



PROCESS ENGINEERED FUEL - FUEL PRODUCT OR PLASTIC WASTE EXPORT IN DISGUISE?

NATIONAL REPORT ON PEF IMPORTATION AND USE IN THE PHILIPPINES

March 2022



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Lead Author

Atty. Gregorio Rafael P. Bueta



IPEN is a network of over 600 non-governmental organizations working in more than 120 countries to reduce and eliminate the harm to human health and the environment from toxic chemicals.

www.ipen.org



EcoWaste Coalition is a non-profit network, founded in 2000, of over 140 public interest groups in the Philippines that have coalesced to advance “a zero waste and toxics-free society where communities enjoy a safe and healthy environment.”

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Front cover photo: (bottom) Philippine's customs officers raid PEF shipment from Australia 2019.
Source: CNN Philippines. (top) Assorted plastic waste. Source: EcoWaste Coalition

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INTRODUCTION

PHILIPPINE WASTE SITUATION REPORT

In the Philippines, there is no time to waste when it comes to the waste crisis. Solid waste management and its related problems is perhaps the most pressing environmental issue in the country today. Rising populations and high poverty rates coupled with increasing urbanization continues to put a strain on waste management systems and infrastructure. The Philippines' archipelagic geographic structure, a rising population, lack of incentives for reform, and weak implementation and enforcement of regulations result in almost 35% of plastic wastes leaking into the open environment.¹

Both statistics and projections support the rising crisis situation. The National Solid Waste Management Commission (NSWMC) points to a rising trend in solid waste generation: "The yearly amount of waste in the country was expected to increase from 13.48 million tons in 2010, to 14.66 million tons in 2014, to 18.05 million tons in 2020".² The DENR-EMB estimates that in 2020, waste generated was 21.4 million tonnes – and this is expected to increase to 23.6 million tonnes by 2025.³ The most recent national Waste Analysis and Characterization Study found that 56.7 percent of municipal solid waste was generated by residential sources.⁴ A further 27.1 percent was coming from commercial establishments, with institutional facilities and the industrial or manufacturing sector contributing the remaining 12.1 percent and 4.1 percent, respectively.⁵

Poor waste management infrastructure has also contributed to the ballooning of this problem. Recent reports by the DENR show that there are only 237 sanitary landfills nationwide to service the 1,634 cities and municipalities in the country (with 11 under construction); and only 11,625 materials recovery facilities (MRFs) to cater to over 42,000 *barangays* (villages). Although it was recently reported that all of the 335 illegal open

1 WWF-Philippines. 2020. EPR Scheme Assessment for Plastic Packaging Waste in the Philippines. WWF: Quezon City.

2 DENR-Environmental Management Bureau. 2019. National Solid Waste Management Status Report 2008-2018. Manila: DENR.

3 DENR-EMB. 2021. Solid Waste Management Statistics. <https://emb.gov.ph/solid-waste-management-data/>

4 Greenpeace Philippines, and EcoWaste Coalition. Waste trade and the Philippines: How local and global policy instruments can stop the tide of foreign waste dumping in the country. 7 March 2020

5 DENR-Environmental Management Bureau. 2019. National Solid Waste Management Status Report 2008-2018. Manila: DENR

dumpsites have been closed⁶, many argue that its implementation 20 years after the mandate of the law is too late and unacceptable.

WASTE TRADE: FUELING THE WASTE CRISIS

Globally, waste generation is expected to gradually increase to unprecedented levels. The world generates 2.01 billion tonnes of municipal solid waste annually, with at least 33 percent of that—extremely conservatively—not managed in an environmentally safe manner.⁷ The world is on a trajectory where waste generation will drastically outpace population growth by more than double by 2050.⁸ According to the World Bank, without urgent action, global waste levels will increase by 70 percent from current levels by 2050, amounting to an estimated 3.40 billion tonnes annually. If not properly dealt with, waste poses a threat to public health and the environment that will affect everyone.⁹

Most of the global waste is generated in developed and high-income countries. Though they only account for 16 percent of the world's population, high-income countries generate about 34 percent, or 683 million tonnes, of the world's waste.¹⁰ One of the solutions which has been used by these countries is to ship their waste out – to a willing or unwilling country. Thus, the global waste trade industry was born.

Global waste trade is a lucrative industry. Legal and regulated movement of waste is still a multi-billion dollar industry. Data from the United Nations Commodity Trade Database recorded that in 2017 the world's plastic waste export and import was valued at USD \$4.5 billion and USD \$6.1 billion, respectively.¹¹ The Association of Southeast Asian Nations (ASEAN) countries, which includes the Philippines, is a primary destination of traded waste. China was formerly the primary endpoint for global waste trade, particularly for plastics recycling. However, with its Green Fence policy introduced in 2013, and fully implemented at the start of 2018, the country effectively closed its doors to these imports.¹² There was a mass scramble for alternative destinations for waste coming from mainly

6 Department of Environment and Natural Resources. <https://www.denr.gov.ph/index.php/news-events/press-releases/2606-denr-shuts-down-100-of-all-illegally-operating-dumpsites-nationwide>

7 World Bank. Trends in Solid Waste Management. https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html

8 See Kaza, Silpa, Lisa Yao, Perinaz Bhada-Tata, and Frank Van Woerden. 2018. "What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050." Overview booklet. World Bank, Washington, DC. License: Creative Commons Attribution CC BY3. OIGO.

9 UNEP. 2015. Global Waste Management Outlook. p. 2.

10 World Bank. Trends in Solid Waste Management. https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html

11 See UN Commodity Trade Database, HSCode. No. 391510, 391520, 391530, and 391590, <https://comtrade.un.org/data/>

12 R.Geyer et. al., "Production, use and fate of all plastics ever made," Science Advances 2017:3

industrialized countries.”¹³ This displaced tonnes of developed countries’ waste to jurisdictions in East Asia and the Pacific with less regulated, ill-prepared and already overburdened waste management systems already unable to deal with local waste in an environmentally sound manner.¹⁴ In 2019, these Southeast Asian countries started putting a halt to waste imports from wealthy countries as well¹⁵, due to the environmental harm and dangers posed by waste importation on people and to the already vulnerable and weak waste management systems in the region.

RDFs, PEFs AND WASTE MANAGEMENT: ARGUMENTS FOR AND AGAINST THEIR USE

The global waste challenge has led to a variety of so-called solutions being offered. As landfills exceed their capacities and governments struggle to find effective alternatives, transforming waste into energy has gained both traction, and notoriety, as a viable solution.

By shifting to the Waste-to-Energy (WTE) incineration model, the calorific energy potential of waste is exploited through the generation of electricity and/or heat in Energy-from-Waste (EFW) plants.¹⁶ As a result, Process Engineered Fuel (PEF) is produced from “sorted, shredded material arising that most people would simply consider rubbish.”¹⁷ According to industry sources, once the waste is transformed into a ready-to-use fuel source¹⁸, it becomes an “energy source in facilities such as power plants and cement kilns, in replacement of ever-depleting fossil fuels such as coal, oil, and gas.”¹⁹

While PEF is widely known as an overarching term for waste-derived fuel, it is interchangeably used with terms such as Refuse Derived Fuel (RDF) and Solid Recovered Fuel (SRF).²⁰ However, RDF and SRF may be differentiated and more specifically defined.

13 Hillary Leung. Southeast Asia Doesn't Want to Be the World's Dumping Ground. Here's How Some Countries Are Pushing Back. 3 June 2019. <https://time.com/5598032/southeast-asia-plastic-waste-malaysia-philippines/>

14 EcoWaste Coalition. Waste Trade in ASEAN: Legal Justifications for Regional Action. 5, July 2021.

15 Kate O'Neill. As more developing countries reject plastic waste exports, wealthy nations seek solutions at home. 5 June 2019. <https://theconversation.com/as-more-developing-countries-reject-plastic-waste-exports-wealthy-nations-seek-solutions-at-home-117163>

16 Giovanna Pinuccia Martignon. 2020. Trends in the Use of Solid Recovered Fuels. IEA Bioenergy. <https://www.ieabioenergy.com/wp-content/uploads/2020/05/Trends-in-use-of-solid-recovered-fuels-Main-Report-Task36.pdf>

17 UNTHA and Focus Enviro. RDF, SRF & PEF - Australia's future resources? <https://untha.s3.eu-west-2.amazonaws.com/2020/02/RDF-SRF-and-PEF-Australias-future-resources.pdf>

18 <https://resourceco.com.au/a-world-away-from-waste/>

19 UNTHA and Focus Enviro. RDF, SRF & PEF - Australia's future resources? <https://untha.s3.eu-west-2.amazonaws.com/2020/02/RDF-SRF-and-PEF-Australias-future-resources.pdf>

20 UNTHA and Focus Enviro. RDF, SRF & PEF - Australia's future resources? <https://untha.s3.eu-west-2.amazonaws.com/2020/02/RDF-SRF-and-PEF-Australias-future-resources.pdf>

Arguments in Support of RDF/PEF

<u>Pros</u>	<u>Cons</u>
Lower cost than coal and gas	Warning of Toxic Contaminants and Emissions
Claimed environmental benefits	Challenges in the Production of RDF
	Same Effect as Burning Fossil Fuels
	Inefficient Way to Produce Energy
	Negative impact on Human Health

RDF is a “relatively crude material, produced by shredding pre-sorted municipal solid waste (MSW).”²¹ Prior to entering the RDF production process, materials such as paper, metal, glass, and wood are removed from the MSW. On the other hand, SRF is usually produced from commercial and industrial waste, or other complex materials like carpets, pulper ropes, production waste, and mattresses.²² “The main difference is how refined and processed the final product is.”²³ Although producing SRF is more time-consuming, the resulting material is very usable as fuel and more efficient than RDF.²⁴

Currently, PEF is primarily used in the cement industry. “Global consumption of PEF at cement kilns is estimated to be around 40 million tonnes per annum, and while high rates of thermal substitution of PEF for fossil fuels is achieved, particularly in Northern Europe, it is relatively easy to produce a 25 to 30% energy substitution.”²⁵ Some industry experts believe that working with cement kilns is advantageous because they claim their process naturally removes all pollutants from the combustion

21 UNTHA. What is the difference between RDF and SRF? <https://www.untha.co.uk/what-is-the-difference-between-rdf-and-srf/>

22 UNTHA. What is the difference between RDF and SRF? <https://www.untha.co.uk/what-is-the-difference-between-rdf-and-srf/>

23 UNTHA. What is the difference between RDF and SRF? <https://www.untha.co.uk/what-is-the-difference-between-rdf-and-srf/>

24 UNTHA. What is the difference between RDF and SRF? <https://www.untha.co.uk/what-is-the-difference-between-rdf-and-srf/>

25 ResourceCo. Turning waste streams into energy. <https://www.sustainabilitymatters.net.au/content/waste/article/turning-waste-streams-into-energy-255666286>

emissions and the ash left over is incorporated into the cement itself.²⁶ However other experts disagree, and point out that it is “swapping one dirty fuel for another”.²⁷

The following section will look at some of the arguments for and against using RDF/PEF as a waste management solution.

Lower Cost

One of the features of PEF/RDF that makes it attractive to various governments and corporations is that it is inexpensive. ResourceCo, an Australian company involved in resource recovery and advanced manufacturing claims that PEF reduces fuel price risk as coal and gas prices significantly increase.²⁸

In the Philippines, some studies and industry players have claimed that “RDF reduces and even eliminates leachate production, as well as offers lower prices for alternative forms of fuel for use of industrial plants.”²⁹

Environmental Benefit

PEF is claimed to provide multiple benefits for health and the environment, including the diversion of waste from landfills and the subsequent reduction of greenhouse gas emissions³⁰, such as methane.³¹ In comparison to waste incineration, among the benefits PEF/RDF burning offers are higher heating value, low moisture content, higher carbon content, and lower sulfur content.³²

The cement industry benefits the most from PEF. According to the United Nations Environment Programme (UNEP), the cement industry is the

26 ResourceCo. Turning waste streams into energy. <https://www.sustainabilitymatters.net.au/content/waste/article/turning-waste-streams-into-energy-255666286>

27 Reuters. Trash and Burn: Big Brands Stoke Cement Kilns with Plastic Waste as Recycling Falters. Available at <https://www.reuters.com/investigates/special-report/environment-plastic-cement>

28 ResourceCo. Turning waste streams into energy. <https://www.sustainabilitymatters.net.au/content/waste/article/turning-waste-streams-into-energy-255666286>

29 Grace P. Sapuay. Resource Recovery through RDF: Current Trends in Solid Waste Management in the Philippines. In *Procedia Environmental Sciences*, Volume 35, 2016, Pages 464–473. <https://www.sciencedirect.com/science/article/pii/S1878029616301190>

30 Grasshopper. Waste To Energy: A Triple Benefit To The Environment. <https://grasshopper.net.au/waste-to-energy/>

31 ResourceCo. 28 November 2019. A World Away from Waste. <https://resourceco.com.au/a-world-away-from-waste/>

32 Christia Meidiana and Dwi Mashita. A Mass Balance Method for Assessing Energy Benefit of Waste Mining for Refuse Derived Fuel Production. In *International Journal of Environmental Science and Development*, Vol.8, No.6, June 2017. <http://www.ijesd.org/vols/995-S0004.pdf>

second biggest source, next to power generation, of carbon emissions which contribute to human-induced climate change.³³

In the context of the Philippines, “each ton of RDF used in cement plants replaces 600 kg of coal.”³⁴ It is claimed by some studies that, “The high temperature and the gas treatment system of the cement kiln guarantee emissions without any secondary pollution.”³⁵ RDF facilities produce an alternative form of fuel that reduces dependence on fossil fuel, generates new avenues for employment, and extends the life of engineered sanitary landfills.³⁶ “As an alternative energy source, RDF helps lessen the problem of power shortages, decreases carbon footprint as it reduces the fossil fuel usage of plants, decreases the risk of garbage slide in sanitary landfills and helps increase the effectivity of the city’s solid waste diversion program.”³⁷

Other studies have claimed that on top of benefitting the cement industry, the use of RDF in the Philippines would be helpful in the management of solid waste in the country. One article claimed that diverting a large portion of waste for alternative fuel is “especially great” for places where there are limited landfill sites—highly urbanized cities with high population growth like Metro Manila.³⁸

“RDF, together with the RA 9003 of reduce, reuse and recycle and waste segregation schemes greatly helps in reducing the volume of waste. This is because, with solid waste segregation already in place, most of the combustible materials used in RDF a real ready residual waste, such as those used as wrappers and all other packaging waste that are found to be non-recyclable.”³⁹ While RDF is not necessarily the best option for disposal, it is an option for prolonging the life spans of land fills and providing additional renewable fuel sources.⁴⁰

33 Kristine Angelli Sabillo. 21 September 2013. Firm cements ways to convert waste into energy. <https://business.inquirer.net/143871/firm-cements-ways-to-convert-waste-into-energy>

34 Grace P. Sapuay. Resource Recovery through RDF: Current Trends in Solid Waste Management in the Philippines. In *Procedia Environmental Sciences*, Volume 35, 2016, Pages 464–473. <https://www.sciencedirect.com/science/article/pii/S1878029616301190>

35 Id.

36 Id.

37 Id.

38 Id.

39 Id.

40 Grace P. Sapuay. Resource Recovery through RDF: Current Trends in Solid Waste Management in the Philippines. In *Procedia Environmental Sciences*, Volume 35, 2016, Pages 464–473. <https://www.sciencedirect.com/science/article/pii/S1878029616301190>

ARGUMENTS AGAINST RDF/PEF USE

Warning of Toxic Contaminants and Emissions

Experts warn of the presence of contaminants in PEF/RDF. “Although RDF has relatively high concentrations of paper and plastics, both of which have a high heating value in comparison to most coals, it also contains materials that: have a relatively high percentage of ash, can be damaging to burners and boilers, and can exert a seriously adverse effect on the quality of the exhaust gases.”⁴¹

“Even though RDF more closely approaches homogeneity than does raw solid waste, the approach is far from great enough to justify RDF being regarded as a clean or high-quality fuel in terms of combustion. The reason is that RDF is a combination of many materials, each of which has its particular set of characteristics. The consequence is that in comparison to more homogeneous solid fuels, such as wood or coal, the maintenance of an efficient combustion process is more difficult when RDF is used as a fuel.”⁴²

“RDF plants store freshly-collected waste for up to a week, often spraying it with strongly scented chemicals and enzymes to cover odors and hasten the de-composition process. This not only produces toxic leachates (juices of decomposing organic matter) but also contaminates compost produced later in the process.”⁴³

“The incineration of RDF in cement kilns, incinerators, and other combustion units releases harmful chemicals into the air and concentrates toxins in ash which must be disposed of later. In some countries, facilities where RDF is produced often sell compost laced with heavy metals and other pollutants without restriction.”⁴⁴

“Numerous studies have confirmed that a typical waste incinerator releases dioxins, lead, cadmium, mercury, and fine particles into the atmosphere.”⁴⁵ Emissions from facilities that burn RDF are always laced with dioxins and furan, which are a result of burning plastic and materials with chlorine.⁴⁶ The mechanical segregation technologies that form part of RDF production do not have the capacity to eliminate common toxic

41 National Energy Technology Laboratory, Department of Energy. Production of RDF. <https://www.netl.doe.gov/sites/default/files/netl-file/production-refuse-derived-fuel-chapter12.pdf>

42 Id.

43 Global Alliance Against Incinerator Alternatives. October 2013. Understanding Refuse Derived Fuel. <https://www.no-burn.org/wp-content/uploads/RDF-Final.pdf>

44 Id.

45 Id.

46 Id.

substances like PVC (Polyvinyl Chloride) plastic or other domestic hazardous wastes like CFL tube lights containing mercury.⁴⁷

Heavy metals aren't destroyed in the incinerator either. "They end up in the incinerator ash or they escape into the environment through the smoke stack and are transported through the air and deposited in water and soil, both near and far from the incinerator."⁴⁸

Challenges in the Production of RDF

In the production of PEF/RDF, factors such as waste characteristics, climatic conditions, technologies available, and final treatments in a given location affect the quality of the final fuel product.⁴⁹

In less developed or tropical countries such as the Philippines, moisture content is a serious challenge.⁵⁰ RDF facilities in landfills are susceptible to receiving mixed or poorly segregated wastes at the plants, which leads to cross contamination of potential resources and increased operational expense in achieving the standards necessary to cement plants, such as moisture content.⁵¹ When the final compost is derived from unsegregated MSW, it is inevitably highly contaminated.⁵²

Poorly segregated waste also produces a final compost that is contaminated with fine pieces of plastic, broken glass, particles from tube lights, and other materials.⁵³

Same Effect as Burning Fossil Fuels

According to press release from Break Free From Plastic quoting National Toxics Network (NTN) Australia, burning plastic waste in the guise of PEF or RDF is a "stealthy way to continue burning fossil fuels"⁵⁴ with added toxic compounds.⁵⁵ "It is also a highly toxic fuel leaving 'forever

⁴⁷ Id.

⁴⁸ Id.

⁴⁹ Global Alliance Against Incinerator Alternatives. October 2013. Understanding Refuse Derived Fuel. <https://www.no-burn.org/wp-content/uploads/RDF-Final.pdf>

⁵⁰ Id.

⁵¹ Worldwide Fund for Nature Philippines. 2020. EPR Scheme Assessment for Plastic Packaging Waste in the Philippines. https://wwf.org.ph/wp-content/uploads/2020/12/WWF_REPORT_EPR_Philippines_2020.pdf

⁵² Global Alliance Against Incinerator Alternatives. October 2013. Understanding Refuse Derived Fuel. <https://www.no-burn.org/wp-content/uploads/RDF-Final.pdf>

⁵³ Id.

⁵⁴ Break Free from Plastics. 18 November 2020. New Federal Law green lights plastic waste export for burning. <https://www.breakfreefromplastic.org/2020/11/18/new-federal-law-green-lights-plastic-waste-export-for-burning/>

⁵⁵ Id.

chemicals' like dioxin and PFAS in our local and global environments where they cause irreversible adverse impacts.”⁵⁶

Inefficient Way to Produce Energy

The cost of producing PEF/RDF outweighs its promised benefits. Significantly less energy is actually produced in comparison to the energy that would be saved by recycling the materials being burned instead.⁵⁷

Segregating waste at source, recycling, reusing, and biological treatment of organics should be prioritized.⁵⁸ “Private companies promising to alleviate a community of their waste problem by centralizing collection and production of RDF are, in actuality, offering to exchange one set of problems for another; they are not offering a solution.”⁵⁹

Negative Impacts on Human Health

According to Greenpeace, people who live near and work with incinerators that burn waste, including RDF, are vulnerable to adverse impacts on their health.⁶⁰ Because of the high levels of dioxins and furans, adults and children are exposed to diseases such as cancer, heart disease, respiratory problems, immune system problems, increased allergies, and congenital abnormalities.⁶¹

As two of the named persistent organic pollutants (POPs) under the Stockholm Convention, dioxins and furans degrade very slowly in the environment and mostly affect humans through the food they consume.⁶² Even from a distance, these pollutants easily affect the environment and human health through the wind and ocean currents.⁶³

The heavy metals found in incinerators and cement plants also cause diseases in the central nervous system, cardiovascular system, respiratory system, liver, and kidneys.⁶⁴ The toxic substances used in manufacturing form part of MSW, and when the waste is left unsegregated, collected, and

⁵⁶ Id.

⁵⁷ Global Alliance Against Incinerator Alternatives. October 2013. Understanding Refuse Derived Fuel. <https://www.no-burn.org/wp-content/uploads/RDF-Final.pdf>

⁵⁸ Id.

⁵⁹ Id.

⁶⁰ Michelle Allsopp, Pat Costner and Paul Johnston. 2001. Incineration and Human Health: State of Knowledge of the Impacts of Waste Incinerators on Human Health. <https://www.dioxinnz.com/pdf-X-greenpeace/GP-archive-rpts-euincin-01.pdf>

⁶¹ Id.

⁶² Global Alliance Against Incinerator Alternatives. October 2013. Understanding Refuse Derived Fuel. <https://www.no-burn.org/wp-content/uploads/RDF-Final.pdf>

⁶³ Id.

⁶⁴ Id.

burned, “regardless of the treatment it may undergo, toxins in the waste end up in the incinerator emissions.”⁶⁵

OBJECTIVES OF THE STUDY

The main objective of this study is to develop a national report on PEF production, importation and use in the Philippines.

This is in support of IPEN’s Toxics-Free Sustainable Development Goals project: *Process Engineered Fuel – Fuel product or plastic waste export in disguise?* The overall objective of this project is to inform a broad range of stakeholders on the generation, use and trade of RDF in the Asia-Pacific region. In particular, the project highlights the potential for Australian plastic waste to be exported as Process Engineered Fuel for burning in cement kilns and incinerators in Indonesia, Malaysia and the Philippines and to investigate any potential for this to subvert or undermine the Basel Convention and the UN SDGs and pose adverse human health and environmental impacts for these importing countries.

Why Focus on the Philippines and Australia?

Australia is known as one of the global leaders in the development and use of RDF and PEF technologies. In recent years there has been an increase in exports of RDF/PEF to ASEAN countries, thereby ensuring that local Australian waste is dealt with. However, many have argued that this is simply shifting the waste problem to other less-developed countries, and the not-in-my-own-backyard (NIMBY) mind-set has to be stopped.

As a response to calls for Australia to take responsibility for its own waste, the Recycling and Waste Reduction Act was passed in December 2020.⁶⁶ As the country’s first national waste legislation, one of its key features is the ban on the export of plastic waste, paper, glass, and tires.⁶⁷ However, environmental groups warn that the law’s ban on waste exports may not be as promising as it sounds. According to NTN Australia, “the bill is a trojan horse.”⁶⁸ Instead of exporting unsorted and contaminated mixed waste, Australia is repacking its waste and relabeling it as a fuel product they can continuously export to poor countries.⁶⁹

⁶⁵ Id.

⁶⁶ Holly Keys. 9 December 2020. Senate passes recycling and waste management act. <https://waste-managementreview.com.au/senate-passes-recycling-and-waste-reduction-act/>

⁶⁷ Id.

⁶⁸ BreakFreefromPlastics. 18 November 2020. New Federal Law green lights plastic waste export for burning. <https://www.breakfreefromplastic.org/2020/11/18/new-federal-law-green-lights-plastic-waste-export-for-burning/>

⁶⁹ **NEED**

Under the new law, only the export of specific raw or unprocessed materials is covered by the ban, but if these materials have been re-processed into “value-added” materials, then they do not fall under the prohibition.⁷⁰ By turning mixed residual wastes and plastic scraps into a more homogenized form, the product would no longer be classified as waste, effectively finding away around the supposed export ban.⁷¹

Indeed, Australian companies seems to have found another way to get rid of their waste — tapping into the potential of cement kilns in Southeast Asia. According to ResourceCo, “Southeast Asia has over 100 cement kilns and there are countless more across China. Most of these kilns are yet to be tapped into.”⁷² In Northern Europe, some kilns get 90% of their energy requirement from alternative fuels, while in Southeast Asia, the substitution rate is estimated at less than 5%—so the opportunity in turning relevant waste streams into PEF is huge in Southeast Asian countries such as the Philippines.⁷³ Some of the biggest cement companies in the Philippines have already been importing RDF. ResourceCo adds that “RDF is largely used by international cement manufacturers operating in the Philippines such as Holcim and Lafarge, as well as by CEMEX.”⁷⁴

70 UTS. 15 December 2020. Australia’s waste export ban becomes law. <https://www.uts.edu.au/news/social-justice-sustainability/australias-waste-export-ban-becomes-law>

71 Break Free from Plastics. 18 November 2020. New Federal Law green lights plastic waste export for burning. <https://www.breakfreefromplastic.org/2020/11/18/new-federal-law-green-lights-plastic-waste-export-for-burning/>

72 ResourceCo. Turning waste streams into energy. <https://www.sustainabilitymatters.net.au/content/waste/article/turning-waste-streams-into-energy-255666286>

73 Id.

74 Grace P. Sapuay. Resource Recovery through RDF: Current Trends in Solid Waste Management in the Philippines. In *Procedia Environmental Sciences*, Volume 35, 2016, Pages 464–473. <https://www.sciencedirect.com/science/article/pii/S1878029616301190>

LEGAL AND POLICY FRAME WORK ON PEF/RDF IN THE PHILIPPINES

This section of the report will provide a brief survey of the relevant legal and policy framework on PEF-RDF use in the Philippines.

LAWS AND POLICIES

Republic Act (RA) No. 9003, the Ecological Solid Waste Management Act of 2000

RA 9003 is the country's primary policy on solid waste avoidance, reduction, treatment, and reduction. Notably, this law devolves its implementation to Local Government Units (LGUs), with waste segregation and collection of biodegradable, compostable, and reusable wastes delegated to the *barangay* (village) level, and municipalities and cities have been given responsibility for the collection of non-recyclable materials and special wastes in their areas of jurisdiction.⁷⁵ At the national level, a National Solid Waste Management Commission under the Office of the President coordinates these local efforts and provides technical assistance for the preparation, modification, and implementation of plans and programs.⁷⁶

Section 48 of RA 9003 likewise prohibits the importation of toxic wastes misrepresented as "recyclable" or "with recyclable content" and the transport and dumping in bulk of collected domestic, industrial, commercial and institutional wastes in areas other than accredited centers or facilities.

RA No. 6969, the Toxic Substances and Hazardous Nuclear Wastes Control Act of 1990

RA 6969 is the Philippine's implementing legislation for the Basel Convention, and the main law which governs the importation of hazardous products, including waste. It declares as a policy of the State, among others, to regulate, restrict, or prohibit the importation of chemical substances and mixtures that present unreasonable risk and/or injury to health or the environment. Under the law it is unlawful to cause, aid or facilitate the storage, importation or bringing into the country, even in transit, of any

⁷⁵ Republic Act 9003 (2000), Sec 10

⁷⁶ Id.

amount of hazardous waste.⁷⁷ RA 6969 is also explicit that the persons or firm responsible or connected with the bringing or importation into the country of hazardous wastes shall be under obligation to transport or send back said prohibited wastes.⁷⁸

RA No. 8749, the Clean Air Act of 1990

RA 8749 is the main law which regulates emissions and prohibits air pollution. Section 20 of the law provides for “a general prohibition on the use of incineration and open burning for the disposal of waste”. Incineration is defined as the “burning of municipal, bio-medical and hazardous wastes, which process emits poisonous and toxic fumes”.

RA No. 9513, the Renewable Energy Act

RA 9513 recognizes the adoption of WTE technologies as a form of renewable energy under the law. In Section 30, the DOE shall, where practicable, encourage the adoption of waste-to-energy facilities such as, but not limited to, biogas systems. This shall be done in coordination with the DENR. As used in RA 9513, waste-to-energy technologies shall refer to systems which convert to biodegradable materials such as, but not limited to, animal manure or agricultural waste, into useful energy through processes such as anaerobic digestion, fermentation and gasification, among others, subject to the provisions and intent of Republic Act No. 8749 (Clean Air Act of 1999) and Republic Act No. 9003 (Ecological Solid Waste Management Act of 2000).

It is worth noting that the RE technology referred to by this law uses biodegradable materials, not non-biodegradable ones such as broken-down plastics.

RE developers who build RDF facilities or at least have RDF projects are given incentives like a tax holiday and duty-free importation of RE materials.

RA No. 10863 (RA 10863), or the Customs Modernization and Tariffs Act

RA 10863 reiterates the prohibited importation and exportation of goods or parts thereof which importation and exportation are explicitly prohibited by law, rules and regulations.⁷⁹ It also adds that for violations of RA 6969, the vessel used to transport the hazardous waste shall also be for-

⁷⁷ RA 6969 (1990), Sec. 13(d)

⁷⁸ RA 6969, Sec. 14(d)

⁷⁹ RA 10863 (2016), Sec. 118(g)

feited in favor of the government.⁸⁰ However, it is important to note that DENR Administrative Order 2013-22, or the procedural manual for the implementation of RA 6969, does not currently list plastic waste among the classification of prescribed hazardous wastes. As such, application of these policies may be limited.

In support of RA 10863, Customs Memorandum Order (CMO) 38-2019, issued in July 2019, institutionalized an Environmental Protection and Compliance Division (EPCD) at the Bureau of Customs (BOC). This newly organized office is intended to serve as the BOC's specialized unit for environmental protection issues.⁸¹ To perform its mandate, the EPCD has been given monitoring functions over the processing of shipments of (among others) hazardous substances, waste products, recyclable products and other chemicals and substances under the regulatory control of the DENR. It may also recommend the issuance of Alert Orders and Pre-Lodgment Control Orders against shipments suspected of containing goods in violation of the Customs Modernization and Tariff Act (CMTA) and other environmental laws.

ADMINISTRATIVE ISSUANCES

DENR Department Administrative Order No. 2010-06

This issuance provides for guidelines on the use of alternative fuels and raw materials in cement kilns. It reiterates the state policies on the regulation of the use and disposal of hazardous substances and waste, compliance with emissions standards and advocating resource recovery.

Alternative fuels have been defined as non-traditional fuels, such as waste materials, that provide thermal energy in the production of cement. Waste materials on the other hand are also defined as any material, product, or by-product, liquid or solid, that the generator intends to dispose, or is required by law to dispose. This creates confusion around the definitions of waste and what is an eligible fuel. The order also provides for an initial list of waste materials not acceptable for co-processing (on which plastics are notably not included).

DENR DAO 2019-21

These guidelines cover the requirements and procedures for the establishment and operation of WTE facilities utilizing municipal solid waste. It requires the conduct of an environmental impact assessment pursuant to

⁸⁰ RA 10863, Sec. 1429(f)

⁸¹ Bureau of Customs, Customs Memorandum Order 38-2019(2019), Sec. 2

Presidential Decree No 1586, and that the host local government unit give its consent to the proposed WTE facility. The facilities shall only accept segregated biodegradable and residual wastes. It also recognizes the use of thermal processes (burn or non-burn) in the operation of the facility.

DENR-DOST JAO 2006-01

This issuance provides for the establishment of an Environmental Technology Verification Protocol. This is to be jointly administered by the DENR and the Department of Science and Technology. Both RA 8749 and RA 9003 were mentioned as basis for the law. The protocol can be used for the review of technology for: i) the treatment, storage, and disposal of waste; ii) pollution control and abatement; iii) best environmental technology; and iv) cleaner production technologies.

This can be used as authority to ensure that any technology currently utilizing PEF/RDF is properly screened and evaluated.

RELEVANT TRADE AGREEMENTS BETWEEN THE PHILIPPINES AND AUSTRALIA

ASEAN-Australia-New Zealand Free Trade Agreement

The AANZFTA is a comprehensive and single-undertaking free trade agreement that opens up and creates new opportunities for approximately 663 million peoples of ASEAN, Australia and New Zealand - a region with a combined Gross Domestic Product of approximately USD \$4 trillion as of 2016. In line with the ASEAN Community Vision 2025, the AANZFTA aims for sustainable economic growth in the region by providing a more liberal, facilitative and transparent market and investment regimes among the twelve signatories to the Agreement.⁸²

⁸² AANZFTA. Overview: The ASEAN-Australia-New Zealand Free Trade Area (AANZFTA). <https://aanzfta.asean.org/aanzfta-overview>

A tariff schedule allows waste to be imported under these categories:

Hdg No.	Description
85.48	Waste and scrap of primary cells, primary batteries and electric accumulators; spent primary cells, spent primary batteries and spent electric accumulators; electrical parts of machinery or apparatus, not specified or included elsewhere in this Chapter.
25.17	Pebbles, gravel, broken or crushed stone, of a kind commonly used for concrete aggregates, for road metalling or for railway or other ballast, shingle and flint, whether or not heat-treated; macadam of slag, dross or similar industrial waste, whether or not incorporating the materials cited in the first part of the heading; tarred macadam; granules, chip-pings and powder, of stones of heading 25.15 or 25.16, whether or not heat-treated.
26.19	Slag, dross (other than granulated slag), scalings and other waste from the manufacture of iron or steel.
26.21	Other slag and ash, including seaweed ash (kelp); ash and residues from the incineration of municipal waste.
27.10	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70% or more of petroleum oils or of oils obtained from bitumi-nous minerals, these oils being the basic constituents of the prepara-tions; waste oils.
38.25	Residual products of the chemical or allied industries, not elsewhere specified or included; municipal waste; sewage sludge; other wastes specified in Note 6 to this Chapter.
39.15	Waste, parings and scrap, of plastics.
40.04	Waste, parings and scrap of rubber (other than hard rubber) and pow-ders and granules obtained there from.
47.06	Pulps of fibres derived from recovered (waste and scrap) paper or paperboard or of other fibrous cellulosic material.
68.08	Panels, boards, tiles, blocks and similar articles of vegetable fibre, of straw or of shavings, chips, particles, saw dust or other waste, of wood, agglomerated with cement, plaster or other mineral binders.
71.12	Waste and scrap of precious metal or of metal clad with precious metal; other waste and scrap containing precious metal or precious metal compounds, of a kind used principally for the recovery of pre-cious metal.
72.04	Ferrous waste and scrap; remelting scrap ingots of iron or steel.
76.02	Aluminium waste and scrap.
78.02	Lead waste and scrap.
84.17	Industrial or laboratory furnaces and ovens, including incinerators, nonelectric.

RDF/PEF USE IN THE PHILIPPINES

This report has looked into daily import entry reports from the Philippine Bureau of Customs, from the period November 2018 to March 2021.

All reported PEF imports during this period were from Australia (except for some that came from Singapore but were still of Australian origin). In 2019, there was a steady stream and increase in PEF imports into the Philippines. There was a slowdown in 2020, which was expected as a result of the lockdowns due to the Covid-19 pandemic restrictions. However, within the first 3 months of 2021, a surge in imports could be seen anew, almost equaling the total PEF imports for the whole of 2020. It is highly likely that this trend continued throughout the year, and is ongoing until the date of publication for this report.

Date/Period	Country of Origin	Mass	Customs Value
November 2018 - December 2019	Australia	11,344,630 kg	USD \$357,151.25
January - December 2020	Australia	2,269,080 kg	USD \$69,787.90
January - March 2021	Australia	1,929,850 kg	USD \$62,720.13
TOTAL		15,543,560 kg	USD \$489,659.28

SUMMARY OF CURRENT NEWS, REPORTS AND PUBLICATIONS ON PEF

This section will briefly present recent news and reports on the issue of PEF use in the Philippines.

Companies that import PEF/RDF claim it is beneficial for the environment and compliant with existing laws.

Holcim claims that it is low-grade fuel, process engineered fuel—not garbage.⁸³

83 Jigger J. Jerusalem. 24 May 2019. Trash from Australia not toxic, says BOC. <https://globalnation.inquirer.net/175545/trash-from-australia-not-toxic-says-boc>

Government officials give conflicting stances.

In May 2019, when the Bureau of Customs intercepted containers of shredded municipal waste in Misamis Oriental from Australia, Foreign Secretary Teodoro Locsin demanded that these be returned. He also commented that if it were true that these were PEF for cement kilns, then cement makers should formally import the PEF so it goes nowhere but to their plants.⁸⁴

The Bureau of Customs contested Holcim's declaration that it was PEF because it was clearly "domestic waste based on its smell."⁸⁵

On the other hand, the Environmental Management Bureau (EMB) had no objections to the importation and use of the PEF from Australia. In a letter from the EMB Central Office, the EMB said that the imported materials complied with Section 4 of DAO 2010-06, the basis used by Holcim for accepting the materials.⁸⁶

Environmental groups and academics claim that PEF/RDF/Waste-to-Energy have adverse health and environmental effects. It is also just another way for Australia to get rid of their waste while making profit.

According to Aileen Lucero of the EcoWaste Coalition:

*"The entry into our country of residual wastes generated by Australia's commercial, industrial, and construction sectors in the form of cement kiln fuels looks like a devious disposal scheme. Described as 'municipal waste' in the shipment declaration, Australia is able to get rid of its residual wastes in a profitable way by converting and relabeling them as processed engineered fuel for export to developing countries like ours. We question this latest scheme of foreign waste disposal."*⁸⁷

Ana Baptista, Assistant Professor of Environmental Policy and Sustainability Management, The New School, adds that because plastics are petroleum-based, "they are difficult to decompose and release harmful pollutants such as dioxins and heavy metals when they are incinerated."⁸⁸

84 DENR Region 2 News clippings. 11 June 2019. https://r2.denr.gov.ph/images/news_clippings/News_Clippings_06_11_2019.pdf

85 Id.

86 Holcim Philippines. 23 May 2019. Holcim statement on alternative fuels held at Misamis Oriental port. <https://www.holcim.ph/holcim-statement-alternative-fuels-held-misamis-oriental-port>

87 GAIA. 24 May 2019. Green groups call on Southeast Asian governments to resist waste imports. <https://www.no-burn.org/green-groups-call-on-southeast-asian-governments-to-resist-waste-imports/>

88 Roxanne Fitzgerald. 20 November 2020. Environmental groups condemn government's "deceptive scheme" to incinerate plastic and waste. <https://thefifthstate.com.au/waste/environmental-groups-condemn-governments-deceptive-scheme-to-incinerate-plastic-and-waste/>

This will pollute other more vulnerable communities in Southeast Asia while fueling the many waste-to-energy incinerators planned for Australia, scandalously as clean and renewable energy projects with public funds.”⁸⁹

Mageswari Sangaralingam of the Malaysia’s Consumers’ Association says that Indonesia and Malaysia have not had positive experiences with Australia’s previous PEF exports as these were found to be contaminated with hazardous waste.⁹⁰

ResourceCo, one of Australia’s largest PEF companies, through ResourceCo Asia, is looking to expand to Southeast Asian countries like the Philippines.

As of 2019, the company is on track to expand to countries such as the Philippines, Indonesia, and Thailand. For ResourceCo, the opportunity is huge regarding what it can achieve to turn relevant waste streams into PEF in the Asian markets.⁹¹

The company claims that it fully complies with the import regulations of Malaysia, Singapore, and the Philippines.⁹²

LOCATION OF FACILITIES AND SITES THAT USE AND/OR PRODUCE PEF

This section will give a snapshot of locations, sites, and facilities that are reported to be using or producing PEF. Data presented here was collected from publicly available news and information, as government data and/or company reports are not readily accessible or are lacking.

Cement kilns

- **HOLCIM/Geocycle** — HOLCIM Philippines has plants in Bacnotan in La Union, Norzagaray in Bulacan, Davao City in Davao, Lugait in Misamis Oriental, and Mabini Batangas.⁹³ Since the PEF shipments arrived at the ports of Tagoloan, Misamis Oriental and Davao⁹⁴, it may

⁸⁹ Id.

⁹⁰ Id.

⁹¹ Waste Management Review. 6 February 2019. ResourceCo’s rapid growth in Asia. <https://wastemanagementreview.com.au/resourceco-pef/>

⁹² ResourceCo. What we do–Energy. <https://resourceco.com.au/what-we-do/energy/>

⁹³ Holcim Philippines. About Us. https://www.holcim.ph/sites/philippines/files/documents/About_us_brochure.pdf

⁹⁴ Holcim Philippines. 28 May 2019. Holcim Philippines statement on alternative fuels held at other ports. <https://www.holcim.ph/holcim-philippines-statement-alternative-fuels-held-other-ports>

be said that HOLCIM potentially uses PEF in their plants in Lugait and Davao City.

- **Lafarge Republic** — As of 2013, Lafarge has three RDF facilities in its Luzon cement plants — two in Bulacan and one in Teresa, Rizal.⁹⁵
- **CEMEX** — CEMEX Philippines uses RDF as part of its fuel mix to minimize energy costs.⁹⁶ It was reported that the company has been partnering with Green Alternative Technologies Specialist, Inc. (GATSI) since early 2000 to supply RDF at the Solid Cement plant in Antipolo City, replacing fossil fuel by as much as 30 percent.⁹⁷ In 2013, GATSI and the Department of Energy formally agreed on building an RDF facility in Brgy. San Isidro, Rodriguez, Rizal, which will be providing RDF supply to CEMEX Philippines.⁹⁸ “With its registration, GATSI can now avail of fiscal incentives under the Renewable Energy Act of 2008, such as seven-year income tax holiday, special income tax rate of 10%, tax exemptions from income generated from carbon credits, zero value-added tax, duty-free importation of RE equipment and machinery, among others.”⁹⁹

Others

- **RDF Facility in Sandoval, Pasig** — In 2015, a facility for RDF, a joint project of the Pasig City government, IPM Construction and Development Corporation, and the MMDA, was inaugurated.¹⁰⁰ It is majority-owned by BEST Inc., a subsidiary of Minerales Industrias Corporation (now IPM Holdings) and France-based company Lafarge Industrial Ecology International.¹⁰¹ It is the Philippines’ biggest waste-to-fuel facility.¹⁰² They claim that the facility is capable of processing up to 600 tonnes of trash a day.¹⁰³ According to then Mayor Eusebio, the facility would produce fuel pellets from waste to supply alternative fuel

95 Kristine Angelli Sabillo. 21 September 2013. Firm cements ways to convert waste into energy. <https://business.inquirer.net/143871/firm-cements-ways-to-convert-waste-into-energy>

96 Rappler. 15 May 2015. CEMEX invests \$300 Min Luzon plant production line. <https://www.rappler.com/business/industries/cemex-invests-luzon-plant>

97 The Philippine Star. 29 November 2013. Cement makers partner with LGUs for alternative fuel. <https://www.philstar.com/business/2013/11/29/1262021/cement-makers-partner-lgus-alternative-fuel>

98 Department of Energy. 24 June 2013. DOE Okays RDF Plant that Yields Fuel, Curbs Waste. <https://www.doe.gov.ph/press-releases/doe-okays-rdf-plant-yields-fuel-curbs-waste>

99 Id.

100 Philippine Daily Inquirer. 25 June 2015. Pasig plant turns trash into fuel. <https://newsinfo.inquirer.net/700610/pasig-plant-turns-trash-into-fuel>

101 Id.

102 ABS-CBN News. 24 June 2014. Philippines’ biggest waste-to-fuel facility opens. <https://news.abs-cbn.com/business/06/24/15/philippines-biggest-waste-fuel-facility-opens>

103 Philippine Daily Inquirer. 25 June 2015. Pasig plant turns trash into fuel. <https://newsinfo.inquirer.net/700610/pasig-plant-turns-trash-into-fuel>

to cement plants of local cement plants such as those of the Lafarge Group.¹⁰⁴

- **RDF Facility in Payatas** — In 2013, the Payatas RDF facility started operating and producing up to 50 tonnes of RDF per day.¹⁰⁵ Operated by the Mundo Verde Corporation, a consortium of PEG Southeast Asia, IPM-ESI, and BEST Inc., the RDF produced goes to the Luzon-based cement plants of Lafarge.¹⁰⁶ Based on a waste characterization study of the waste disposed in Payatas, “about 52% of the materials are usable for RDF and 48% are unusable for RDF but some of the unusable materials are recyclable materials such as metal and glass.”¹⁰⁷
- **Green Alternative Technology Specialist Inc. (GATSI) RDF Plant** — Located in Rodriguez, Rizal, the facility has the capacity to produce 350 tonnes of RDF per day.¹⁰⁸
- **FDR-Integrated Resource Recovery Management RDF Plant** — Located in Naga City, Cebu, the facility has the capacity to produce 300 tonnes of RDF per day.¹⁰⁹

Other relevant projects

- **Republic Cement Plans of RDF Use** — In line with their aspirations towards plastic neutrality, Republic Cement aims to optimize the use of alternative fuels, including RDF, as a substitute for fossil fuels. The company has been reported to have already tied up with, among others, the local government units of San Jose del Monte and Norzagaray in Bulacan, Teresa in Rizal¹¹⁰ — all of which are provinces known to have RDF facilities.

104 Philippine Daily Inquirer. 25 June 2015. Pasig plant turns trash into fuel. <https://newsinfo.inquirer.net/700610/pasig-plant-turns-trash-into-fuel>

105 **NEED**

106 Id.

107 Id.

108 Worldwide Fund for Nature Philippines. 2020. EPR Scheme Assessment for Plastic Packaging Waste in the Philippines. https://wwf.org.ph/wp-content/uploads/2020/12/WWF_REPORT_EPR_Philippines_2020.pdf

109 Id.

110 Republic Cement. 16 August 2020. Cement company ties up with public, private sectors to address waste woes. <https://republiccement.com/cement-company-ties-up-with-public-private-sectors-to-address-waste-woes/>

ANALYSIS/OBSERVATIONS

RDF/PEF USE IS INCREASING IN THE PHILIPPINES, WITH IMPORTATION AS A KEY DRIVER

The findings of this report show that RDF/PEF use is increasing, and will likely further increase, in the Philippines. Importation of these products, particularly from countries like Australia, have continued even during the on-going COVID-19 pandemic situation. In the customs records that were analyzed, each month showed varying volumes of shipments of PEF (although the exact consignee or recipient could not be verified based on BOC reports), which however contribute to the rising number of PEF used in the country.

It can thus be surmised that importation of PEF is fueling the increasing use of PEF in the Philippines. This situation also contributes to the existing waste trade issues and challenges of the Philippines. Developing countries in ASEAN continue to be the dumping ground of wastes and discards for the developed and industrialized world. This not only exacerbates environmental and health risks but also amplifies the waste crisis facing countries like the Philippines.

In addition, more and more facilities that process and use PEF have begun operations across the country. Most, if not all, of these facilities are tied to the cement industry which uses the PEF as feedstock for its kilns. It is also worth noting that information on these facilities is not readily available to the public. Websites of proponents provide little to limited information on existing and/or proposed facilities. Even government websites do not readily provide the information, and requesting the same has been a challenge.

EXISTING POLICIES FAIL TO CONSIDER THE INCREASING EVIDENCE OF THE POTENTIAL HARMFUL EFFECTS OF PEF/RDF USE

As early as 2010 guidelines were issued by the DENR for the use of alternative fuels or raw materials in cement kilns. These materials are essentially waste which is loosely defined as “any material, product or by-product ... which the generator intends to dispose”. This definition thereby allows waste products such as plastics to be used as alternative fuels to be burned in the kilns.

A decade later, and as more and more evidence of the harmful effects of these alternative fuels come to light, the Philippine government has not updated its standards, as embodied in its existing policies. In fact, there is growing support from the government itself for the increased use of RDFs and PEFs as a solution to the waste crisis. WTE is also being pushed as one of the quick fixes for the plastic problem. There are even some who refer to WTE as a form of renewable energy project—which by global and technical standards it is not.

This creates a dangerous situation wherein PEF/RDF use and WTE projects are readily accepted without a full and thorough analysis of its impacts on the health of the environment and of people. Government authorities, both at the DENR and the DOE, easily approve these projects and activities. Concerned citizens including those who may be directly affected by the related facilities (i.e., where the operations will be conducted) are not given the full information on the risks and impacts. In most cases, some have reported only being informed of the benefits of PEF/RDF use, or that of WTE, which is to provide a quick and easy solution to the growing waste problem. But they are not warned of the potential long-term health hazards of living in the vicinity of facilities which use PEF/RDF.

THE PROMOTION OF PEF/RDF USE IS INCONSISTENT WITH SEVERAL EXISTING LAWS AND POLICIES

A careful reading of the laws used as basis for allowing and promoting the use of PEF/RDF in the Philippines yields a different conclusion.

First, PEF/RDF facilities, including WTE facilities utilizing thermal processes, violate the ban on incineration provided for in Section 20 of the Clean Air Act. RA 9003 also prohibits the burning of garbage as a waste management activity. Second, allowing the use of PEF/RDF is also inconsistent with the declared policies of the State. RA 9003 calls for environmentally sound methods of ecological solid waste management whilst ensuring the protection of public health and the environment. In addition, RA 6969 seeks to regulate, restrict or prohibit the importation of chemical substances and mixtures that present unreasonable risk and/or injury to health or the environment. Allowing the use of PEF/RDF despite the increasing evidence of its detrimental effects on health and the environment runs counter to the stated objectives of these laws.

It can also be argued that the failure to provide adequate information and basis for allowing the use of PEF/RDF, and facilities which utilize the same, is a violation of the right of the people to a balanced and healthful ecology under Section 16, Article II of the Philippine Constitution. The

constitutional environmental right espoused here calls on the government and all concerned parties to ensure the protection of the rights of current and future generations. By allowing the use of PEF/RDF, authorities are disregarding the potential long term harmful effects on people and the environment. In addition, the failure to adequately and timely disclose information to the public is an additional form of violation of this right.

The promotion and use of PEF/RDF also runs contrary to the climate goals of the Philippines. Its recently submitted Nationally Determined Contribution (NDC) submitted under the requirements of the Paris Agreement, vowed to reduce carbon emissions by 75% by 2030. Allowing the continued burning of PEF/RDF in cement kilns, along with WTE facilities contradict this stated objective and will make it harder for the Philippines to achieve its climate goals and targets. Moreover, as climate impacts increase in a country ranked as one of the most vulnerable, adding the risk posed by burning of PEF/RDF aggravates the problems and challenges faced by the Filipino people.

NOT ENOUGH INFORMATION IS BEING GIVEN ON PEF/RDF USE

One challenge which this study encountered was the difficulty in accessing and obtaining data on PEF/RDF use. As noted above, there is no readily available information on PEF/RDF use, neither from government sources nor from private sector proponents and users. This leads to a situation wherein concerned citizens and those who may be affected by facilities which use PEF/RDF cannot make informed decisions if they will approve if the activity or not. For example, although customs data show that 15 million kilograms of PEF came into the Philippines between 2019 to March 2021, it is not known where these products were burned or used.

Research done for this study also shows that information on consignees and users of imported PEF are not readily available. People living near facilities that use RDF/PEF cannot ascertain if imported materials are being used. Local government leaders base their decision to approve or give consent on the limited information that is available and presented.

Environmental groups and civil society organizations have raised the alarm on the potential risks and harmful effects of PEF/RDF use. However, so far government officials and users of these materials – in particular cement industry players – have not heeded these calls and have only espoused the “positive benefits” of its use. They cite the potential to quickly and conveniently dispose of mounting piles of garbage, and that of a “renewable” source of energy which can also give additional revenues for local governments in the form of energy savings and sales. One irony in this situation is that local cement companies have to import PEF – derived

from garbage and waste of foreign countries like Australia – even when the Philippines is in the midst of its own waste crisis. Thus, local use of PEF is solving foreign countries' waste problems, while aggravating the likes of air pollution issues in the Philippines.

IMPORTATION OF PEF/RDF ADDS TO CONCERNS OVER THE ISSUE

As mentioned above, the importation of PEF/RDF aggravates the waste crisis in the Philippines. The country already needs to deal with the increasing volumes of waste, especially during this Covid-19 pandemic where plastic and medical waste has increased. This is due to the fact that waste management laws and facilities are not being fully and properly implemented. Case in point – it was only in the middle of 2021 when all illegal dumpsites were closed down by the DENR, 21 years after the enactment of RA 9003 which mandated that only SLFs shall be allowed.

The poor implementation of waste management laws also increases the risk of mixed waste being used in facilities, both from local and foreign sources. Government authorities do not have the capacity to inspect all shipments that come in, or to properly monitor all facilities using PEF/RDF. There is limited capacity of institutions to ensure the health and safety of the public when using these materials and technology. There have also been reports that proponents of WTE facilities are encouraging local government users to just place all its garbage – without any sorting or segregation–into incinerators and burners.

The ongoing problem of illegal waste importation also adds “fuel to the fire”. In recent years, the vigilance of environmental groups and concerned citizens have stopped the entry of illegal waste shipments – containers labelled as recyclable products, but which in fact consist of mixed or municipal waste. There have also been documented cases wherein imported PEF does not appear to be properly processed, where reports of mixed waste with plastic particles are visually present.

CONCLUSIONS AND RECOMMENDATIONS

This brief report on the Philippines highlighted the increasing risk brought about by the use of PEF/RDF in the country. Despite the growing number of experts and evidence which point to the need for more study and a cautious approach to the use of this “advanced technology and process”, countries like Australia and the Philippines continue to allow its export, import, and use. The existing waste crisis and the continuing waste challenges of the Philippines do not make for an ideal situation to test these dangerous materials and technologies – at the expense of placing the health of people and planet at high risk. More importantly since Philippine institutions do not have the capacity or resources to exact full compliance with standards and requirements of the law, its use should be suspended for now, limited, or perhaps eventually banned.

Below are some recommendations drawn from the findings of the study, providing actions to be taken to adequately and correctly address the issue of PEF/RDF use in the Philippines.

Reiterate calls for a total ban on waste imports, which includes waste derivatives such as PEF/RDF

In the past few years, environmental groups and concerned citizens in the Philippines and across ASEAN have called for a ban on waste imports to the region.¹¹¹ It has been repeatedly said that ASEAN countries are not a dumping ground for waste from the developed world. These calls for a ban on waste imports can be extended to importation of PEF/RDF which are just in fact waste conveniently presented in another form. Waste in whatever shape or size poses the same health and environmental risks to people and the planet, especially if it is derived from harmful materials such as plastics.

111 See EcoWaste Coalition and IPEN. 2021. Waste Trade in Southeast Asia: Legal Justifications for Regional Action 2021 Report. https://ipen.org/sites/default/files/documents/waste_trade_in_asean-final_revised.pdf

Immediate suspension of the use of PEF/RDF in all facilities in the Philippines

In support of calls to ban waste imports to the Philippines, the government must immediately suspend the use of PEF/RDF in all facilities in the Philippines. This is to make way for the following activities:

- Conduct of a thorough and transparent multi-stakeholder scientific study and analysis of the health and environmental impacts of PEF/RDF use;
- Conduct of meaningful and open consultations with concerned groups and stakeholders, particularly environmental groups and the cement industry and other users of PEF/RDF, including those to be potentially affected by PEF/RDF facilities;
- Review of emissions standards, as well as available technologies with a focus on cleaner production mechanisms, to align with global efforts and concerns on PEF/RDF use and climate goals and targets; and,
- Identify viable and safer alternatives to PEF/RDF, which can be sufficient feedstock for cement kilns and other facilities.

This suspension should be immediately implemented to ensure that no unknown harmful and detrimental effects on the public and the environment take place.

Reevaluate and renegotiate trade agreements with Australia and other countries

Existing trade agreements, which include the one with Australia and New Zealand, currently allow for the easy and tariff-free entry of products considered as waste. It does not make sense for a country like the Philippines to import waste from other countries when it cannot even effectively deal with its own domestic waste. Despite being a lucrative economic activity, monetary gain must not be at the expense of the health of people and the environment.

The reevaluation and renegotiation can be done on a regional level. ASEAN countries can band together and call for the removal of tariff-free entry of waste products into its shores. The Philippines going at it alone will be very difficult and may not have the same impact and leverage compared to ASEAN as a whole.

Focus on the proper and full implementation of existing waste management laws

Instead of looking for quick and easy fixes to the waste crisis, the government and all concerned stakeholders must focus on the full and proper implementation of existing waste management laws. This in itself will

reduce the amount of harmful waste that ends up in the open environment. This will also help support other less-harmful industries and activities such as recycling facilities (including the promotion and implementation of EPR), zero-waste alternatives and solutions, and enactment of upstream policies to change production and consumption patterns of harmful materials and products.

***Find alternative and viable solutions to the waste crisis
- not easy solutions which are dangerous***

The government and other stakeholders should invest their time, talent, and effort in finding viable and safe solutions to the waste crisis. Materials such as PEF/RDF, and the use of thermal WTE facilities can potentially do more harm than good in the long run. It also does not offer a long term solution to the waste problem – if people are of the mindset that their waste will just easily be disposed of through modern engineering, or that mounds of garbage will suddenly disappear, then there is no motivation for them to change their lifestyle and consumption habits to reduce waste. An increasing population with rising incomes and consumption will continue to overburden waste management systems. Zero waste programs and other upstream initiatives and projects should be prioritized over downstream solutions such as WTE and using PEF/RDF. Pushing for a more circular economy approach and incentivizing shifts to cleaner and greener technology in industries can also provide viable options for waste management.



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ipen@ipen.org

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