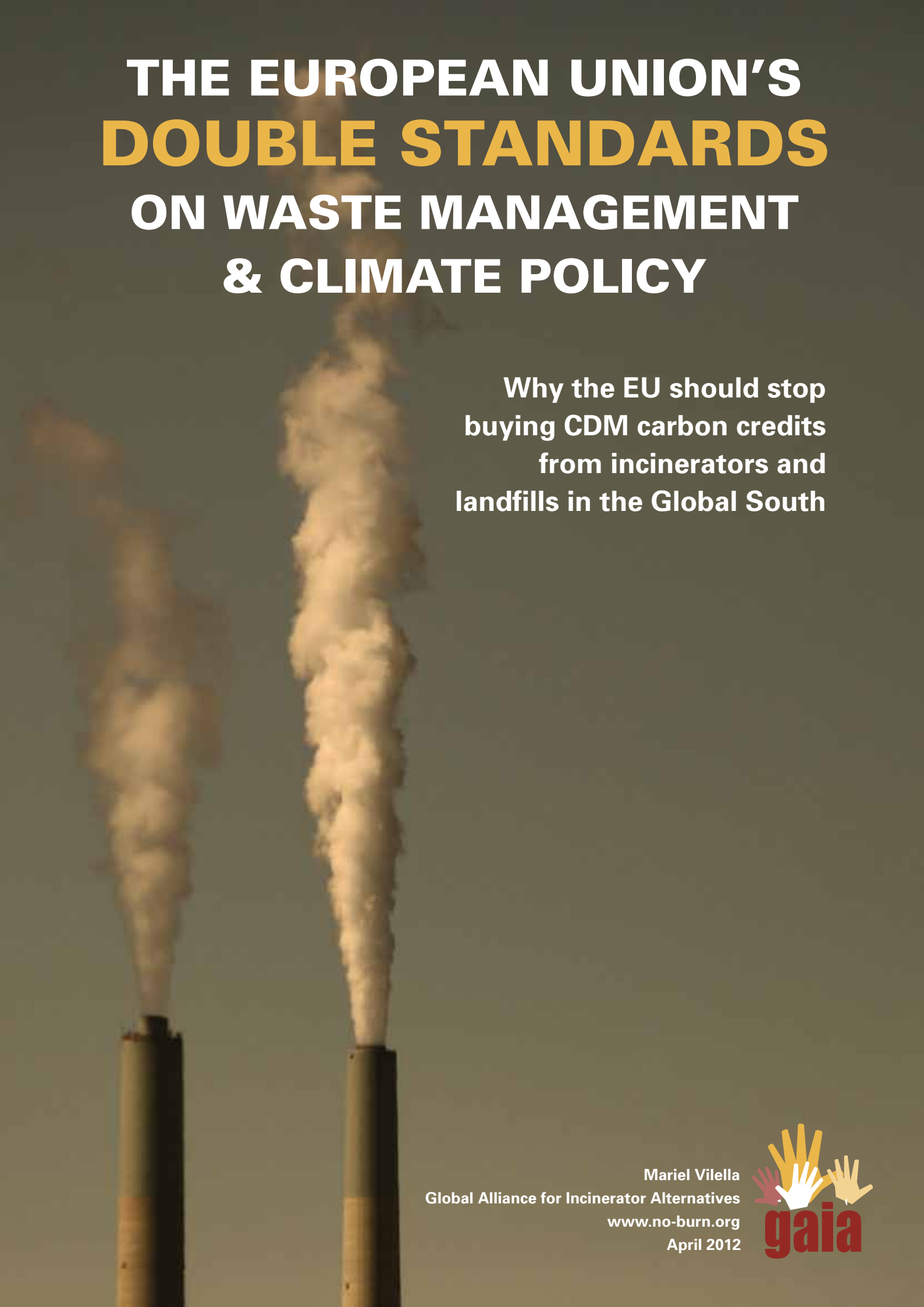

THE EUROPEAN UNION'S DOUBLE STANDARDS ON WASTE MANAGEMENT & CLIMATE POLICY

Why the EU should stop buying CDM carbon credits from incinerators and landfills in the Global South

Mariel Vilella
Global Alliance for Incinerator Alternatives
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gaia

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GAIA is a worldwide alliance of more than 600 grassroots groups, non-governmental organizations, and individuals in over 93 countries whose ultimate vision is a just, toxic-free world without incineration.

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Design: Design Action Collective

EXECUTIVE SUMMARY

The European Union (EU) is maintaining a double standard on climate and waste policies that needs to be recognized and eliminated without delay. On the one hand, the EU policies on municipal solid waste (MSW) management are articulated around the principles of the Waste Hierarchy, which prioritises waste reduction, reutilisation, and recycling. Furthermore, MSW management in Europe is successfully taking steps towards more organic waste diversion from landfills and increasing recycling rates, in a spirit of developing an increasingly efficient use of natural resources.

On the other hand, EU climate policies are built around the EU Emissions Trading System (ETS) to comply with its emission reductions targets. This scheme allows member states to buy carbon credits, known as Certified Emission Reductions (CERs), generated by projects developed under the Clean Development Mechanism (CDM) — including landfill gas systems (LFG) and waste incinerators, the very disposal methods at the bottom of the Waste Hierarchy.

The problems related to the LFG and incineration technologies presented in this report reflect important contradictions between increasingly strong European waste management policies and the often environmentally and socially counterproductive MSW projects supported by the EU carbon market. Indeed, the contradictions detailed in this report ultimately raise questions about the environmental integrity of the CDM and its capacity to reduce greenhouse gas (GHG) emissions and deliver sustainable development and technology transfer to developing countries.

This report clarifies how, by buying carbon credits from CDM-backed MSW projects, the EU is actually fostering the generation of toxic emissions, jeopardising current practices of recycling and composting, and filling up the EU ETS with carbon credits that are in reality "non-additional"— that is, carbon credits that do not represent real GHG emission reductions. Ultimately, the EU is supporting waste management projects in developing countries that would be illegal on European soil. In addition, GAIA is deeply concerned about the failure of the CDM accreditation process to take into account the toxic pollution generated by these facilities, and the displacement of informal sector recycler livelihoods. For these reasons, GAIA is calling for **an immediate EU ban on all carbon credits earned through LFG and incinerators.**

In short, this briefing shows that:

- The CDM's promotion of waste disposal technologies intrinsically contradicts European waste management standards, which seek to minimise disposal in favour of best waste management practices such as organics diversion and recycling.
- One third of CDM-backed LFG systems are pure waste disposal without resource or energy recovery – those LFG projects that only flare. Within the Waste Hierarchy, waste disposal with and without energy recovery are the least environmental options.
- The CDM creates a perverse incentive to landfill as much waste as possible, in contradiction to the Landfill Directive (1999/31/EC). Since the CDM promotes landfill gas capture on a profit-basis, i.e., the more gas one captures, the more profitable the project will be, landfilling of MSW—especially organics—is ultimately encouraged in this counterproductive climate mitigation strategy.
- At least 64% of CDM-backed LFG projects scrutinised by GAIA plan to stay open and receiving MSW during their crediting period. In this way, the waste keeps being landfilled and it produces the methane emissions that will be later captured, flared, and finally certified as emission reductions by the CDM. Consequently, emissions will actually increase, at the same time as more carbon credits are earned for supposed "reductions".
- LFG systems entail too many uncertainties to reliably issue CDM carbon credits. Methane "capture" systems allow significant methane emissions to escape into the atmosphere, but these uncertainties are not fully taken into account by the CDM. This allows landfill gas projects to make inflated predictions of methane gas emission reductions, which implies that these projects are issuing non-additional CERs.[1]
- CDM support for incineration provides an incentive to burn recyclable and compostable materials. This contradicts the waste hierarchy established by the Waste Framework Directive 2008/98/EC and the EU Resource Efficiency Roadmap, which gives priority to waste prevention and reuse of materials before energy recovery or incineration.
- CDM incinerators generally lack pollution control. Strict monitoring of incinerator pollution rates is not required by the CDM, nor does it impose toxic emissions limits as a condition for the approval of these projects, as the EU waste legislation does. Consequently, CDM incinerators represent a major source of global toxic pollution.
- CDM incinerators require fossil fuels alongside municipal solid waste in order to burn the organic waste fraction. The CDM rules for waste incineration allow up to 50% of the energy generated by an incinerator to be from auxiliary fossil fuel. Incineration of such wet wastes with added fossil fuel does nothing to abate climate change and has serious implications for CDM's environmental integrity.
- Most importantly, CDM –backed LFG systems and incinerators systematically ignore the informal recycling sector in their baseline scenarios, which often result in the displacement of their livelihoods and a negative impact to recycling rates. The informal recycling sector typically represents a work force of about 1% of the urban population in the Global South and it can achieve higher emission reductions through recycling than CDM incinerators and RDF plants, as the Indian case shows. The continued disregard for the impact of LFG systems and incinerators on existing recycling rates implies that emission reductions are overestimated and that these projects are issuing non-additional CERs.

The continued purchase of CDM carbon credits into the EU creates a double standard on waste and climate policies that needs to be addressed without delay, by excluding such carbon credits from the EU ETS.

INTRODUCTION

Municipal solid waste management has always been a major issue on the environmental agenda, and in the last decade it has been incorporated into the climate change agenda. The UN-administered Clean Development Mechanism (CDM) began paying attention to greenhouse gas (GHG) emissions from the waste sector, resulting in a new trend of financial support directed to waste management technologies that are expanding in countries of the Global South, where waste management infrastructure is underdeveloped.

The most problematic CDM projects dealing with MSW are landfill gas systems (LFG) and incinerators.

Under the Clean Development Mechanism, industries in Annex I countries that are committed to reducing their GHG emissions can satisfy their obligation by buying carbon offsets generated in developing countries, where it has presumably been cheaper to reduce emissions. In this way, the CDM becomes a financial and policy driver to develop projects in the Global South. The CDM is also supposed to promote sustainable development and technology transfer. The European Union Emission Trading System (EU ETS), the first and biggest international system for the trading of GHG allowances, is the main buyer of CDM carbon credits, technically known as Certified Emission Reductions (CERs).

The CDM has shown little capacity to police the carbon offset system and its performance has been increasingly questioned over the years. Independent researchers have reported that most of the carbon offsets generated under the CDM are non-additional, that is, that they do not represent real emission reductions. After a series of scandals surrounding spurious CDM offset credits from industrial gases, the European Commission launched an impact assessment of CDM projects to consider restricting the use of credits of certain projects in the EU ETS. So far, the measure has led to the ban on the use of industrial gas credits in the EU Emission Trading System (EU ETS) as of May 2013.

In the case of the municipal solid waste (MSW) sector, considerable evidence indicates that the projects approved by the CDM are not achieving any of its core goals; indeed, in many cases they are directly undermining them.

Overall, the CDM has focused its support on end-of-pipe technologies rather than more environmentally meaningful upstream approaches. End-of-pipe technologies seek to reduce emissions, not to prevent them, and produce energy from waste instead of conserving it; they typically include waste incineration or landfill options. Upstream strategies, in contrast, keep wastes that cannot be recycled or composted from being generated in the first place and thereby offer much larger potential for GHG abatement through the reduction of emissions associated with raw material acquisition, manufacturing, and transportation.[2] These approaches include options related to waste reduction, reutilisation, and recycling.

The most problematic projects dealing with municipal solid waste (MSW) under the CDM are landfill gas systems (LFG) and incinerators, including incinerator variants such as gasification, pyrolysis, and Refuse Derived Fuel.[3] These projects are justified within the CDM's framework on the grounds that they reduce methane emissions from waste disposal sites while producing energy that replaces conventional energy in the grid. However, as this report explains below, LFG and incinerator projects do not reduce GHG emissions but actually increase them. Moreover, CERs for such projects create a perverse incentive to keep burying and burning waste regardless of authentic climate-friendly alternatives. CERs for such technologies also "greenwash" technologies that pose serious toxic threats to local communities and the environment.

The assumptions underlying the GHG estimates of CDM-backed landfills and incinerators do not take into account the GHG reduction impact of current informal recycling sector

or the possibility of future development of local recycling capacity. Bearing in mind that recycling and composting create greater GHG emission reductions, are most cost effective, and tend to produce fewer toxic emissions, ignoring present or future recycling capacity is deeply short-sighted. Investing in expensive, often corporate-managed or contracted waste-to-energy (WTE) projects prevents the development of waste management plans that could empower local decision-makers to start taking the waste issue into their own hands and promote the alternatives with the lowest emissions: prevention, reuse, and recycling.

The majority of CDM-backed municipal solid waste projects are in direct contradiction to the Waste Framework Directive, the Landfill Directive, and the Industrial Emissions Directive, which establish objectives and guidelines for waste treatment in Europe. European legislation rightly emphasizes keeping organics out of landfills, increasing separate collection of waste at source, recycling, and using strict monitoring controls on the emissions of incinerators and landfills--yet many CDM waste projects financed by EU countries do exactly the opposite. For all of these reasons, the EU should consider a ban on the purchase of carbon credits from these projects.

Facts and figures about MSW projects in the CDM

The majority of the 298 MSW projects that are registered or under validation in the CDM are landfill gas systems (see Graphic 1).[4] A survey of these projects shows that 33% of the total (98 projects) flare[5] the methane gas that they collect, while 44% (130 projects) use the gas to generate electricity. Where power generation is a factor, the landfill has to ensure the production of enough gas of a certain quality, which can only come from landfilling more MSW. This creates a perverse incentive for increasing methane production from the inception of these projects.

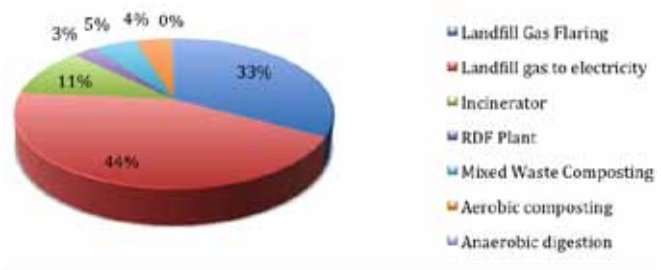
Waste incineration appears as the third most common technology to avoid methane emissions from landfills, and may become more widespread. There are currently 32 incinerators in the CDM pipeline: seven registered and 25 under validation. China hosts 28 of those.[6]

Refuse Derived Fuel (RDF) plants likewise are entering the pipeline in significant numbers; there are currently eight plants of this kind in the CDM pipeline; two registered and six under validation. India hosts all of them.[7]

Refuse-derived fuel (RDF) produces dried mixed waste pellets that can be burnt in incinerators or cement kilns.

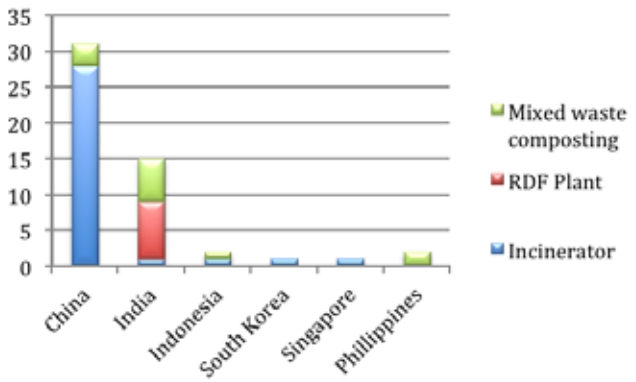
A less popular option for MSW management is making compost from mixed ("dry" and organic) waste rather than separated waste. This can lead to serious contamination of agricultural soil with heavy metals, for example, and endanger human health. GAIA has raised this issue with the CDM previously.[8]

Graph 1. CDM Project Types for MSW Management



Source: compiled by author based on PDDs of MSW projects in the CDM pipeline (UNEP Risoe Database)

Graph 2. CDM Incineration, RDF and mixed waste composting by host country



Source: compiled by author based on PDDs of MSW projects in the CDM pipeline (UNEP Risoe Database)

1. WASTE AND CLIMATE CHANGE: THE BASICS

Rapid increases in population and urbanization in developing countries are resulting in increases in GHG emissions from waste—particularly methane (CH4) from landfills. In rapidly developing countries, where MSW keeps increasing, methane emissions from landfills alone are expected to increase almost 50% between 1990 and 2020.[9]

Methane's short-term, heat-trapping effects are severe; over the next 20 years—the period of time during which effective action on global warming is most crucial — methane's potential to trap heat in the atmosphere is 72 times greater than that of CO2, on a per tonne basis.[10] Therefore, curbing methane emissions is critical to preventing catastrophic climate change, as methane is second only to CO2 as a man-made cause of global warming.[11]

But how are landfills a source of methane emissions? The answer is simple. Methane releases from landfills and dumps result from burying organic matter (usually in mixed waste) in anaerobic conditions, i.e. without oxygen. In developing countries, the great majority of the MSW consists of food waste, garden waste, paper and cardboard – materials which produce methane in landfills but which could easily be composted, recycled or fed to animals.[12] Such landfills can extend over tens of hectares, reaching depths of approximately 20 metres below ground and heights of many tens of metres above ground level.[13]

Landfills are not only the second largest human-created source of methane gas,[14] they are also a source of toxic pollutants that can cause cancer, asthma, and other serious health effects.[15] Studies link cancer to living near landfills, where escaping gases will typically carry toxic chemicals such as paint thinner, solvents, pesticides, and other hazardous volatile organic compounds. In addition, all dumps leak toxic leachate; even "state-of-the-art" landfills will eventually leak and pollute nearby groundwater, especially since, over time, a landfill's groundwater protection can be eroded.[16]

The amount of mixed waste that we contribute to landfills represents only the tip of a very big iceberg of waste and despoliation created across the materials economy and lifecycle of products. Every ton of municipal discards wasted means more than 70 tons of waste produced in manufacturing, mining, oil and gas exploration, agriculture, and coal combustion. Our use of landfills supports a system, in which a constant flow of resources is pulled out of the Earth, processed in factories, shipped around the world, and buried in our communities.

Ultimately, the best option for waste management and climate change mitigation is to minimize waste generation and preserve natural resources. This is recognized in the EU's Waste Hierarchy,[17] the science-based milestone of European waste management legislation, which provides definite criteria to prioritise the different options. Clearly, after waste prevention, reuse and recycling are the most beneficial options for the environment and communities, as well as being less expensive for public budgets.

Landfills are a source of toxic pollutants that can cause serious health effects. Moreover, all landfills leak toxic leachate, the liquid resulting from the landfilled waste.

Climate-friendly alternatives

Reducing, reusing, and recycling municipal waste are effective and high-impact means of reducing greenhouse gas (GHG) emissions.[18] When discarded materials (waste) are recycled, they provide industry with an alternate source of raw materials. This results in less demand for virgin materials whose extraction, transport and processing are a major source of GHG emissions. Recycling thus reduces emissions in virtually all extractive industries: mining, forestry, agriculture, and petroleum extraction.

Additional energy (and associated emissions) are saved in the manufacturing process itself, as recycled materials generally require less energy to be turned back into products.[19] In this way, recycling can save three to five times as much energy as incineration captures by burning.[20] This is particularly notable in products such as aluminium, where the direct energy required to recycle is 88% less than that required to produce primary aluminium.[21]

Recycling of paper and wood products has a notable double impact. Not only does it reduce the demand for virgin wood fibre, thus reducing emissions from deforestation, but it also preserves forests' ability to continue to act as carbon sinks (removing carbon from the atmosphere).

Recycling of aluminium, plastic, metals and paper reduces the demand for virgin materials whose extraction, transport and processing are a major source of GHG emissions.

2. THE EU DOUBLE STANDARDS IN WASTE AND CLIMATE POLICIES

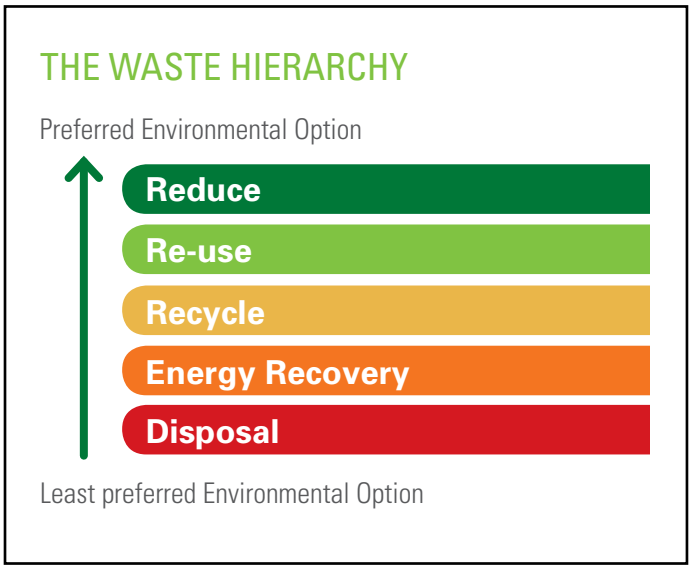
The European Waste Framework Directive (2008/98/EC) is organised around the recommendations of the Waste Hierarchy. The Waste Hierarchy defines waste prevention as the preferable option, followed by preparation for reuse and then recycling; incineration with high energy recovery, landfilling, and incineration without energy recovery are the least desirable options.

This European Directive makes waste management plans and separate collection compulsory and recommends that bio-waste be collected separately and then treated away from landfills. Moreover, it establishes recycling targets of 50% for paper, metal, glass, and plastic, which caps the amount of waste that is eligible to be burned.

Furthermore, the EU has recently launched the Roadmap for a Resource Efficient Europe,[22] in which waste management will have a central role. In the words of Janez Potocnik, EU Commissioner for the Environment, with this Roadmap "we will have moved close to a resource efficient society when landfilling is reduced to virtually zero, when we only bury the residues of the residues and when energy recovery (incineration) is limited to non-recyclable materials."[23]

It is clear that European legislation and waste policies prioritize waste prevention, recycling, and the separate collection of organics, further reinforced by the Landfill Directive, as explained below. The aim of the European Waste Framework Directive is to reduce the impact of waste and emissions on human health and the environment, and ultimately to reduce materials to be buried or burnt.

Unfortunately, European climate policies do not take the same stance. The European Union Emissions Trading System (EU ETS) allows EU countries to buy carbon credits generated by mixed waste landfills and waste incinerators. These carbon credits come from the Clean Development Mechanism, which has become the primary source of market-based incentives



and an important driver of "disposal-first" approaches to waste management in the Global South (such as LFG, incineration, and RDF).[24] The CDM's promotion of waste disposal technologies intrinsically contradicts European standards, which seek to minimise disposal in favour of best waste management practices such as organics diversion and recycling. The end-of-pipe technologies also increase social and environmental injustice, often displacing the informal recycling sector, which typically represents a work force of about 1% of the urban population in the Global South.[25]

Conditions in many countries in the Global South are in fact ideal for developing appropriate waste management practices (e.g., waste prevention, waste reduction, recycling, and separate organics collection). Yet by issuing carbon credits for end-of-pipe technologies, the CDM creates a perverse incentive to landfill and to incinerate waste. The EU ETS should not admit such credits, which are in deep contradiction with recognized best practices and the EU's own waste legislation.

2.1 European Standards for Landfill Gas Management

Current organic waste management in the EU is mainly concerned with ensuring that the wastes remain as biologically inactive as possible, preventing contamination of groundwater and minimising methane leakage, with currently installed gas collection systems flaring the methane captured. As for future policy relating to organics, the fact is that diversion away from landfills will always produce greater GHG reduction benefits, and this has been the key driver of the European Landfill Directive.

In 1999, the European Union concluded that landfills were not able to safely manage organic discards, and it ordered the Union's 25 Member States to phase out burying decomposable waste. According to the guidelines of the Landfill Directive (1999/31/EC), the biodegradable municipal waste going to landfills was to be progressively reduced. Specifically, it stipulated that five years after the adoption of the Landfill Directive biodegradable waste going to landfills should amount to no more than 75% of the total amount of organics produced by 1995 levels; eight years later no more than 50% of the organic waste could be landfilled, and fifteen years after the adoption of the Directive, the amount of organics going to landfill could be no more than 35% of the total generated.

Germany, Austria, Denmark, and the Netherlands have made considerable progress in reducing per capita waste to landfill as of 2007.[26] More recently, the UK introduced more stringent regulations aimed at minimising the quantity of organic material that is landfilled.[27] For example, from 1990 to 2005, Germany gradually banned the practice of landfilling untreated organic waste. By 2012, this ban is expected to have prevented approximately 28.4 million tonnes of CO2-e[28] from methane landfill emissions.[29]

The EU aims to phase out the landfilling of organic waste.

In countries outside Europe, there are notable examples showing the potential of separating biodegradable waste at source. Organics can be used to make biogas in small-scale energy solutions for communities, as grassroots recyclers do in Mumbai (India). They also can be composted domestically or in large-scale facilities for application in agriculture as soil improver as practiced in Bali (Indonesia).

The European standard for landfill gas management embraces the "divert organics" philosophy, and this is clearly the way forward. Nonetheless, it is being contradicted by other international policies and regulations currently in place, including the Clean Development Mechanism, which is presenting a perverse economic incentive to not only keep organics in the landfill but to even increase their disposal and maximize methane generation, as discussed in the next section.

Grassroots recyclers collect organic waste at the source and run sucessful small-scale biogas plants.

2.2 The Reality of Landfill Gas Systems under the CDM

Since the CDM promotes landfill gas capture on a profit-basis, i.e., the more gas one captures, the more profitable the project will be, landfilling of MSW—especially organics—is ultimately encouraged in this counterproductive climate mitigation strategy. This is exactly the opposite of what is recommended by the European Waste Framework Directive. Ultimately, the CDM is erecting a barrier to the development of sustainable waste management policies in the Global South that would prioritize waste minimisation, reutilisation and recycling.

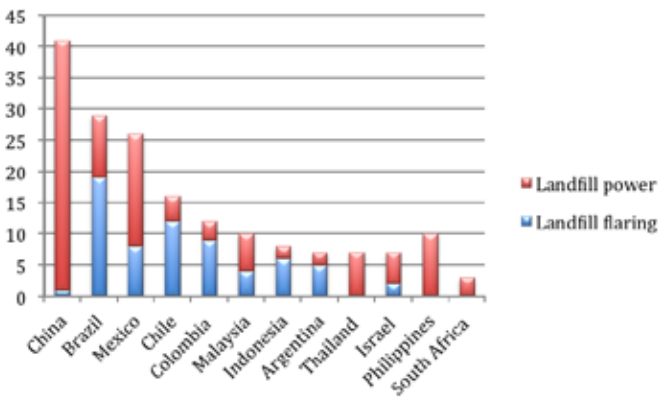
Although LFG systems may be a viable option for closed dumps, which cause great problems to communities and the environment if left uncontrolled, the promotion by the CDM of this end-of-pipe technology as a general waste management tool in the Global South creates perverse incentives to landfill as much waste as possible to feed the LFG energy-generation projects.

The CDM argues that using landfill gas (LFG) for energy purposes reduces the amount of power that must be generated on the utility grid, transforming some of the negative effects of landfilling into a positive means of reducing greenhouse gas emissions (GHG). Yet approximately one third of CDM LFG projects only flare. If the gas is to be flared without generating any electricity, this is only waste disposal. Within the Waste Hierarchy, waste disposal with and without energy recovery are the least environmental options. (see Graph 2)

The CDM specifically supports LFG capture from landfills that receive waste during the emission reductions certification period. GAIA scrutinised 112 project design documents (PDD) for landfill gas systems and found that 75 projects of them (67%) plan to actively receive MSW during their crediting period,[30] which means that the landfills stay open and continue receiving MSW. The waste keeps being landfilled during the crediting period and it produces the methane emissions that will be later captured, flared, and finally certified as emission reductions by the CDM. In short, the availability of carbon credits and the possibility of energy generation encourage landfill operators to produce methane that they later capture and claim as emission reductions. Moreover, some of these projects state that the amount of waste landfilled will increase at an annual rate of 1-3% per year. Consequently, emissions will actually increase, at the same time as more carbon credits are earned for supposed "reductions". Recycling and composting—which have a much greater impact on GHG emission reductions—are thus placed at an economic disadvantage while less desirable LFG approaches are favoured.

The CDM rewards practices that maximise methane capture (as well as methane generation) instead of discouraging methane generation in the first place. This in turn delays or discourages implementation of policies directed at organics diversion. UNEP has noted that the trend towards more managed landfill practices in developing nations—such as those

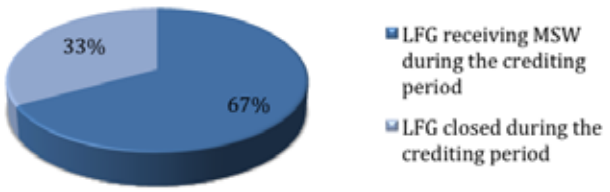
Graph. 2. LFG in the CDM pipeline by Host Country



Source: compiled by author based on PDDs of LFG projects in the CDM pipeline (UNEP Risoe Database)

Graph 3. Open and closed LFG systems during their crediting period

Graph: GAIA scrutinised 116 project design documents (PDD) for landfill gas systems and found that 75 projects of them (64%) plan to stay open and be actively receiving MSW during their crediting period.[32] This will generate a higher amount of methane and therefore a higher rate of Certified Emission Reductions (CER).



Source: compiled by author based on PDDs of LFG projects in the CDM pipeline (UNEP Risoe Database)

promoted by the CDM—is ironically leading to enhanced anaerobic conditions and therefore generation of greater quantities of methane.[31]

The promotion of LFG sends the wrong signals to owners and operators of landfills and to policy-makers—with the unintended consequence of erecting marketplace barriers to more effective mitigation options such as organics diversion. (See Graph 3)

In addition to creating the wrong incentives, there are simply too many uncertainties around LFG emission reductions to reliably issue CERs. The CDM requires the monitoring of a number of parameters in landfills to determine the quantity of methane emissions reduced and provide appropriate credits. However, the margin of error of some of these parameters is larger than the scale of claimed reductions.

How much methane is produced in a landfill? According to the 2006 IPCC guidelines, it is quite difficult to figure out how much methane is being generated in a landfill, which makes the calculation of the baseline emissions uncertain. Inaccuracies for global emissions from waste can be as high as 10-30% for developed countries (with good data sets) and 60% or more for developing countries that do not track annual data.[33] Further, a recent study noted that if assumptions were adopted for future waste generation, their results for total methane emissions from landfills worldwide could be 40-50% lower, or 20-25% higher.[34]

A critical problem is that despite the name, methane "capture" systems allow significant methane emissions to escape into the atmosphere. LFG involves a considerable amount of uncontrolled methane releases (referred to as "fugitives"). They leak into the atmosphere through cracks, tears, and broken seams along the sides and top of the LFG structure, and can also escape through leachate collection trenches and piping from the bottom of the facility.[35]

According to the US EPA,[36] energy efficiency rates from LFG are in fact as low as 30% on average; according to 2006 IPCC guidelines, they range from 10% to 85%.[37] The CDM however, assumes that 50% of the methane generated is captured by the facility, which appears to be over-optimistic.[38] Thus, the model used under the CDM is likely to significantly overestimate landfill gas control system collection efficiency, and thus grossly underestimate uncontrolled, fugitive methane releases into the atmosphere.

LFG systems tend to create or necessitate increased methane emissions in a variety of ways. First, LFG systems applied to an open landfill will, by their very structure, enhance the anaerobic conditions in the landfill and thus increase methane emissions.[39] [40] Second, traditional dry tomb or old landfills may turn out to be so dry that they have insufficient moisture to produce useful levels of landfill gas for electricity generation; operators have addressed this by adding moisture to landfills, which increases methane generation. Third, in order to have sufficient levels of useful gas, more household waste has to be landfilled to increase methane generation. The deliberate manipulation of landfills to generate more methane (and thus more profits) has been well-documented in the US, where, as with the CDM, project developers often depend financially upon sales of energy from the methane.[41]

LFG generates spurious carbon credits. Uncertainties presented above relating to how much methane is generated, escapes, and is captured will affect the baseline against which the project emission reductions are calculated as well as the final account of emission reductions. Under current CDM rules, these uncertainties are not fully taken into account, which allows landfill gas projects to make inflated predictions of methane gas emission reductions. The overestimation of methane releases is distorting methane emission reductions claimed by LFG projects, which implies that these projects are issuing non-additional CERs.[42]

On the right, decayed trash in a landfill. Old landfills may be too dry to produce useful levels of landfill gas to produce electricity. On the left, methane powered generators will need fresh waste to be landfilled to produce electricity.

2.3 European Standards for Incineration

The Waste Incineration Directive (2000/76/EC), recently recast into the Industrial Emissions Directive, recognizes that chimneystacks of MSW incinerators typically discharge dozens of harmful substances including arsenic, cadmium, mercury, hydrogen chloride, volatile organic compounds, dioxins, furans, and fine dust particles.[43] Furthermore, it acknowledges that a quarter of burnt waste remains as ash, including a proportion of highly toxic fly ash, which is sometimes captured and sent to a hazardous waste landfill—which will eventually leak.

There is considerable evidence that the emissions from burning waste affect human health. Several studies have pointed to the link between cancer and the emission of dioxins from incinerators and other industrial sources.[44] Even modern incinerators and gasifiers can emit large quantities of ultra fine particulates of less than 2.5 microns, known as nanoparticles, which are small enough to pass through the lung membranes, carrying harmful substances such as dioxins and metals into all parts of the body.[45]

In its domestic policies, the EU sets emission limit values and requires continuous measurements for NOx, CO, dust, TOC, HCl, HF, SO2, and at least two measurements per year of heavy metals, dioxins, and furans, as well as many other conditions. Despite the fact that abatement devices for capturing these pollutants cannot completely neutralise the health and environmental dangers resulting from burning waste, they have been paramount in notably reducing toxic emissions. Yet these necessary devices are very expensive and almost double the costs associated with incineration; this is the reason why in the developing world they are often not employed, with a significant impact on people's health and the environment. Some of those emissions, such as dioxins and furans, may easily find their way to Europe through long-distance atmospheric transport or the food chain.

Incinerator plant

The incinerators that the EU ETS supports in the developing world through buying their carbon credits are spewing toxic emissions that would be not only unacceptable, but also frankly illegal on European soil. This is evidence of a double standard that the EU should not allow.

Worker and crane in a recycling centre. The European Waste Framework Directive (2008/98/EC) establishes recycling targets of 50% for paper, metal, glass, and plastic, which caps the amount of waste that is eligible to be burned.

2.4 The Realities of MSW Incineration Under the CDM

While incinerators have aroused concerns worldwide and their impacts on human health have been extensively documented, the CDM continues to support their expansion, with little regard for their impact on recycling rates and without requiring any pollution control. In this way, the EU continue to offset their own carbon emissions with carbon credits from incinerators that would never be allowed under European Union law. The following are the key problems with CDM-backed incinerators.

Existing recycling and composting practices are displaced. One of the most striking consequences of CDM support for incineration is that it actually provides an incentive to burn recyclable and compostable materials. This contradicts the waste hierarchy established by the Waste Framework Directive 2008/98/EC and the EU Resource Efficiency Roadmap, which, as described above, gives priority to waste prevention and reuse of materials before energy recovery or incineration.

Incinerators and RDF plants actively compete with recycling, which offers much greater total greenhouse gas reductions. To burn waste, incinerators require a high proportion of paper, cardboard and plastic in waste—materials which are far better recycled. Most developing countries do in fact recycle high proportions of these materials, thanks to the efforts of the informal recycling sector. However, the CDM systematically ignores the existence of recycling and the impact on recycling rates of incentivising waste burning. Nor does it consider the possibility of increased recycling; indeed, by supporting waste disposal technologies such as incineration, the CDM precludes the possibility of improved recycling in the future.

CDM Incinerators lack pollution control.

Incinerators lack pollution control. Strict monitoring of incinerator pollution rates is not required by the CDM, nor does it impose toxic emissions limits as a condition for the approval of these projects, as the EU waste legislation does. Consequently, incinerators represent a major source of global pollution.

It is important to note that developing countries typically do not have emission control regulations as rigorous as those in the Industrial Emissions Directive, and even those that do tend to lack the capacity to monitor and enforce them. Hence, even if modern incinerators have significantly reduced their emissions, the truth is that in developing countries the emissions are still much higher than what is considered safe in the EU.

Therefore, when allowing CERs from incinerators into the EU ETS, the EU is financing a very dangerous source of pollutants whose cost in human lives and health treatments falls primarily on the host country.

Incinerators do not always replace fossil fuels in energy generation, but often require them alongside municipal solid waste. Municipal waste, particularly in developing countries, is high in moisture and often will not burn without the addition of auxiliary fuel. The CDM rules for waste incineration allow up to 50% of the energy generated by an incinerator to be from auxiliary fossil fuel.[46] The use of added fossil fuel to burn organic waste does not comply with the definition of "renewable" energy as described in European legislation.[47] The CDM rules for waste incineration allow up to 50% of the energy generated by an incinerator to be from auxiliary fossil fuel. Incineration of such wet wastes with added fossil fuel does nothing to abate climate change and has serious implications for CDM's environmental integrity.

In China, the major recipient of CDM-backed incineration projects, the supplemental fuel that is required for incineration makes it impossible to gain net energy generation.[48] Despite the CDM rules for waste incineration, which allow that the

fraction of energy generated by auxiliary fossil fuel should be "no more than 50% of the total energy generated in the incinerator,"[49] incineration of such wet wastes does nothing to abate climate change.

Biogenic emissions from CDM incinerators are not tracked. Biogenic emissions—those that occur as a result of the combustion or decomposition of biological materials—from incinerators have been considered carbon neutral by project developers, and the CDM has not corrected this mistake. CDM projects continue to exclude biogenic emissions, thus under-reporting their actual CO2 emissions, overestimating their emission reductions, and producing non-additional CERs as a result.

The fact is that Municipal Solid Waste includes a high proportion of biomass. An estimated 50% to 80% of all CO2 emissions from waste incinerators in the Global South are of biogenic origin. When biomass is burnt, it produces more CO2 per MW/h than fossil-fuel plants—around 33% more carbon dioxide per unit of energy than a gas fired power station—as has been borne out by the data.[50]

This fault in CDM incinerator projects has been addressed by the IPCC, which explicitly states that biogenic emissions from incinerators must be taken into account: "The CO2 emissions from combustion of biomass materials (e.g., paper, food, and wood waste) contained in the waste are biogenic emissions and should not be included in national total emission estimates.

Municipal Solid Waste is mostly organic, so incinerators generally need auxiliary fossil fuel to burn it.

However, if incineration of waste is used for energy purposes, both fossil and biogenic CO2 emissions should be estimated."[51] Nevertheless, the CDM continues to permit companies to keep most of their CO2 emissions off the books by labelling them "biogenic". A recently-approved project in New Delhi will receive carbon credits for supposedly reducing emissions while it produces 6 times more CO2 than it reports.[52]

CDM incinerators compete with waste pickers for recycable materials that burn well such as paper and plastics.

3. LFG AND INCINERATORS: THREATENING WASTE PICKERS' WORK AND LIVELIHOODS

While municipally-run recycling systems are commonplace in industrialized countries, in the developing world most recycling is done by waste pickers/grassroots recyclers.[53] These are self-employed workers, mostly in the informal economy, who retrieve reusable and recyclable items from the waste stream.[54] They collect, sort, clean, and in some cases, process the recyclables, returning them to industry as an inexpensive and low-carbon raw material. In doing so, waste pickers contribute much of the expense of waste management that does not then have to be borne by the public sector.

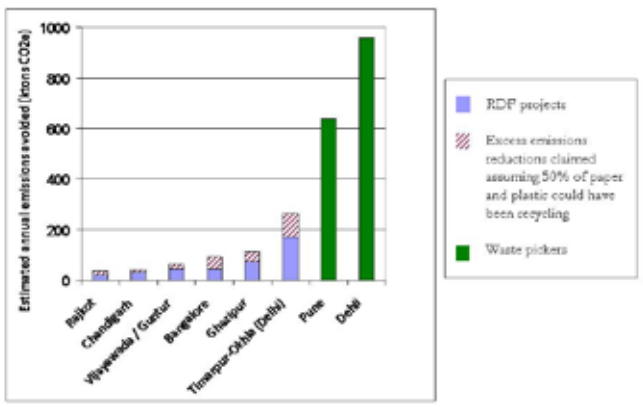
Indeed, recycling provides a livelihood to approximately 15 million people worldwide—1% of the urban population in the developing world.[55] Waste pickers/grassroots recyclers can be incredibly efficient recyclers, achieving recycling rates higher than 80% in places where they handle organic material, such as Cairo (before the city's waste management was handed over to private waste companies).[56] In Delhi, the annual GHG emissions savings that the informal sector brings to the city is estimated to be 962,133 T CO_2-eq, which is over 3 times more than other waste projects slated to receive carbon credits in the city (see Graph 4).[57] Waste pickers/grassroots recyclers thus represent a huge opportunity to reduce GHG emissions through increased recycling rates, if given proper recognition and support.

In the name of "modernisation," some governments are eager to replace labor-intensive collection, separation, and recycling by a population whose poverty they find embarrassing with high-tech incinerator and LFG systems. Yet displacement by technology does not solve the social, economic, and cultural challenges of these grassroots recyclers, any more than incineration provides a sustainable, environmentally sound strategy for waste management. While waste pickers/grassroots recyclers often face challenges of poverty, exploitation by those to whom they sell recyclables, lack of recognition for their work, and lack of access to public benefits, they are increasingly organizing into cooperatives or unions that strengthen their negotiating capacity within the public and private sectors, and in some countries gaining official recognition and inclusion in national waste legislation and planning.

The CDM's support of the expansion of WTE technolgies such as waste incinerators (including gasification, pyrolysis, and RDF) and landfill gas facilities represents a huge threat to waste pickers. These technologies actively compete for resources with the waste pickers/grassroots recyclers and general recycling programs, which offer much greater total greenhouse gas reductions, especially when combined with biological treatment methods.[58] [59] As long as the CDM fails to take the actual impact of waste pickers and their recycling programs into account in its baseline GHG estimates, its incentives for end-of-pipe projects will ultimately be responsible for increased emissions due to the burning and landfilling of materials that were previously recycled. Indeed, the projected emission reductions of waste technologies tend to be based on assuming that waste that is not burned is simply landfilled—which is manifestly not true in many developing countries.

Action by the Global Alliance of Wastepickers in the UNFCCC Conference in Tianjin, China. October 2010.

Graph 4. Emission reduction estimates in India.



Source: Cushing, L., Waste-to-energy or wasted opportunity? Informal sector recycling for climate change mitigation in India. Energy and Resources Group, University of California, Berkeley, May 2010.

4. CONCLUSION

Waste-to-energy projects such as incinerators and LFG within the CDM supply the EU ETS with highly problematical carbon credits. The purchase of these credits supports projects which do not comply with minimal European waste management and quality standards. This double standard is a clear case of European policies working against each other: whatever good the Waste Directive and Landfill Directive accomplish on European soil is being undone by the ETS abroad.

In the developing country context, incinerator and LFG projects also generate a number of serious problems that escape the purview of the CDM. They threaten the livelihoods of a large but vulnerable population—grassroots recyclers; they produce uncontrollable toxic emissions; they consume additional fossil fuels; and they encourage intensive use of natural resources.

Finally, the carbon credits generated by such projects are supposed to help the EU meet its GHG emissions goals. Yet these credits are often spurious—they do not represent real emissions reductions—and their importation into the ETS undermines EU climate policy.

For all these reasons**, the ETS should immediately discontinue the use of CERs from waste disposal projects.** The EU has taken action in the past to prevent spurious CERs from undermining the environmental integrity of the ETS, and should act again.

Furthermore, this report recommends the consideration of the following principles, to be applied to any EU support for waste management in developing countries:

1. **Respect for the Waste Hierarchy must prevail.** The EU should be consistent in prioritising waste prevention and recycling over end-of-pipe disposal strategies, since waste prevention and recycling generate lower GHG emissions, whether in Europe or the Global South. If the Waste Hierarchy is not respected, increased emissions associated with disposal and lost recycling can easily outweigh any savings from reduced methane emissions.
2. **The informal sector must be integrated.** The informal recycling sector comprises a large population with an essential skill set for proper MSW management in developing countries. Rather than exclude them or create programs which compete directly with them, they should be included in every stage of program planning, development and implementation. This will ensure improved social as well as environmental outcomes
3. **Organics diversion from landfills must be supported.** Organics diversion is critical to reducing GHG emissions. The EU should shift support from long-term landfilling and LFG in open dumps to promote strategies that will avoid dumping organics in the first place. The "diversion of organics" principle of the Landfill Directive is one of the landmarks of EU environmental policy and the EU should not support lower standards elsewhere.
4. **Separate collection and zero waste policies must be encouraged.** Without separate collection of waste within an overall policy framework aiming at waste reduction, it is difficult to increase recycling rates or find safe, environmentally friendly uses for organic waste. End-of-pipe technologies such as incineration and LFG systems should not be encouraged as a climate change abatement strategy.

Such recommendations may take time to incorporate into EU overseas development assistance programs. However, a ban on the use of CERs derived from incinerators and LFG can be imposed immediately, and should be.

Endnotes

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3 Refuse Derived Fuel is a technology in which waste is dried and compressed into bricks or pellets, then burned as fuel, often in cement kilns.
4 For the purpose of this report, the sample has focused in CDM projects under the methodologies ACM001 and AM0025, which are currently under revision by the CDM Methodological Panel. It can be found at www.no-burn.org /cdm. This sample includes by far the majority of MSW projects in the CDM pipeline (a total of 298) but is not exhaustive.
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Photo by Gigie Cruz

GAIA stands for both the Global Alliance for Incinerator Alternatives and the Global Anti-Incinerator Alliance.

We are a worldwide alliance of more than 600 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration. Our goal is clean production and the creation of a closed-loop, materials-efficient economy where all products are reused, repaired or recycled. GAIA's greatest strength lies in its membership, which includes some of the most active leaders in environmental health and justice struggles internationally. Worldwide, we are proving that it is possible to stop incinerators, address climate change, and implement zero waste alternatives. GAIA's members work through a combination of grassroots organizing, strategic alliances, and creative approaches to local economic development.

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