management.

2. Wiharja - BRIN

a. Technical regulations regarding RDF standards are currently available only in the cement industry. Therefore, the Ministry of Industry or KLHK needs to formulate technical plans, including supportive regulations for other industries.

b. The manufacturing industry could serve as a model for good practices in implementing domestic products or equipment.

c. Studies are needed to identify potential non-cement offtakers that can utilize RDF products, as well as studies on conditions and challenges affecting the development of Modern Concrete Homes (RBM).

3. Ita - PT Solusi Bangun Indonesia

a. The RDF practice in Cilacap has been operational for four years but faced issues with shredder damage. Policy support related to TKDN standards is needed to address this issue through the purchase of local products, which would avoid high costs.

b. KLHK is expected to open wider opportunities for industries to be involved in Extended Producer Responsibility (EPR), such as FMCG, to assist local governments in the operationalization of RDF.

c. OPEX costs are high and cannot solely rely on RDF product sales. Therefore, full government support is needed to encourage private sector involvement in the RDF process chain.

d. Waste management should not be influenced by politics but should focus on improving the system and finding the right solutions.

4. Samosir - Fiscal Policy Agency, Ministry of Finance

a. There is a lack of alignment between Law No. 18 of 2008 and Law No. 23 of 2014, where the primary responsibility for waste management should lie with the regions, yet it places a significant burden on the state budget.

b. One key to the operation of the RDF Plant in Cilacap is that the offtaker also serves as the operator. Clear division of tasks is needed, where local governments act as regulators, not operators.

c. Waste management issues are not due to the type of technology but rather poor coordination between central and local governments.

d. The Ministry of Finance has issued regulations providing fiscal incentives for regions that can significantly manage and reduce waste.

5. Muhriji - DLH Cilegon City

a. Areas suitable for using RDF technology are those located near cement industries. Cilegon City has many industries that use coal in their production processes but require specific specifications, leaning toward biomass.

b. It should be considered to regulate mandatory spending for the waste sector in regions, at least a minimum of 5% of the local budget (APBD).

6. Deti - DLH Bandung City

a. Bandung City has conducted research on co-firing coal in the textile industry, and the results show that 78 textile industries in Bandung have the potential to become RDF offtakers, with 2 currently in trial locations.

b. Only a portion of the industries are interested in using RDF products, provided there is a guarantee that the product will not damage boilers. External technical support is needed to standardize this, as it is beyond the capacity of local governments.

c. Support and intervention from the Ministry of Industry are needed to promote RDF utilization in other industries, including textiles.

7. Lieke - FORPASI

It is essential for the government to build public trust regarding waste management.

XIII. Conclusion and Follow-Up Discussions

The conclusion of the National Public Policy Dialogue on "***Advancing RDF Production and Utilization in Indonesia***" is:

1. Waste management is a mandatory matter, and waste processing (RDF) can help cover some of the costs. Waste processing (PLTSa and RDF) can serve as an **alternative to fossil fuels, reduce CO2 emissions, conserve resources, and reduce the need for landfill space**.
2. Various technological initiatives and the use of RDF are increasingly being developed. Collaboration among all parties, including the central government, professional associations, industries/private sector, local governments, and the community, is necessary to create a conducive RDF ecosystem moving forward.
3. Future actions needed:
   a. Further analysis to determine the suitable institutional structure for operators
   b. Analysis of power plant and RDF demand from various offtakers
   c. Roadmap policy for energy recovery (RDF utilization) within the framework of waste and energy management
   d. Studies on synchronization, collaboration, and role-sharing between government and private stakeholders (RDF chain)
   e. Development of RDF project business models and assessments to determine whether government guarantees are required for private sector involvement.
4. The RDF Roadmap is expected to include at least the following information:
   a. Regulatory studies are available and needed to support the RDF ecosystem
   b. Alignment of the RDF Roadmap with other documents and targets (EBT, NDC, etc.)
   c. Demand analysis: potential RDF offtakers, RDF standards, and pricing standards
   d. The necessary activity milestones, including the division of roles among stakeholders (government and non-government) – detailed until 2030 and general until 2045.

XIV. Closing

Delivered by: Evan Maksum, ST, MSc
(Deputy for Facilities and Infrastructure, Ministry of National Development Planning/Bappenas)

a.Waste management requires collaboration from all parties to run effectively and efficiently, including the role of households and communities in sorting waste to reduce processing costs at intermediate and final facilities.

b.The government needs to provide policies that can align supply and demand to create an optimal RDF implementation ecosystem, including standard regulations, quality standards, technological standards, green procurement, and others.

XV. Documentation



REGISTRATION


OPENING


OPENING SPEECH



PANEL DISCUSSION


Q & A





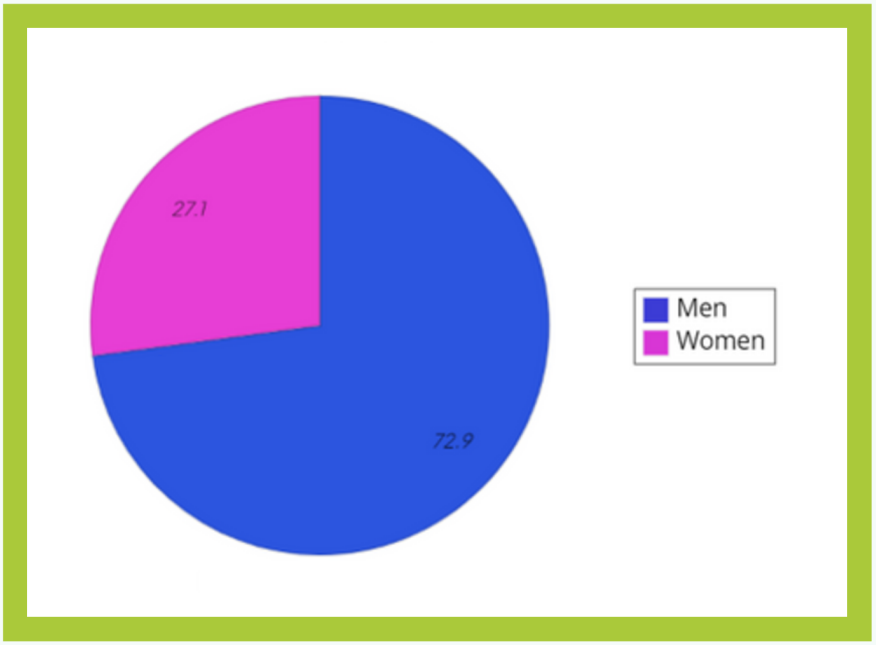




XV. Appendix

A. Attendance

Below is the Appendix of the Attendance List and the Attendance Percentage of Event Participants.



Attendance list link :
https://drive.google.com/drive/folders/1nJh8vIy-uuWUEg_jivNb6iUKv2q5icpS

B. Meeting Minutes

We have also attached the meeting minutes from two note-takers we assigned to summarize the proceedings of this event.

Meeting minutes link 1 :
https://drive.google.com/drive/folders/1cxV2Gmttnr1TTO6DJ8EHFALEKbk_r9A4

Meeting minutes link 2 :
https://drive.google.com/drive/folders/1cxV2Gmttnr1TTO6DJ8EHFALEKbk_r9A4

C. Speaker's material

All materials presented by the speakers during this discussion can be downloaded in full from the following link:

- Session 1 : Policy and Regulatory Framework
  Topic : "Environmental Policies Supporting RDF Production and Utilization in Indonesia"
  Title : Implementation of the Energy Recovery Principle in Supporting Waste Management
  Link :

https://docs.google.com/presentation/d/1GqDPcjQDCsFnU7YTm7QLhuFroadeXt21/edit?usp=drive_link&ouid=104817768016247020575&rtpof=true&sd=true

- Session 2 : Sektor Energi dan RDF
  Topic : “RDF as an Alternative Fuel in Indonesia's Energy Mix”
  Title : RDF as an Alternative Fuel in Indonesia's Energy Mix Indonesia
  Link :
https://drive.google.com/file/d/11rwIWwJmXKA3aU4QzcnQ-3WMUWB51_0O/view?usp=drive_link

- Session 3 : Regional Implementation of RDF Initiatives
  Topic : “Operationalizing RDF at the Local Level”
  Title : RDF Plant Operations in Bantargebang
  Link :
https://drive.google.com/file/d/1oLFK9cqur9wR1tlPirDQR38V8VbgHtPO/view?usp=drive_link

- Session 4 : Market Dynamics and Offtake Agreements
  Topic : “Market Demand and Supply Chain Dynamics for RDF”
  Title : Utilization of Alternative Fuels by Indocement
  Link :
https://drive.google.com/file/d/1s6S6oGgNE4P8NYnISf_GozYnmE45Ih1X/view?usp=drive_link

BAPPENAS
Kementerian Perencanaan Pembangunan Nasional/
Badan Perencanaan Pembangunan Nasional

SIPA
Sustainable Infrastructure Programme in Asia

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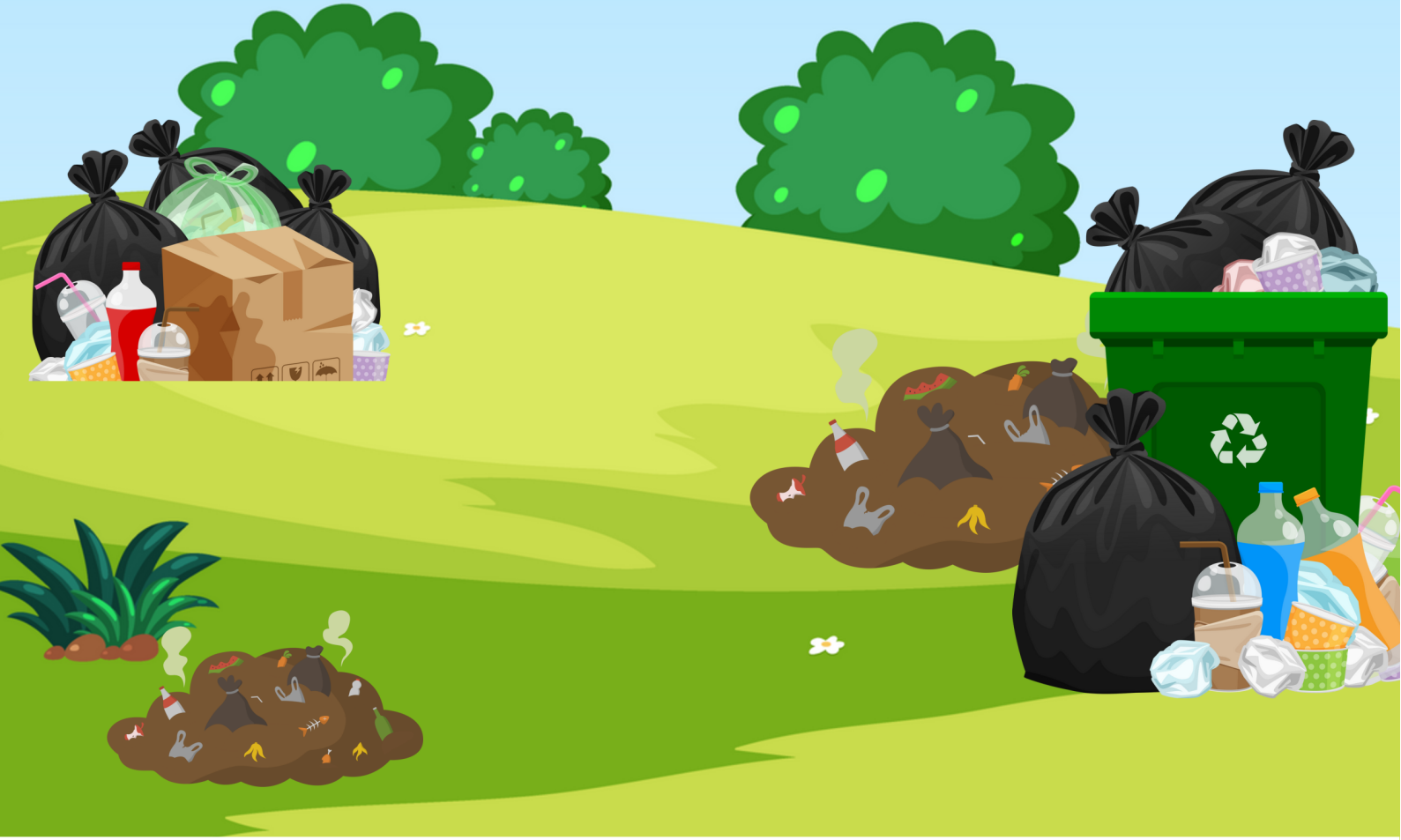
THANK YOU



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