ADB & WASTE INCINERATION: BANKROLLING POLLUTION, BLOCKING SOLUTIONS

EXECUTIVE SUMMARY

*(The full report is available at **no-burn.org**)*

About the report

This report is a critical review of how Asian Development Bank (ADB) promotes investments in waste incineration, including so-called "waste-to-energy" (WTE) incineration, as a recommended method for municipal solid waste management for its borrowing member countries. It comes at a time when the bank is increasing its support of waste incinerators in the region, despite the documented negative impacts of these facilities on public health, the environment, the economy and the climate.

At present, waste incineration is being phased out in other parts of the globe in recognition of how the world needs to shift away from the destructive linear economic model abetted by landfilling and incineration, and transition to a circular economic system grounded on the principles of Zero Waste.

Countries in the Asia-Pacific region are currently struggling to improve the management of their natural resources, address growing pollution and waste in cities, and cope with climate change impacts. Their successful transition toward a Zero Waste circular economy will provide many opportunities to decouple economic growth from excessive resource extraction, consumption and wastage.

Borrowing member countries need to have the political will to ensure they are not forced into an "incineration trap," and instead proactively demand from ADB funding and programs that will lead them towards, and not away from, a Zero Waste circular economy.

In publishing this report, the Global Alliance for Incinerator Alternatives (GAIA) is calling on ADB to remove all financing from any form of waste incineration, and to instead fund just, equitable and sustainable Zero Waste systems.

Incinerators: problems, not solutions

Waste incineration

- the process of treating waste (household, industrial, medical, etc) through thermal methods including mass burn, pyrolysis, gasifcation or plasma processes, with or without so-called "energy recovery."[i]
- "end-of-pipe" approach for resource and waste management that does not tackle the problem at source
- produces multiple residue streams that are often more hazardous and more difficult to handle than the original waste that was burned.

Health and environmental impacts

- Incineration creates and releases thousands of toxic pollutants that contaminate air, soil and water, even when "state-of-the-art" pollution control devices are in place.
- Incinerators are major emitters of dioxins and furans--persistent organic pollutants that are highly carcinogenic and among the most toxic substances known to science.

Not climate-friendly; not RE

- Incinerators are carbon intensive, emitting significant amounts of greenhouse gases.[ii]
- Waste is a highly inefficient fuel; WTE incinerators use more energy than they can realistically generate.
- Waste is not renewable energy (RE); waste is a non-renewable resource. Building and subsidizing incinerators takes investments away from much-needed RE solutions.

Economic costs

- Incinerators are the most expensive way to manage waste and generate electricity. They impose a huge financial burden on cities and communities, contribute significantly to climate change, destroy livelihoods, block the implementation of Zero Waste solutions, and perpetuate the unsustainable "take, make, waste" linear economic model that abets the continuous extraction of natural resources and the creation of more waste.
- *Locking cities and municipalities into decades of wastage and debt.* The biggest revenue stream for a WTE incinerator is the tipping fee (the charge a city pays for bringing a volume of waste to a waste facility), not electricity generation.[iii] Together with high tipping fees, cities are locked into long-term "put-or-pay" contracts for a period of up to 30 years to guarantee revenue. In that period, the city promises to deliver a minimum quantity of waste and pay corresponding fees--even when they produce and deliver less waste to the facility. Thus, incineration creates perverse incentives for cities and municipalities to generate more waste, and are effectively penalized for reducing waste.[iv]
- This situation is compounded by the scale of the facilities being promoted by development banks

such as ADB. In order to be economically viable, incinerators are planned as large scale facilities (processing at least 150,000 tons of waste per year),[v] leaving a very small margin for cities to reduce waste generation.

Waste incineration: an ill-advised proposition

1. Waste volume is low, and waste composition in Asia is mostly organic

- Consumption and waste generation patterns in the Global North and South are different. On the average, Europe and North America generate up to four times more waste than Asia and the Pacific.[vi]
- Also, in Asia, organics (wet waste) comprise 50-70% of waste, while in North America and Europe, organics make up 27% and 33% respectively.[vii]
- The high portion of organics makes waste in Asia unfit to be burnt without preparation (which will cost additional resources); while the low portion of residual waste, and low energy content of the waste in general, makes burning waste an uneconomic proposition.

2. Developing countries generally have weak regulatory and governance structures, and often lack necessary technical resources and infrastructure, making it difficult to effectively monitor--and hold accountable--operators of environmentally and socially sensitive infrastructure.

- In the Global South, there is a lack of capacity for effective maintenance, emissions monitoring, public reporting and transparency.
- A study in China showed that only 65 of 160 WTE incinerators in operation publicly revealed their pollution emissions data; and of these, only 20 plants were in compliance with legal limits on emissions.[viii]
- Other cases of lax governance and monitoring with regard to waste infrastructure in the Global South have led to incidents and accidents with disastrous consequences on people, particularly those living on the margins.[ix]

3. Many developing countries in Asia lack the waste infrastructure and associated policy framework that address approaches higher up the waste hierarchy, and which need to be prioritized before proposing waste incineration.

- Many countries in Asia still do not have efficient waste segregation and collection systems in place, so that oftentimes, mixed waste end up in open dumps.
- There is also a lack of recycling infrastructure and associated policy support not just for recycling, but also for waste reduction and related policies such as extended producer responsibility (EPR) schemes.
- Local and national governments have limited money to improve waste systems--funds that would be further depleted should the money be used for waste incinerators.
- In many parts of Asia, informal waste workers provide unrecognized services for reduction and recycling. Investing in community-centered recycling and reduction efforts will improve the quality of the livelihoods of waste workers. In Asia, governments and international agencies must commit to including the informal sector in policy and project design in maximizing recycling, minimizing landfilling, and eliminating incineration altogether.[x]

4. Support for incinerators locks countries in the global South into a destructive, linear resource management and development model.

- Building incinerators in developing countries will block the adoption of sustainable resource management systems in places where they are most needed. A shift in the way we manage our resources--from the destructive linear economy to a sustainable circular economy--is essential in order to decouple economic growth from environmental destruction.
- Incinerators will prevent developing countries from avoiding the mistakes of industrialization in the Global North, creating even greater pressure on the planet.

ADB policies: fast-tracking incinerator investments, backtracking on social and environmental commitments?

WTE incinerator facilities advanced by ADB present significant investment risks, fail to comply with key provisions of the bank's safeguard standards as well as core pillars of the bank's poverty reduction strategy, and present a lack of accountability to the very people within member countries it is mandated to serve.

- ADB's *Poverty Reduction Strategy* does not reference or commit to international laws and standards outlined in internationally accepted human rights or environmental agreements. As a result, the bank can remain fundamentally unaccountable to the people and governments it is mandated to serve, protected by a guarantee of legal immunity. It is in this context that the bank continues to finance projects, investments and technical assistance in toxic industries, such as incineration and fossil fuel extraction, which exact a heavy toll on people's health and livelihoods.

- While its *Energy Policy* considers RE cost effective and contributing to increased quality of life of communities, it incorrectly defines WTE incineration as renewable (and therefore marked as a priority for investments). No level of exposure to an incinerator's cocktail of toxic pollutants, whether in the air, soil and/or groundwater is safe; nor can it be claimed such investments "do no harm" or take a precautionary approach. It is also not "cost effective," requiring huge capital and operational investments. Costs are huge to people who have to deal with health impacts, the local institutions that need to

respond to these impacts, or for governments that get locked into "put-or-pay" contracts with private developers.

- ADB's *Safeguard Policy Statement* states that it will not finance "projects that do not comply with the host country's social and environmental laws and regulations, including those laws implementing host country obligations under international law."[xi] However, there are very clear cases of projects where this safeguard policy appears to be disregarded.
  - ADB actively promotes WTE incineration in technical assistance (TA) projects in the Philippines,[xii] [xiii] [xiv] in apparent contravention to the country's ban on waste incineration enshrined in Republic Act 8749, or the Clean Air Act of 1999[xv] and reinforced in Republic Act 9003 or the Ecological Solid Waste Management Act.[xvi] It also encourages WTE incinerators to take advantage of RE feed-in-tarrifs,[xvii] disregarding provisions Republic Act 9513, or the Renewable Energy Act, which clearly defines biomass as "non-fossilized, biodegradable organic material."
  - ADB's knowledge of the 2004 *Dhaka Declaration on Waste Management* of the South Asian Association for Regional Cooperation (SAARC) has not stopped the bank from recommending incinerator facilities to SAARC countries.[xviii] [xix] The declaration states that "SAARC countries agree that incineration as well as unproven technologies…should not be considered as an option for the treatment of their municipal solid wastes" because of the low calorific value of the waste and the high potential for pollution.[xx]
  - By supporting waste incineration, ADB directly contributes to the increased release of persistent organic pollutants (POPs) mostly in the form of highly toxic dioxins and furans. In effect, the bank's schizophrenic funding policy serves to prevent its borrowing member countries from fulfilling their obligations as signatories or parties to the Stockholm Convention on POPs.

- The new *Access to Information Policy* to take effect in 2019 has a mandate to promote "stakeholder trust,"[xxi] but there are no time-bound requirements for disclosure of an EIA or Resettlement Action Plan, nor requirements to update the Project Data Sheet. The new policy also appears to offer a wide range of possibilities for exceptions to disclosure to be requested by project proponents based on claims that information is "proprietary" and consequently to be kept confidential. The policy text further states that "full disclosure is not always possible" particularly because of a need to pay attention to the "views of borrowers and clients regarding the manner and timing of disclosure",[xxii] presumably, over the concerns of other stakeholders.

- Based on the bank's various project and public documents, incineration is deeply embedded in ADB's approach to *Integrated Solid Waste Management.* The bank puts forward incineration as an approach that cities and municipalities can consider whenever funds are available. However, there is a significant absence of information from the bank which discusses the social, environmental and economic drawbacks of incineration necessary for government decision makers and communities to know about when considering the range of options available.

- Certain investments within *Private sector operations* (i) do not require public disclosure of the component projects that are eventually financed, and (ii) do not necessarily comply with the banks' social and environmental standards, offering limited opportunities for affected communities to raise concerns through grievance or complaints mechanisms. In advancing support for a "bankable" investment climate and project pipeline, ADB directly ends up promoting the idea that compliance with guidelines on transparency and standards for respecting the economic, social and cultural rights of people in borrowing member countries can be voluntary, subject to decisions by investors.

ADB's investments in incinerators: a snapshot

ADB documentation shows that financing for private sector incinerator investments was identified as a priority focus for the Infrastructure Finance Operations Division 2 (for China, Mongolia and Southeast Asia) as early as 2006.

- However, precise numbers of projects and funding involved is more difficult to discern from the perspective of concerned stakeholders because of (i) the wide range of projects to consider; (ii) the different sectors involved; and (iii) the vagueness of wording of investment descriptions in relation to providing advice or support for ISWM or urban waste management infrastructure. In addition, some financing, particularly with regard to private sector equity and financial intermediary modalities, is earmarked for multiple subcomponent projects as determined by the corporate proponent.
- Within the context of offering advice to member countries to invest in incinerator facilities, the bank specifically suggests reliance on support from the private sector, calling for member countries to ensure an "enabling environment" for business, both in terms of policy and legal frameworks.
- However, the bank does not insist that member countries offer an enabling environment for the communities affected in order to ensure key

provisions of their safeguard policies are not undermined. As a result, where incineration projects are proposed in member countries (including China, Vietnam and the Philippines), there remains a lack of safe space available for community-based advocates to raise critical concerns about such investments without fearing repercussions on their security.

China private sector financing

The most prominent recipient of investments in incinerator projects within ADB private sector operations portfolio are two Chinese corporations, China Everbright International Limited and Dynagreen.

- Since the bank's investments for Everbright and Dynagreen have proceeded as capital investments or in the form of financial intermediary grants, no details of precise incinerator projects to be planned and financed are available prior to approval--presenting a discrepancy with the bank's safeguards policy.
- The most recent online ADB evaluation claims that China Everbright's contribution to "ADB's strategic development objectives is rated excellent."[xxiii] However, information gathered by independent researchers who undertook site visits to Everbright's ADB-financed facilities of Jinan, Suzhou and Zhenjiang in 2015 document several alarming environmental and social issues which illustrate failures of the projects to comply with local laws and ADB safeguard policies on the environment as well as involuntary resettlement (including consultations prior to project development and the provision of accessible grievance mechanisms).

China public sector financing

ADB also provided a technical assistance grant of USD 300,000 to government line ministries in Tianjan for the "Sustainable Management of Fly Ash from Municipal Solid Waste Incineration".[xxiv]

- According to the project description, "Fly ash [produced by incinerator/WTE facilities] is considered toxic in most countries including the PRC [and] typically contains heavy metals and salts and may contain dioxins."
- In its explicit acknowledgement that incinerators produce toxic waste that is not appropriately disposed of in regular municipal facilities, this project would seem to directly demonstrate the lack of a "precautionary" and "do no harm" approach entailed by building incinerator projects, raising key questions about the efficacy of the bank's explicit approval of incinerators, not only in China, but across the region.

Philippines

Regional and national technical assistance (TA) projects involving the Philippines recommended engaging the private sector in ISWM, particularly to "infuse funds, technical skills and operational efficiencies,"[xxv] and, in the case of Quezon City, Philippines, to build of large-scale incinerators.

- ADB's "Practical Guide" on ISWM for local governments[xxvi] promotes the suitability of moving grate incinerators for waste management--despite noting concerns of dioxin emissions, opposition by affected communities, the reality that much of the waste generated is actually organic and wet, requiring pre-treatment to dry it, and the need for post-treatment to deal with air pollution, ash and slag.
- Another project involving several municipalities in the country[xxvii] recommended incinerator projects with support from the private sector, with the aim to "pave the way for WTE in all major urban cities." But while promoting incinerators, the TA noted that environmental risks from such facilities includes "residues consisting of bottom ash"[xxviii] that they suggested be disposed of in landfills given the level of toxicity. It also noted that incineration does generate measurable quantities of greenhouse gases.
- Policy risks identified include the concern that WTE facilities would be deemed incompatible with current regulations, but instead of advising compliance with regulations, the TA suggested that mitigation could be undertaken by encouraging recognition of WTE incineration under the national Renewable Energy Act.[xxix]

Vietnam

In August 2018, ADB approved an new investment with China Everbright, to build waste burning facilities in several municipalities in Vietnam.[xxx] ADB has already posted media releases[xxxi] in praise of the financing.

- Given (i) that siting of facilities and the concerns of affected communities have yet to be considered; (ii) the poor environmental and community relations track record of Everbright's facilities in China not evidently considered; and (iii) acknowledgement of environmental risks of incineration in the bank's other TA's, such premature celebratory public relations efforts from the on the part of ADB are questionable at best.

The shift toward a sustainable circular economy: a death knell for the incineration industry

The European Union--which is facing incineration overcapacity that has given rise to regional waste trade--is now changing direction and is moving toward transitioning to a Circular Economy as a strategy to advance a low-carbon, sustainable economy.

- The Circular Economy Action Plan directs member states to prioritize "increasing waste prevention, reuse and recycling"[xxxii] over waste burning and landfilling, in their public policies and investments.
- In January 2017, the European Commission (EC) issued its *Communication on the Role of "waste-to-energy" in the Circular Economy*[xxxiii] which:

- advises member with high incineration capacities to issue a moratorium on new incinerators and decommission older and less efficient ones;[xxxiv] and states that public funding should "avoid creating overcapacity for non-recyclable waste treatment such as incinerators."
- calls on EU Member States to "phase-out public support for the recovery of energy from mixed waste," and warns them that "the risk of stranded assets [in the form of WTE incinerators] is real."

- In September 2018, the EC issued a set of guidelines to Member States at risk of not meeting the 2020 EU recycling targets, instructing these states to "introduce measures (incl. taxes) to phase out landfilling and other forms of residual waste treatment (e.g. Mechanical Biological Treatment, and incineration)."[xxxv]

Double standards for countries in the Global South

- In contrast, European ambassadors at ADB, as well as dedicated funding facilities that draw on European state contributions, continue to advance incinerator facilities as acceptable for governments and people in the Asia Pacific region.
  - Several of ADB's Climate Investment Funds and Urban Financing Facility Funds support investments in technical assistance or projects for building incinerators.
  - The majority of these funds are sourced from contributions by non-regional member countries in Europe and Scandinavia.[xxxvi]
- Instead of enabling countries in Asia to leapfrog toward a sustainable circular economy by supporting segregation, reduction, and recycling systems and programs which are much-needed and clearly under-developed in many developing countries in Asia, European countries are funding incinerators which will lock Asia into outdated systems being phased out in the EU.
- Developing countries, already disadvantaged, will be committed into 30-year contracts for waste burning, and will therefore lose out on many opportunities to develop sustainable, low-carbon, resilient economies being pursued in the EU.

ADB should enable borrowing member countries to transition to a sustainable circular economy

The trend towards a sustainable circular economy is already putting pressure on the global incinerator industry. In the past decade, incinerator companies have been moving to "new markets" in Asia. But it is clear that without the massive support it enjoys from funding institutions such as ADB, waste incineration is on its way to becoming a sunset industry.

- Multilateral development banks will play a critical role in facilitating a sustainable circular economy. Unfortunately, as demonstrated by ADB's funding priorities for waste management approaches at the bottom of the waste hierarchy, the bank is far behind in enabling the region's transition to a sustainable circular economy.
- As long as ADB promotes incinerator facilities for borrowing member countries, the window for these countries to fully integrate principles of resource sustainability and conservation into their national agendas will be lost.
- Borrowing member countries need to have the political will to ensure they are not forced into an "incineration trap," and instead proactively demand from ADB funding and programs that will lead them towards, and not away from, a sustainable circular economy that embraces Zero Waste approaches.

Zero Waste: where the bank should be putting money

- There is a substantial financing gap in mainstreaming Zero Waste approaches. Instead of funding waste incinerators, this is the gap that ADB and other international financial institutions can fill.
- Innovative financing mechanisms are necessary to replicate and mainstream these programs.
- Implementing Zero Waste approaches cost considerably less than constructing and operating incineration facilities, and the investment goes to people and communities rather than destructive infrastructure.
- Examples of such projects can include participatory elaboration of city-level Zero Waste plans, decentralized compost and anaerobic digestion facilities, infrastructure to process source segregated recyclable materials, research development on waste reduction, redesign policies, etc..

Conclusions and recommendations

ADB must move away from investing in incinerators as waste management strategies that systematically fail to take a "do no harm," "precautionary" approach or meet other basic principles outlined in ADB's own social and environmental safeguard standards.

This report challenges ADB to consider fundamentally shifting towards more forward-looking solutions that support member countries in holistically eliminating waste production problems over the long-term, while providing support for Zero Waste management approaches and solutions appropriately tailored to the needs and aspirations of communities served.

Recommendations for ADB

- Phase out all private and public sector financing (including but not limited to technical assistance, projects, equity and capital investments) for waste incineration, including WTE incineration, and revise

project pipelines accordingly, withdrawing proposed projects and not entertaining new proposals;
- Explicitly promote Zero Waste solutions for waste management concerns in borrowing member countries as well as energy solutions that do not rely on the incineration of waste;
- Revise the 2009 Energy Policy to eliminate WTE incinerators from the list of renewable energy options to be financed and recommended;
- Revise all policy documents in relation to ISWM to withdraw recommendations for borrowing member countries to invest in WTE incinerator projects;
- Revise guidelines for financing facilities directed towards energy and urban infrastructure to withdraw any support (project-based, equity investments or technical assistance) for WTE incinerator projects; and
- Phase out all financial intermediary agreements for waste and energy sectors that do not explicitly exclude WTE incineration investments and revise PSOD pipeline investments accordingly.

Recommendations for ADB donor member countries:

- Remove support from projects and technical assistance involving waste incineration; and
- Ensure that their funding is channeled to Zero Waste solutions for the bank's borrowing member countries.

Recommendations for ADB borrowing member countries:

- Reject any funding, whether in the form of projects or technical assistance, earmarked to promote or build waste incineration facilities, and demand funding for Zero Waste solutions.

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[i] European Parliament and the Council. (2010). *Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)*. Brussels: EUR-Lex.

[ii] Platt, B., Ciplet, D., Bailey, K. & Lombardi, E. (2008). *Stop Trashing the Climate*. Washington DC: ILSR.

[iii] US EIA. (2013).

[iv] One extreme example of how waste burning discourages recycling is from Tuscany, in Italy, where municipalities had to pay EUR 5 million to an incinerator operated by Veolia. Six municipalities had failed to deliver the amount of waste stipulated in the contract with the waste incinerator because they implemented a door-to-door separate collection scheme in line with European Waste Framework Directive, in order to meet national recycling targets of 65%. In the United Kingdom, in Nottinghamshire, the county refused to implement separate food waste collection in order to meet incineration tonnage obligations. In Derby, also in the UK, the recycling rate fell from 42% to 31% over a course of a year due to specific provisions on the composition of the waste in the contract with the incinerator, which encouraged the burning of recyclable and compostable material. (See Muznik, S. (2017). "Deliver or pay", or how waste incineration causes recycling to slow down. Zero Waste Europe. Retrieved from https://zerowasteeurope.eu/2017/10/deliver-pay-waste-incineration-causes-recycling-slow/.)

[v] Themelis, J., Diaz Barriga, M., Estevez, P. & Gaviota Velasco, M. (2013). *Guidebook for the Application of Waste to Energy Technologies in Latin America and the Caribbean*. New York: Earth Engineering Center, Columbia University.

[vi] Kaza, S., Yao, L., Bhada-Tata, P., & Van Woerden, F. (2018). "What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050." *Urban Development Series*. Washington, DC: World Bank.

[vii] ibid.

[viii] Zhang, D., Huang, G., Xu, Y., and Gong, Q. (2015). Waste-to-Energy in China: Key Challenges and Opportunities. *Energies*, 8(12), 14182-14196.

[ix] Some examples include: the recent Ghazipur landfill collapse in India in 2017 (see Bhattacharya, S. & Yadav, P. (2017). Two killed as 50 tonnes of waste hurtles down Ghazipur landfill. *Times of India*. Retrieved from http://timesofindia.indiatimes.com/articleshow/60332295.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst); the Leuwigajah landfill avalanche in Bandung Indonesia (see Pomeroy, R. (2015). When an Avalanche of Trash Killed 143 People. *Real Clear Science*. Retrieved from https://www.realclearscience.com/blog/2015/01/the_waste_avalanche_that_killed_143_people.html); and the landslide in the Philippines' Payatas garbage dump in 2000, which killed 300 people (see Payatas Dumpsite Tragedy 12 Years Later: When Shall We Learn?. (2012). *EcoWaste Coalition*. Retrieved from http://ecowastecoalition.blogspot.com/2012/07/payatas-dumpsite-tragedy-12-years-later.html.)

[x] Tangri, N. (2010). *Respect for Recyclers: Protecting the Climate through Zero Waste*. Berkeley: Global Alliance for Incinerator Alternatives.

[xi] ADB. (2009). *Safeguard Policy Statement.* Mandaluyong City, Philippines: Asian Development Bank.

[xii] Mainstreaming Integrated Solid Waste Management in Asia (46248-001). (2018). *Asian Development Bank*. Retrieved from https://www.adb.org/projects/46248-001/main#project-pds.

[xiii] ADB. (2014). *Republic of the Philippines: Solid Waste Management Sector Project Technical Assistance Consultant's Report.* Mandaluyong City: Asian Development Bank. Retrieved from https://www.adb.org/sites/default/files/project-document/200441/45146-001-tacr-01.pdf

[xiv] Leyson, O. (2017, June 18). ADB grants P40 million for landfill facility study. *The Freeman*. Retrieved from https://www.philstar.com/the-freeman/cebu-news/2017/06/18/1711531/adb-grants-p40-million-landfill-facility-study

[xv] *Clean Air Act 1999* (Phils.).

[xvi] *Ecological Solid Waste Management Act 2000* (Phils.).

[xvii] AECOM & ADB. (2016). *Prefeasibility Study - Conventional Waste-to- Energy Project: Quezon City, Philippines.* Mandaluyong City, Philippines: AECOM and ADB.

[xviii] ADB. *Toward Sustainable Municipal Organic Waste Management in South Asia: A Guidebook for Policy Makers and Practitioners*. (2011). Mandaluyong City, Philippines: ADB.

[xix] Maldives: Greater Male Environmental Improvement and Waste Management Project. (2018). Asian Development Bank. Retrieved from https://www.adb.org/projects/51077-001/main#project-pds.

[xx] ibid.

[xxi] ADB. (2018). *Access to Information Policy*. Mandaluyong City: Asian Development Bank.

[xxii] ibid. (para 8).

[xxiii] ibid.

[xxiv] China, People's Republic of: Sustainable Management of Fly Ash from Municipal Solid Waste Incineration. (2018). *Asian Development Bank*. Retrieved from https://www.adb.org/projects/49019-001/main#project-pds.

[xxv] Philippines: The Procter & Gamble Company Waste To Worth Project. (2018). *Asian Development Bank*. Retrieved from https://www.adb.org/projects/46248-001/main.

[xxvi] ADB. (2017). *Integrated Solid Waste Management for Local Governments: A Practical Guide.* Mandaluyong City, Philippines: Asian Development Bank.

[xxvii] Philippines: Solid Waste Management Sector Project. (2018). *Asian Development Bank*. Retrieved from https://www.adb.org/projects/45146-001/main.

[xxviii] ibid.

[xxix] ibid.

[xxx] Viet Nam: Municipal Waste-to-Energy Project. (2018). *Asian Development Bank*. Retrieved from www.adb.org/projects/50371-001/main.

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[xxxiii] European Commission. (2017). *Communication from the Commission to the European Parliament, the Council, the European Economic And Social Committee and the Committee of the Regions: The role of waste-to-energy in the circular economy.* Brussels: European Commission.

[xxxiv] ibid.

[xxxv] European Commission. (2018). Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the implementation of EU waste legislation, including the early warning report for Member States at risk of missing the 2020 preparation for re-use/recycling target on municipal waste (24.9.2018 COM(2018) 656 fnal). Brussels: European Commission.

[xxxvi] See for example, the projects and funds earmarked by ADB as "Funds and Facilities for Climate Change" at https://www.adb.org/themes/climate-change-disaster-risk-management/funds-facilities; and the "Urban Environmental Infrastructure Fund" at https://www.adb.org/site/funds/funds/urban-environmental-infrastructure-fund.