

SMOKE SCREEN

Why the UK must turn its back on incineration
and embrace the circular economy as a solution
to the global waste crisis



A TEARFUND SUMMARY REPORT FOR THE MEDIA

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Cover photo: *A woman searches through rubbish in Thailand after the 2004 tsunami.*
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EXECUTIVE SUMMARY

In a nutshell

Fast-growing cities across the planet are drowning in waste. Incineration is being touted as the panacea to a mounting global waste crisis, despite damning evidence of the damage it causes to people and planet. The circular economy presents a radically different approach for both the UK and developing countries, reducing waste dramatically and encouraging reuse and recycling. This report calls on the UK to reposition itself as a proponent of regenerative, renewable approaches, and to help create prosperous, green and resilient societies locally and globally. This shift is critical if we're to release developing nations from aid dependency and attain the UN Sustainable Development Goals. We have a narrow window of opportunity to redefine ourselves as a nation and lead the way in building a circular economy, both at home and overseas.

Fast-growing cities across the world are drowning in waste – and the situation is rapidly getting much worse, especially in developing countries.

Three billion people – 40 per cent of the world's population – don't have access to controlled (regulated) waste disposal. Huge open dumps blight cityscapes. Already, two billion tons of municipal solid waste are generated each year, the equivalent weight of 6,000 Empire State Buildings, and municipal governments are struggling to provide even basic waste management services. By 2025, it's predicted that municipal solid waste will have tripled to six billion tons.

Rapid population growth and urbanisation in developing nations mean the problem is growing exponentially. As middle-income countries see their economies grow, urban consumption and waste production per capita are rising sharply too.

In lower-income cities in Africa and Asia, municipal solid waste generation is expected to double in the next 15 to 20 years.

This situation is already having huge health and environmental impacts especially on the poorest people in city slums.

- **Every year, 9 million people die of diseases linked to mismanagement of waste and pollutants. That's 20 times more than die from malaria.**
- **Drains blocked by waste aggravate flooding and help spread disease.**
- **Open dumping and burning are causing severe pollution of land, air and water.**

City officials are looking for quick-fix solutions and waste incineration is being touted as a magic bullet. Industrial-sized incinerators are spreading across the developing world, particularly in middle-income countries in Asia, but there are also ambitious expansion plans afoot in Africa. Already 2,200 thermal treatment plants are active worldwide, with the capacity to dispose of about 300 million tons of waste per year.

The priority must be to stop open dumping and uncontrolled burning, but industrial incinerators are merely the 'lesser of two evils' and are not the best solution to these problems.

Even in regulated contexts such as the UK, incinerators pose risks to public health and the environment, at a time when public concern over air pollution more generally is on the rise. Lack of regulation and lack of public accountability in many developing country contexts make incinerators there an environmental and health time-bomb.

- They emit harmful emissions including fine particulates and persistent organic pollutants (POPs), banned under the Stockholm Convention, and produce fly ash, classified as a 'hazardous chemical'.
- There is a strong link between fine particulates and cardiovascular and respiratory diseases as well as cancer.
- Residues such as wastewater are often discharged untreated into the environment.

The expansion of waste incineration is fuelled by a potent combination of industry promotion, government subsidies and, alarmingly, climate finance. Waste incineration is being misbranded as a green solution and a 'renewable energy' source – sometimes naively, sometimes deliberately. Incinerators are being built and sustained with climate finance, as the world looks on unquestioning. This must stop.

Currently, most northern European countries have over-capacity for waste incineration and policymakers' enthusiasm for the technology is waning. The World Bank and the EU have both signalled a policy shift away from its promotion. Some developed countries are pulling back from incineration on home soil. Yet the push to promote and help fund incineration in middle-income countries continues apace, jeopardising chances of reaching the Sustainable Development Goals. This smacks of double standards.

One main reason for Europe reining in its enthusiasm for waste incineration at home is that it is undermining efforts to increase recycling rates and recover valuable secondary resources. To operate properly, and to justify their 'waste-to-energy' label, incineration plants require a constant diet of high-quality combustibles such as recyclable plastics. The UK's incinerators now threaten its own recycling targets.

Crucially, incineration threatens the livelihoods of some of the world's most vulnerable and marginalised people: the 15–20 million waste pickers in developing country cities. They have been the *de facto* urban recycling service for decades, achieving high recycling rates in some regions – despite lack of recognition, low remuneration and appalling working conditions.

The recent tragedy at the Koshe dump outside Addis Ababa brought many of these issues into sharp focus. A landslide at the dump in March 2017 killed at least 113 of the waste pickers who live and work there. A new incinerator planned for the site threatens the livelihoods of those who survived – and looks set to pave the way for the roll-out of incineration plants across Africa.

Yet, as Tearfund argues in this report, there is another way. Waste pickers point to a radically different approach to the world's waste problem: the circular economy. Circular economy approaches redefine 'waste' as a resource: discarded products and materials are mostly reused, repaired or remanufactured.

As the case studies here show, circular economy approaches such as 3Rs (reduce, reuse, recycle) and Zero Waste cities are already having powerfully positive impacts on public health, the environment and resource security in cities across the globe. They can regenerate economies and create jobs.

They can also tackle poverty. By formalising informal sectors such as waste pickers' work, they can deliver real benefits to some of the poorest people on the planet: better jobs in much safer, healthier conditions.

As governments and businesses globally are beginning to appreciate, the circular economy represents huge untapped potential.

- If India were to embrace the circular economy, its greenhouse gas emissions would be 44 per cent lower than today's by 2050 and it could generate US\$624 billion a year.
- Greater resource efficiency could save European manufacturers US\$630 billion a year.
- Recycling materials from municipal solid waste saves three to five times more energy than burning them for electricity.

The UK stands at a crossroads. It not yet 'locked in' to incineration as other countries are, but it's close to the point where its recycling is fixed at low rates due to the need to feed its ever-expanding incineration capacity. New laws on organic waste set to come into force in the UK in 2020 present an opportunity to embrace circular economy approaches such as composting. The Paris Climate Agreement is also a pressing reason to review the suitability of waste incineration as a strategy to combat climate change.

As it redefines its position on the world stage, the UK has a unique opportunity to become a proponent of circular economy approaches at home and overseas. Embracing regenerative and renewable circular economy approaches is critical if we are to achieve the Sustainable Development Goals. If the UK seizes this chance, it can become a world leader in helping to create resilient, healthy and green societies less dependent on aid.

Recommendations

The UK government should:

- position itself as a leading proponent of a circular economy:
 - domestically, by committing to establish an enabling environment in which circular approaches are supported and incentivised, and
 - internationally, by supporting and funding circular economies in developing countries, rather than locking waste management systems into incineration
- ensure the soon-to-be privatised Green Investment Bank no longer funds incineration domestically and incineration is no longer eligible for public loan guarantees

The EU and the UK should:

- ensure that no EU or UK official development aid supports incineration projects, but instead promotes alternative circular economy solutions such as 3Rs and Zero Waste cities. They should invest in developing small and medium sized enterprises in the recycling and renewable energy sectors.
- ensure that subsidies given to renewable energy do not include incineration projects
- call for international climate finance mechanisms and related programmes such as the NAMAs to stop funding incineration and prioritise investment in techniques such as advanced recycling and composting, circular economy practices relating to repair and re-design, and Zero Waste city concepts
- build on growing public concern about waste incineration and support additional awareness-raising campaigns for consumers in developing country cities on waste reduction, sustainable lifestyles and waste separation at source
- help build municipalities' capacity to develop and run integrated waste management systems

1 THE DEVELOPING WORLD'S WASTE CRISIS

Urban areas in developing countries are fast disappearing under mountains of waste. And things are going to get much worse very quickly: predictions see municipal solid waste tripling in the next eight years. The implications for public health and the environment are disastrous.

Today, two billion people don't have access to properly regulated solid waste collection (as opposed to open dumping); three billion people don't have controlled waste disposal (in other words, bin collections).¹ This is despite significant progress made by developing countries since the 1990s, when controlled disposal was virtually non-existent.

The situation will worsen in low- and middle-income countries as economies develop. Resource consumption and waste generation per capita typically rise in line with income in these contexts. It is estimated that three billion people will join the middle class by 2025.² And, all the while, rapid population growth and urbanisation are ramping up the pressure on cities: every week, an estimated three million people move from rural to urban areas.³

Already, two billion tons of municipal solid waste are generated each year (the equivalent weight of 6,000 Empire State Buildings).⁴ By 2025, predictions say, this will have tripled to six billion tons.⁵ If other forms of urban waste from construction, commerce and industry are included, the world is already producing seven to ten tons of waste a year.⁶ In lower-income cities in Africa and Asia, municipal solid waste generation is expected to double in the next 15 to 20 years. To compound this problem, Western nations are exporting most of their electronic waste (e-waste) to Asia and Africa. Eighty per cent of e-waste in the US is transported to Asia.⁷

TWO BILLION TONS OF MUNICIPAL SOLID WASTE ARE GENERATED EACH YEAR (THE EQUIVALENT OF 6,000 EMPIRE STATE BUILDINGS)

Cities are suffering the consequences of lack of foresight: policies to stimulate economic growth, employment and income have been developed without appropriate programmes and policies to set up sustainable waste management systems. The consequences for public health and the environment are disastrous:

- Uncollected waste causes the spread of gastrointestinal and respiratory infections, particularly among children.
- Drains blocked by waste aggravate flooding and help spread disease.
- Open dumping and burning cause severe pollution of land, freshwater, groundwater and sea water, as well as local air pollution.

Every year, nine million people die of diseases linked to the mismanagement of waste and pollutants – 20 times more than die from malaria.⁸ Sometimes, the consequences are catastrophic: in March 2017, at least 113 people were killed in a giant landslide at Ethiopia's largest rubbish dump at Koshe outside Addis Ababa. Predictably, it is the poorest people, such as those Tearfund works with, who are worst affected. The costs to society of untreated and uncollected waste (eg health care, lost productivity, flood damage) are estimated to be between five and ten times higher than the financial costs per capita of proper waste management. Urgent action is vital.

1 UNEP/ISWA (2015) *Global waste management outlook*

2 World Business Council for Sustainable Development (2016) *Informal approaches towards a circular economy: learning from the plastics recycling sector in India* www.wbcsd.org/content/wbcsd/download/2030/25665

3 Ibid

4 The worldwide average for waste generation is 1.2kg per person per day; individual countries range from 14.4 kg/capita/day in Trinidad and Tobago to 0.09kg in Ghana. Source: World Bank (2012) *What a waste*

5 UNEP/ISWA (2015) *Global waste management outlook*

6 Ibid

7 Electronic Waste Facts (2014) *Electronic revolution = E-Waste* www.theworldcounts.com/stories/Electronic-Waste-Facts

8 www.cep.unep.org/meetings/documents/811d63da2f3ac96c08eb670f64db4310/@@download/en_file/PollutionSDGSummary-en.pdf

2 INCINERATION: A VICIOUS CYCLE

In a bid to tackle their waste management problems, city authorities in developing countries are beginning to opt for incineration as a quick-fix solution. Whilst incineration may seem a good solution to get rid of waste fast and generate electricity at the same time, it creates a range of social and environmental problems. Incinerators are constructed and operated with scant regard for their negative impacts on health and communities. Global expansion of incineration discourages and even limits recycling, threatening global green targets and the livelihoods of some of the poorest people on the planet.

Compared with the incontrovertible benefits of circular economy approaches to waste outlined in Section 3.2, incinerators have little to recommend them. They're hugely costly to build – a 2,000 ton per day incinerator can cost upwards of US\$500 million in Europe. So, in the developing country context, the often cash-strapped municipal governments require additional funding, in most cases from international sources. What's more, incinerators are not efficient or safe in generating energy from waste: recycling materials from municipal solid waste saves three to five times more energy than burning them for electricity.⁹ To produce the same amount of electricity as a coal plant, the average incinerator in the US releases 28 times as much dioxin and 2.5 times as much carbon dioxide.¹⁰

Municipal governments across the world have been moving away from landfill for both practical and environmental reasons: cities are chronically short of space and landfill is widely condemned for leaching toxic chemicals into groundwater and releasing methane, a potent greenhouse gas. Incineration – often branded as a type of 'waste-to-energy' approach – appears to be a win-win solution: burn waste to generate heat for municipal heating systems or steam for electricity.

Incineration, the focus of this report, is commonly labelled as a waste-to-energy technology that is able to produce energy from waste. Although other technologies (eg gasification, thermal depolymerisation or pyrolysis) that do not use combustion are available, these are not directly relevant for developing country contexts, where it is incineration that is being pushed as the main waste-to-energy solution. It is also important to distinguish between incineration and approaches such as biogas generation (anaerobic digestion) from agricultural waste or organic household waste, and the production of fertiliser and compost, which are considered sustainable solutions to waste.

2.1 Scale of waste incineration

Waste incineration is expanding rapidly, mostly as a means of disposing of waste rather than for recovering energy. Today, more than 2,200 thermal treatment plants are active worldwide, with the capacity to dispose of about 300 million tons of waste per year – an amount equal to the combined body weight of the entire global adult human population.¹¹ More than 280 plants with a capacity of nearly 80 million tons annually were constructed between 2011 and 2015 alone. Industry estimates suggest that more than 600 new plants with a capacity of about 170 million annual tons will be constructed by 2025.¹² The future growth markets are mainly middle-income countries in Asia. Indonesia, for example, currently has no waste-to-energy incinerators but plans to build seven in as

9 Seltnerich N (29 August 2013) 'Incineration versus recycling: in europe, a debate over trash', *Yale Environment 360* http://e360.yale.edu/features/incineration_versus_recycling_in_europe_a_debate_over_trash

10 Energy Justice Network, *EPA eGRID 2010 CO₂, SO₂ and NO_x emissions data for U.S. electric power plants* www.energyjustice.net/egrid

11 Jamail D (2016) 'Not a fish tale: humans are ingesting plastic thanks to ocean pollution', *Global Research* www.globalresearch.ca/not-a-fish-tale-humans-are-ingesting-plastic-thanks-to-ocean-pollution/5516583

12 Waste to Energy 2016/2017 www.ecoprog.com/publikationen/abfallwirtschaft/waste-to-energy.htm

many years, putting incineration front and centre of its waste management strategy.¹³ Mainland China's 160 incineration plants have the capacity to dispose of 60 million tons of waste each year, making it the world's biggest incinerator of waste; in 2000, there were only six such facilities in the country. Its current plans suggest a doubling of capacity by 2019, with at least one new plant, that being planned for Shenzhen near Hong Kong, being a mile long. The incineration industry has now extended its reach into sub-Saharan Africa: a vast plant is currently being built on the edge of Addis Ababa (see Ethiopia case study in Section 2.3).¹⁴

2.2 Health and environmental impacts

Incineration is not, however, the magic bullet it is presented as. Air pollution control systems intended to remove pollutants from smokestack emissions do not do the job. Even in OECD countries, environmental controls do not prevent harmful emissions:

- Exhaust gases contain persistent organic pollutants (POPs) including dioxin, a known carcinogen:¹⁵ banned under the Stockholm Convention, POPs' specific characteristics pose a global threat to health and environment.
- There is a strong and well established link between fine particulates and cardiovascular and respiratory diseases as well as cancer, leading the WHO to discourage incineration.¹⁶
- Fly ash produced is classified as a 'hazardous chemical' as it may contain toxic substances.
- Residues such as waste water from wet flue gas filters are often discharged untreated into the environment.¹⁷

The health impacts of these and other emissions such as heavy metals (eg lead, mercury) are widely documented. In many developing countries, these health impacts are multiplied as a result of lack of specific regulation, weak supervision, lack of transparency and failure to use existing environmental (pollution control) technology due to shortage of funds (see India case study in Section 2.3). If control systems to reduce toxic emissions are properly implemented at an incineration plant, they account for at least half of the building costs, so the temptation to 'cut corners' on these safety measures and save money is huge.

IN MANY DEVELOPING COUNTRIES, THESE HEALTH IMPACTS ARE MULTIPLIED AS A RESULT OF WEAK SUPERVISION, LACK OF TRANSPARENCY AND FAILURE TO USE EXISTING ENVIRONMENTAL TECHNOLOGY

The World Bank, once a strong supporter of incineration, has become a critic of it in developing country contexts.¹⁸ Developed nations are now pulling back on their commitment to waste incineration at home,¹⁹ due to high costs, over-capacity of incineration facilities, competition with recycling rates and health concerns (see Section 5).²⁰ Yet they continue to promote it in middle-income countries (see Section 4).

13 In parallel, and in stark contrast, Indonesia is also developing Zero Waste policies in several provinces.

14 The plant, hailed as a contributor to 'sustainable development', is being built by the Ethiopian Electric Power Corporation and UK-based Cambridge Industries: Messenger B (2017) 'VIDEO: 50MW waste to energy plant part of sustainable development plans in Ethiopia', *Waste Management World* <http://waste-management-world.com/a/video-50mw-waste-to-energy-plant-part-of-sustainable-development-plans-in-Ethiopia>

15 Shibamoto T, Yasuhara A and Katami T (2007) 'Dioxin formation from waste incineration' (Abstract), *Reviews of Environmental Contamination and Toxicology* 190 pp 1-41 www.ncbi.nlm.nih.gov/pubmed/17432330

16 World Health Organisation (2016) 'Ambient (outdoor) air quality and health: factsheet' www.who.int/mediacentre/factsheets/fs313

17 IPEN (2005) *After incineration: the toxic ash problem* http://ipen.org/sites/default/files/documents/After_incineration_the_toxic_ash_problem_2015.pdf

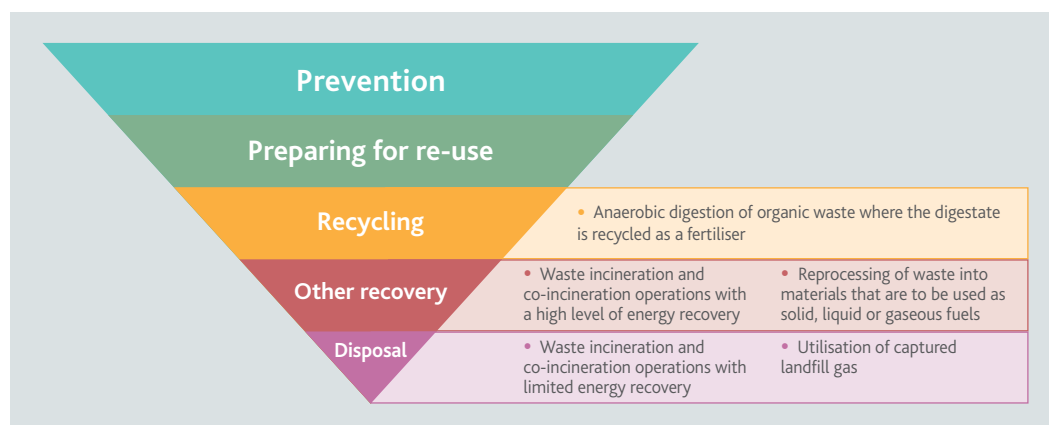
18 See, eg, Hoornweg D and Bhada-Tata P (2012) *What a waste: a global review of solid waste management*, World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/17388>

19 European Commission (2017) *The role of waste-to-energy in the circular economy* <http://ec.europa.eu/environment/waste/waste-to-energy.pdf>

20 See Ecoprog projections here: www.resourcerecovery.biz/features/global-energy-recovery-market-remains-strong

Despite being included in national climate change mitigation strategies and attracting climate finance (see Section 4), according to Zero Waste Europe waste incineration is a net contributor to climate change. In the European Commission's 2017 hierarchy of waste management options considered best for the environment and society, it compares favourably only with landfilling in terms of reduced methane emission reductions (see diagram below).²¹ Promoting incineration is therefore at odds with the Paris Climate Agreement which came into force in 2016 (see Section 5).

Examples of waste-to-energy processes



Source: Page 4 <http://ec.europa.eu/environment/waste/waste-to-energy.pdf>

For these reasons, incineration poses a serious threat to our ability to reach several Sustainable Development Goals (SDGs), especially those relating to health, inclusive societies and communities, decent work and livelihoods, and sustainable consumption and production. Promoting waste incineration over prevention, re-use and recycling is therefore undermining development efforts to achieve the SDGs.

Understandably, municipalities want to end open dumping and open uncontrolled burning, but industrial incinerators are merely the 'lesser evil' and are not the best solution to these problems.

2.3 Impact on recycling rates and recyclers

One of the main objections to waste incineration is that it reduces recycling and, at its worst, it removes the incentives for preventing waste. For incinerators to work properly, they require high-quality feedstock. Municipal solid waste in developing countries typically has low calorific value²² and high moisture content. Up to 80 per cent of waste in Asia's developing countries is organic.²³ Non-recyclable materials amount to only about 10 to 20 per cent of municipal solid waste in these contexts and do not burn well. Recyclables such as plastics made with petroleum burn well and generate more energy than most materials, but they also emit dioxins as they are burnt (see Section 2.2). The alternative is co-firing – supplementing the waste products with costly fuels such as coal or oil. Incinerator operators require a steady stream of waste, often tying city officials into long-term contracts to supply rubbish (see Section 5) and reducing incentives to recycle.

INCINERATION REDUCES RECYCLING AND, AT ITS WORST, REMOVES THE INCENTIVES FOR PREVENTING WASTE

²¹ Ibid

²² 800 cal/kg compared with the 2,000–3,000 cal/kg required for combustion to succeed: www.alternative-energy-news.info/negative-impacts-waste-to-energy

²³ www.unescap.org/sites/default/files/Full%20Report%20%20.pdf

The growth of incineration is having a serious knock-on effect, not only on recycling rates, but also on the livelihoods of a significant sector of the urban poor. So-called waste pickers are people who salvage reusable or recyclable materials thrown away by others to sell or for personal use. In developing countries, about 15–20 million people survive and make a livelihood in this informal sector, with the largest numbers in China, India and Brazil.²⁴ They are predominantly in developing countries, but increasingly in post-industrial countries too. Most have no alternative employment options. The materials collected by waste-pickers are exactly those required by incinerators: plastics and other recyclable materials with high calorific value. So their livelihoods are under direct threat from the installation of new incinerators.



The Zabbaleen (which literally means 'garbage people') have collected Cairo's household waste for decades.
Mike Webb/Tearfund

Incinerator courts controversy

The Timarpur-Okhla incineration plant in Delhi has courted controversy since it opened. Locals have consistently accused it of violating environmental regulations, through the release of dangerous dioxins and POPs, and of using untested and unapproved technology.²⁵ Local waste pickers protest that it is damaging the livelihoods of Delhi's almost 100,000 waste pickers as its processes rely on burning recyclables. It's also been accused of fraudulently claiming carbon credits by misrepresenting the types of technologies being used at the plant.²⁶ Officials have failed to keep promises to the local community that they would close it down. The validation reports and other project documents to the UNFCCC were prepared by a British consultancy, SGS United Kingdom Ltd.²⁷

24 Medina M (2008) *The informal recycling sector in developing countries: organizing waste pickers to enhance their impact*

25 Zero Waste Europe (2016) *UNFCCC approved incinerator reveals double standards in climate finance that undermine European climate policy* www.zerowasteurope.eu/2016/11/unfccc-approved-incinerator-reveals-double-standards-in-climate-finance-that-undermine-european-climate-policy

26 Carbon Market Watch, *Timarpur-Okhla, waste incineration project, India* <http://carbonmarketwatch.org/campaigns-issues/timarpur-okhla-waste-incineration-project-india>

27 Validation report found at: <http://cdm.unfccc.int/Projects/DB/SGS-UKL1185291186.52>

Waste pickers are plugging a gap left by inadequate municipal government provision, particularly as regards recycling plastics.²⁸ Waste collection rates of up to 80 per cent have been reported for certain waste streams. In Brazil, for example, waste picker associations or cooperatives are responsible for a third of all recyclable waste collected, and they run more than half of the sorting facilities in operation. In general, they recycle a much higher proportion of their waste than private sector or municipality waste services.²⁹ They are also important contributors to the local economy: three-quarters of waste pickers say their main buyers are formal businesses, while between a quarter and a half also supply recyclable materials to informal businesses, private individuals and the general public. A third of waste pickers use municipal services as part of their work, generating revenue for city governments.³⁰ Despite this, waste pickers have low social status, deplorable living and working conditions, and little recognition or support from local governments (see Pakistan case study in Section 3.1).

The World Business Council on Sustainable Development has recognised the contribution that informal plastics recycling in India has made to a number of SDGs and acknowledges that globally 'the informal waste sector often reveals a great development potential'.³¹ Tearfund believes that formalising these informal recycling sectors is a key solution to increasing recycling rates (see Section 3). It must be done in an inclusive and careful way, ensuring that women's livelihoods too are protected and improved: when jobs are formalised, waste pickers gain higher status so there is a risk of women being excluded from these roles. While development cooperation programmes have contributed to this sector, it remains an area of untapped potential. Incineration threatens its destruction.

Double tragedy for Addis waste pickers

Many hundreds of Addis Ababa's poorest people live and work on the city's dump, known as Koshe (Amharic for 'dirt'), scraping a living by sorting waste and selling recyclables on to businesses.³² In January 2013, the Ethiopian government, a Chinese company (China National Electric Engineering Co – CNEEC) and a company called Cambridge Industries Ltd (CIL) signed a contract to build a US\$120 million waste-to-energy plant next to the 50-year-old dump. Once operational, the 'Reppie waste to energy' plant will burn more than '1,400 tons of waste a day'.³³ Many local waste pickers fear it will destroy their livelihoods, despite the promise of retraining (see below).

Already facing a bleak future, the Koshe waste pickers were hit by further tragedy on 11 March 2017: a landslide at the dump killed at least 113 people, burying their makeshift homes. A fraction of the government's investment in incineration could have provided proper homes for the waste pickers and a proper recycling facility, which could have averted this tragedy. It would also have provided them with a secure income and safer working environment.

Furthermore, it appears that the plan is to roll out further damaging and controversial incineration projects across Africa. Global company DP Clean Tech, which announced its partnership with CIL to deliver the Reppie plant in 2014, says that the bigger plan is to 'facilitate the rollout of biomass and waste-to-energy projects in Africa'. It mentions a 'further pipeline of projects in Ethiopia, Djibouti, Senegal, Uganda and Kenya'.

Running in tandem with the Reppie project in Addis, there are plans to close the Koshe dump, rehabilitate the land and build a new landfill, 25 miles away in Oromia state. French development agency AFD made a grant of \$22.18 million to the Ethiopian government for this purpose in 2011. This funding also covered the cost of retraining for Koshe waste pickers – but so far, no moves towards this have been made. Furthermore, farmers in Oromia whose land has been earmarked for the new site also now find their livelihoods under threat, fuelling concerns that the government's agenda prioritises waste disposal over people.

28 WBSCD, *Informal approaches* www.wbcsd.org/content/wbcsd/download/2030/25665

29 Fernandes A (2016) *Closing the loop: the benefits of the circular economy for developing countries and emerging economies*, Tearfund

30 WIEGO, *Waste pickers* www.wiego.org/informal-economy/occupational-groups/waste-pickers

31 WBSCD, *Informal approaches* www.wbcsd.org/content/wbcsd/download/2030/25665

32 Knowles C (22 August 2014) 'Inside Addis Ababa's Koshe rubbish tip: where hundreds literally scratch a living', *The Guardian* www.theguardian.com/cities/2014/aug/22/inside-addis-ababa-koche-rubbish-tip-ethiopia

33 Reppie Waste-to-Energy Project www.africawte.com/about.html

34 DP CleanTech (2014) *DP CleanTech acquires new partner to develop waste-to-energy and biomass plants in Africa* www.dpcleantech.com/medias/press-releases/dp-cleantech-acquires-new-partner-to-develop-waste-to-energy-and-biomass-plants-in-africa

3 THE CIRCULAR ECONOMY: A VIRTUOUS CIRCLE

While the global trend is to prioritise landfill and incineration, some cities are starting to transition towards a circular economy in which waste is reduced to a minimum or eliminated completely. Materials previously seen as waste become a resource ripe for redeployment. This approach doesn't just make strong business sense but it can also hasten progress towards the Sustainable Development Goals and help keep emissions within safe environmental limits.

3.1 An end to waste?

IN THE CIRCULAR ECONOMY, THERE IS NO WASTE AS SUCH: DISCARDED PRODUCTS AND MATERIALS ARE MOSTLY REUSED, REPAIRED OR REMANUFACTURED

In the linear economy, a product like a mobile phone is made, used and then, when it's broken or obsolete, thrown away. In redefining a product as waste, all the resources involved in making it (eg energy, metals, water) are lost for good. In Europe, 95 per cent of a product's material and energy value are wasted in this way.³⁵ By contrast, in the circular economy, there is no waste as such: discarded products and materials are

mostly reused, repaired or remanufactured. Other materials can be recycled or put through biological processes such as composting. The circular economy mimics nature: when an organism reaches the end of its life, it provides nutrients for another part of the system.

In 2016, Tearfund and the Institute of Development Studies published a major report outlining significant development opportunities that the circular economy offers to countries such as those where Tearfund is working.³⁶ It promotes the very practices cited in the European Commission's waste management hierarchy as being the best for society and the environment: waste prevention ranks at the top of this hierarchy (see Section 2.2). Yet currently the circular economy is almost entirely absent from the development discourse.

In middle-income countries where circular economy approaches are being adopted, they are proving to be an effective alternative growth model which turns lifting people out of poverty, tackling the global waste problem and protecting the planet into mutually compatible goals. The two main approaches that have been successfully adopted in several cities are the 3Rs (reduce, reuse, recycle) and Zero Waste cities. Incorporating informal sector recyclers such as waste pickers into municipal waste management systems has been key to such projects.

'Zero Waste cities' generally start as grassroots initiatives in which waste pickers have a strong voice, and are often a popular reaction against incineration proposals. Typically, they involve a partnership between civil society groups and municipal government (which offers support in terms of policy and finance for scale-up). As the case studies on the next page show, the solutions Zero Waste cities embrace cover a wide range, from recycling and composting to more radical approaches, such as product redesign. Crucially, they go hand in hand with social transformation such as more sustainable consumption (lifestyle choices on the part of city dwellers) and poverty reduction (improving livelihoods and working conditions for waste pickers).

35 McKinsey (2015) *Growth within: a circular economy vision for a competitive Europe*. Report commissioned by Ellen MacArthur Foundation

36 Gower R and Schröder P (2016) *Virtuous circle: how the circular economy can create jobs and save lives in low and middle-income countries*, Tearfund http://tilz.tearfund.org/~media/Files/TILZ/Circular_economy/2016-Tearfund-Virtuous-circle.pdf

CASE STUDY**Zero Waste city: Alaminos' antidote to incineration**

Waste incineration has been banned in the Philippines since 1999.³⁷ Current law also requires all secondary cities to convert open dumps to controlled landfills and separate waste at source. Responsibility for waste management rests with city district (so-called *barangay*³⁸) officials. In practice, *barangay* officials often struggle to implement the law. In Alaminos, a city of 84,000 people in Pangasinan province, a partnership between an NGO called the Global Alliance for Incinerator Alternatives (GAIA) and the city government is pioneering a Zero Waste approach across all *barangays*. GAIA provided training and financial support (eg for plastics shredders and vehicles): the city government provided logistical, technical and strategic planning support. Both provided staff. Now composting, source-separation programmes and small-scale sorting facilities are springing up across the city. Open burning and dumping have virtually ended and waste pickers recover more materials under better conditions and sell them for better prices.³⁹

CASE STUDY**Recognising waste pickers: Bogotá integrates informal recyclers into municipal systems**

In Colombia's capital, Bogotá, waste pickers have provided an informal recycling service since the 1950s when violence forced farmers to flee to cities. Recycling was their only alternative to begging. For decades, their work was unrecognised. Lobbying by waste picker associations led to new laws in 2011 which required waste pickers to be paid for the waste they collected. The municipality also helped provide motorised vehicles for them, to replace animal-drawn carts. The following year, the city set up weighing centres where waste pickers took collected recyclables, and introduced a bimonthly payment to recyclers who would commit to bringing materials to these centres daily, at the same rate per ton as that paid to private companies. This has effectively doubled the income of some 8,250 recyclers and their families, enabling them to send their children to school. Recyclers now divert an estimated 1,200 tonnes of recyclable materials per day from landfill. City authorities have now initiated a Zero Waste programme.⁴⁰

CASE STUDY**A bespoke approach to Pakistan's waste crisis: neighbourhood recycling centres**

Municipal authorities in Pakistan collect only half of the 54,000 tons of solid waste generated each day. Jam Chakro in Pakistan is one of the largest dump sites in the world, extending over 202 hectares.⁴¹ Waste pickers endure appalling conditions and are mostly women or minority groups such as Christians. Tearfund is looking to fund Integrated Resource Recovery Centres (IRRCs) in Islamabad and Sindh provinces in Pakistan, such as the one Waste Concern piloted in Bangladesh then replicated in several smaller cities in Asia. These neighbourhood-based centres, which cost £45,000 to build, are run in close collaboration with waste pickers who collect pre-sorted waste from households, markets and businesses (raising consumer awareness of 3R principles), and bring it to the centre for processing. Organic waste is turned into high-quality organic compost, sales of which cover the IRRCs' operating costs. Biogas digesters turn meat and fish waste into biogas, and cooking oil is converted into biodiesel. Recyclable materials are sold to sectors such as glass and plastics manufacturers, greening their supply chains. IRRCs can process up to 20 tons of waste a day, serving a population of 50,000 people.⁴²

37 Edie newsroom (2 July 1999) *Philippines bans waste incinerators* www.edie.net/news/0/Philippines-bans-waste-incinerators/1378

38 A *barangay* is the smallest administrative division in the Philippines, referring to a village, district or ward.

39 Source: GAIA, *Zero waste from dream to reality in the Philippines* www.no-burn.org/Zero-Waste-from-dream-to-reality-in-the-philippines

40 Source: UNEP/ISWA (2015) *Global waste management outlook*

41 Ibid

42 Source: ESCAP/Waste Concern

3.2 Comparative benefits of the circular economy

The circular economy offers huge benefits in terms of human health, poverty reduction and the environment, when compared with current waste management systems. The statistics and predictions below present a compelling business case:

Resource security

The long-term trend is for resource prices to rise and remain volatile. In 2012, governments around the world, including the UK, released resource security strategies in response to concerns that the reduced availability of some raw materials might slow economic growth. In 2011, almost a third of profit warnings issued by FTSE 350 companies were related to rising resource prices. The UN suggests the risk of resource-related conflicts 'may well come to define global peace and security in the 21st century'.⁴³

THE CIRCULAR ECONOMY WOULD BE AN IMPORTANT STEP TOWARDS 'DECOUPLING' ECONOMIC GROWTH FROM RESOURCE USE

The circular economy would be an important step towards 'decoupling' economic growth from resource use.⁴⁴ Consultancy firm McKinsey estimates that greater resource efficiency could save European manufacturers US\$630 billion a year.⁴⁵

Protecting the environment

The shift to a circular economy could halve European carbon emissions by 2030.⁴⁶ Predictions by the Ellen MacArthur Foundation suggest that, if it embraced a circular economy, India's greenhouse gas emissions would be 44 per cent lower by 2050 compared to current predicted projections.⁴⁷

Health benefits

Current waste management systems, including incineration, are taking a heavy toll on human health. Every year, nine million people die of diseases linked to mismanagement of waste and pollutants. Furthermore, industry and manufacturing create pollution in generating new resources. This situation could be vastly improved through the adoption of the circular economy, which minimises waste and pollution.

Jobs creation

Circular economy approaches create jobs. A recent meta-analysis of 65 academic studies in this area concluded that while more research is needed, 'existing studies point to the positive employment effects occurring in case that a circular economy is implemented'.⁴⁸ Green Alliance and Wrap say that 'this is because, whilst [circular business] activities tend to be efficient in their use of natural resources, they can be relatively intensive in their use of labour, compared with the activities they replace'.⁴⁹ Furthermore, jobs created in remanufacturing, repair and high-tech recycling are likely to be skilled roles.

43 The EU-UN Partnership of Land, Natural Resources and Conflict Prevention: www.un.org/en/land-natural-resources-conflict

44 McKinsey (2015) *Growth within: a circular economy vision for a competitive Europe*. Report commissioned by Ellen MacArthur Foundation

45 World Economic Forum (2014) *Towards the circular economy, volume 4: accelerating the scale-up across global supply chains*. Report prepared in collaboration with McKinsey and Ellen MacArthur Foundation

46 McKinsey (2015) *Growth within*

47 Ellen MacArthur Foundation (2016) *Circular economy in India*

48 Horbach J, Rennings K and Sommerfeld K (2015) *Circular economy and employment*, IZA Institute of Labor Economics http://conference.iza.org/conference_files/enviro_n_2015/horbach_j11332.pdf p 23

49 Morgan J and Mitchell P (2015) *Employment and the circular economy*, Green Alliance and WRAP www.green-alliance.org.uk/resources/Employment%20and%20the%20circular%20economy.pdf

If we are to meet the SDGs, low- and middle-income countries need these jobs: a quarter of those in extreme poverty are either unemployed or working in low-quality, dangerous employment (eg waste pickers).

Economic growth

The circular economy transforms waste into a 'resource for our economies'.⁵⁰ Its adoption in India, for example, could generate US\$624 billion a year – equivalent to 30% of India's current GDP.⁵¹

Circular economy approaches are therefore critical to achieving many SDGs. They underpin efforts to reduce material poverty by decoupling economic growth from resource availability and from pollution and its attendant health impacts. There are also clear, specific linkages to Goals 3 (health), 7 (clean energy), 8 (work), 12 (sustainable consumption and production), 9 (innovation and infrastructure) and 11 (cities). By contrast, incineration poses a serious threat to our ability to reach several goals.

3.3 A credible alternative

Many sectors of low- and middle-income countries already exhibit circular systems, albeit often in the informal sector. Waste pickers are just one example. There is also often a strong culture of repair and even remanufacture: a case in point is the vast Suame/Kumasi industrial cluster in Ghana, an alliance of micro-enterprises and SMEs situated at the periphery of the international automotive industry and employing 200,000 people in more than 12,000 businesses.⁵² The challenge is to build on these existing strengths rather than importing a broken, Western economic model based on take-make-throw.

There is no doubt that implementing 3R principles can be time-consuming and will need committed and sustained support from states and municipalities, in terms of infrastructure, public awareness and capacity building. For example, only ten per cent of waste pickers are organised into associations or cooperatives currently, and even among these organisations, a significant number (perhaps half) lack the expertise to maintain contracts with the government or larger private sector enterprises.⁵³

**MANY DEVELOPING COUNTRIES
COULD POTENTIALLY LEAPFROG
DIRECTLY TO CIRCULAR SYSTEMS
IF EXISTING CIRCULAR ECONOMY
APPROACHES WERE SUPPORTED,
FORMALISED AND SCALED UP**

Many low- and middle-income countries are currently seeing traditional cultures of repair and re-use being eroded as they opt into the dominant linear supply chains, infrastructure and institutions of the global economy. However, recent research from EPEA Brazil, the University of Santa Catarina and Tearfund suggests that, in certain sectors, many developing countries could potentially leapfrog directly to circular systems if existing circular economy approaches were supported,

formalised and scaled up. The shift need not take long. Without incineration, most European countries could improve current recycling rates from 20–30 per cent to 80 per cent within six months, according to Zero Waste Europe.⁵⁴

There is a great deal of momentum behind the present model. However, the examples in this section demonstrate what is possible. The problem lies in lack of imagination and vested interests, not technical impossibility. In fact, there is no option but to live within our biophysical limits.

50 UNEP/ISWA (2015) *Global waste management outlook*

51 Ellen MacArthur Foundation (2016) *Circular economy in India*

52 Gower R and Schröder P (2016) *Virtuous circle*

53 Fernandes A (2016) *Closing the loop*

54 Seltentrich N (29 August 2013) 'Is incineration holding back recycling?', *The Guardian* www.theguardian.com/environment/2013/aug/29/incineration-recycling-europe-debate-trash

4 HOW DID WE GET SO FAR DOWN THE LINE WITH INCINERATION?

The global waste incineration industry is expanding rapidly and countries are fast becoming 'locked in' to incineration, unable to raise recycling rates. With the involvement of foreign aid and investment, waste incineration has been rebranded as 'renewable energy' or, worse still, as a 'green solution'. Why is this? The main drivers for incineration expansion in developing countries are outlined in the following sections.

4.1 Municipalities want quick fixes

Municipal authorities are looking for quick-fix solutions as rapid population growth and urbanisation have outstripped their capacity to provide even basic services such as waste management. The priority for municipal governments is to tackle open dumping and control landfill. Officials in the Chinese city of Hangzhou have had to halve the expected lifetime of the city's landfill sites as waste production is rising by about 17 per cent a year, or twice the national average, hence plans for a new incinerator in Yuhang district. Yet financing incinerators is a major challenge for municipal governments. The cost of incineration per ton is at least three times the cost of landfilling, according to World Bank estimates.⁵⁵ Municipal governments rely heavily on finance, investment and subsidies from industrialised countries. Quite how these subsidies work is not at all transparent.

4.2 The incineration industry is pursuing new markets

Recognising this problem, incineration equipment suppliers from Europe and Japan are rushing to exploit a business opportunity to export their technologies and equipment to middle-income countries. Most countries in northern Europe (except for the UK) already have over-capacity for waste incineration, thanks to the industry's rapid expansion on the back of public subsidies, which is leading to those countries importing waste from overseas.⁵⁶ Now, markets in that region are drying up, at the same time as public disquiet over incinerators is gathering momentum and policymakers' appetite to promote the technology is waning (see Section 5). In many middle-income nations, by contrast, the lack of regulation or enforcement concerning waste management and the fact there is little or no public accountability over waste management infrastructure make it very easy for big industry players to push for industrial-sized incineration plants.⁵⁷

MOST COUNTRIES IN NORTHERN EUROPE (EXCEPT FOR THE UK) ALREADY HAVE OVER-CAPACITY FOR WASTE INCINERATION

55 Hoornweg D and Bhada-Tata P (2012) *What a waste: a global review of solid waste management* <https://openknowledge.worldbank.org/handle/10986/17388>

56 European Commission (2017) *The role of waste-to-energy* <http://ec.europa.eu/environment/waste/waste-to-energy.pdf>

57 Visiongain reports: 'The leading players comprise a diverse range of companies, including international utilities, national agencies and devolved bodies, and smaller engineering, procurement and construction and operations and maintenance companies.' www.prnewswire.com/news-releases/the-25-leading-companies-in-waste-to-energy-wte-2015-553011151.html

Public outcry ignored

In Pathum Thani province, Thailand, residents and activists fear a proposed waste-to-energy plant will contaminate waterways which local farmers use to irrigate their crops and which serve as a drinking water supply for the capital. A public meeting on the issue was controlled by the governor and only supporters were allowed access. Now the project is on the government's fast-track list. Similarly, widespread public protests in China have largely been ignored.⁵⁸

4.3 The 'renewable energy' label means incinerators attract aid and subsidies

A number of international donors have funded incineration projects, often through development cooperation projects. Japan Bank for International Cooperation (JBIC) and Japanese technology suppliers⁵⁹ provided finance and technology for two incineration plants in On Nuch in Bangkok, Thailand. German Development Cooperation, through GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit und Entwicklung), has been strongly criticised by leading German NGOs over its involvement in proposals to incinerate waste in cement kilns (for example in Dominican Republic, Mexico and India), despite such plants having no means of filtering toxic emissions.⁶⁰

INCINERATION IS FREQUENTLY MISBRANDED AS 'RENEWABLE ENERGY'

More alarming still, perhaps, incineration is frequently misbranded as 'renewable energy'. (Confusingly, in China, waste incineration is part of the country's 'circular economy' strategy.) Climate finance has frequently funded incinerators, initially under the Clean Development Mechanism (CDM) and now, it appears,

through green climate finance programmes. The CDM database shows 38 projects registered in the category of waste incineration, two of which were rejected, from September 2010 to April 2014. All of these projects were implemented in China, except for three in Singapore, Vietnam and Indonesia. The Timarpur-Okhla incinerator in Delhi (see Section 2) was also funded by the CDM.

With the loss of CDM carbon credit revenues, industry is now promoting incineration as a climate change mitigation strategy alongside solar power and alternative energy solutions. Several countries are incorporating incineration in their Nationally Appropriate Mitigation Actions (NAMAs), including India⁶¹ and Rwanda,⁶² for example. By contrast, the Kenyan NAMA includes an innovative 'Circular Economy Solid Waste Management Approach for Urban Areas'.⁶³

Also at national policy level, feed-in tariffs similar to those attributable to solar energy production have been introduced to enable the expansion of incineration capacity and are part of countries' climate mitigation policy frameworks. In Vietnam, the feed-in tariff for solid 'waste-to-energy' projects is 25 per cent higher than that for wind – and a fraction higher than the tariff considered the minimum threshold

58 Source: DW, *Thai communities fighting with their hands tied* www.dw.com/en/thai-communities-fighting-with-their-hands-tied/a-19070727

59 PS (2001) *ENVIRONMENT-THAILAND: Japan hit for backing incineration project* www.ipsnews.net/2001/05/environment-thailand-japan-hit-for-backing-incineration-project

60 Deutsche Klimafinanzierung (2016) *Funding unsustainable solutions: German climate finance to the waste sector in the Global South* www.germanclimatefinance.de/2016/10/26/funding-unsustainable-solutions-german-climate-finance-waste-sector-global-south

61 Ibid

62 NAMA Database, *Waste-to-Energy (WtE) and improved waste management practices in Kigali* [www.nama-database.org/index.php/Waste-to-Energy_\(WtE\)_and_improved_waste_management_practices_in_Kigali](http://www.nama-database.org/index.php/Waste-to-Energy_(WtE)_and_improved_waste_management_practices_in_Kigali)

63 NAMA Database, *Circular economy solid waste management approach for urban areas* www.nama-database.org/index.php/Circular_Economy_Solid_Waste_Management_Approach_for_Urban_Areas

to make investments into waste-to-energy viable.⁶⁴ Financial support has come in other forms too, including tax exemptions and premium taxes, even at EU level.

The UK has also played its part in promoting incineration. The UK was involved in 14 of the 38 waste incineration projects on the CDM database mentioned above, through UK banks and UK-based carbon trading consultancies, including Dexon Carbon Capital, Macquarie Bank Ltd, Originate Carbon Limited and Ecoscurities International Ltd. These consultancies and carbon traders were the investors who bought the projects' certified emissions reductions (CERs) to help finance the plants. Limited information online suggests the UK government's DFID may have been involved with the Indonesian government to jointly promote incineration as a climate mitigation strategy. The summary of DFID's work in Indonesia between 2011 and 2015 says that 'turning waste to energy has enormous potential to help meet future energy needs in Indonesia'.⁶⁵ The UK's Carbon Trust also has produced a comprehensive study (funded by the Foreign Office), entitled *Waste to energy in Indonesia: Assessing opportunities and barriers using insights from the UK and beyond*. In an unfortunately worded statement, it refers to waste pickers as 'barriers' to waste-to-energy in Indonesia, because they 'tend to remove waste with higher calorific value (plastics) upstream' which means projects 'can be largely slowed down or deemed unfeasible because of this large and strong constituency'.⁶⁶

Local civil society organisations opposed to incineration accuse international donors of 'double standards': while building new incineration plants in the EU or Japan is discouraged, funding and technical support are provided to promote incineration in developing countries. The EU has issued directives calling on member states to end the burning of all recyclable materials by 2020.

4.4 Expansion is fuelled by a mix of political expediency and wishful thinking

Lack of transparency and available information make it hard to establish exactly why incineration has been allowed to expand and receive 'renewable energy' subsidies. Tearfund believes this situation has come about because governments have listened too closely to the incineration industry. Municipal governments have been too willing to brand incineration as 'renewable energy' to access funding through renewable energy funding mechanisms. And, in including incineration into climate action plans, governments have been keen to show they are doing something for the climate. Technical discussions on incineration can be very complex and accounting methods often ignore the true environmental impact of emissions, especially when organic waste is burned.

**GOVERNMENTS HAVE LISTENED
TOO CLOSELY TO THE
INCINERATION INDUSTRY**

64 Morris D (2014) *Ground-breaking feed-in tariff for waste-to-energy projects in Vietnam* <https://blogs.duanemorris.com/vietnam/2014/06/20/ground-breaking-feed-in-tariff-for-waste-to-energy-projects-in-vietnam>

65 Ibid

66 www.carbontrust.com/media/512147/ctc831-waste-to-energy-in-indonesia.pdf p 46

5 THE UK'S WINDOW OF OPPORTUNITY

Unlike many European nations, Britain is not yet 'locked in' to incineration – but it is close to becoming so. As it reconsiders its position on the world stage, the UK has a narrow window of opportunity to redefine itself as a world leader in promoting circular economy approaches, both at home and in developing nations.

THE UK HAS A NARROW WINDOW OF OPPORTUNITY TO REDEFINE ITSELF AS A WORLD LEADER IN PROMOTING CIRCULAR ECONOMY APPROACHES

Already, countries with high incineration capacity such as Sweden, Germany, the Netherlands and Denmark are 'locked in' to incineration for the medium term. Because incineration plants are so expensive to build, operators need a guaranteed stream of waste and often sign contracts with municipalities guaranteeing a certain volume of waste over a long period, sometimes up to 30 years. These countries now import waste to feed their incinerators. 'The financial logic for engaging in further recycling is lost,' according to waste-management consultancy Eunomia.⁶⁷ By contrast, in cities such as Flanders in Belgium, a conscious effort to cap incineration at about 25 per cent has helped boost recycling to the point that combined recycling and composting rates now exceed 75 per cent⁶⁸ – the highest waste diversion rate in Europe.

The UK's own incineration capacity is relatively small: only 3.6 per cent of municipal solid waste was incinerated in 2014.⁶⁹ It has developed since the late 1990s/early 2000s due to government funding under the Private Finance Initiative (DEFRA and the Welsh Government), as well as through renewable energy subsidies and concessional loans from the Green Investment Bank. Currently, 17 plants are under construction and another 65 waste-to-energy plants are at different stages of planning.⁷⁰ Overall, existing and planned projects amount to a total capacity of about ten million tons annually.

According to Eunomia, by 2014, the UK already had more incineration capacity (either operational or being built) than was sustainable if we were to hit our recycling target of 70 per cent. It predicted then that our maximum recycling rate would fall below 66 per cent if all the incinerators with planning consent were built.⁷¹ The EU has set a common recycling target of 65 per cent of municipal waste and 75 per cent of packaging waste by 2030. If the UK keeps building more incinerators, it will become locked in and need to start importing waste, threatening its ability to hit even the more modest recycling targets to which it is committed, such as recycling 50 per cent of the UK's household waste by 2020.

So the UK is at a crossroads. It faces a stark choice: being locked into a system which gradually lowers recycling rates or embracing a more regenerative, renewable, circular economy approach.

There are pressing, practical reasons at home why we need to take some big decisions now. New laws on waste are set to come into force in 2020, by which time no organic waste can be put into landfill. So, either organic waste will be burned or it could be composted or anaerobically digested to create biogas, if the UK opts for a circular economy approach.

Renewed public concern about worsening air quality in UK cities, due to high levels of particulate matter and toxins, must also be addressed. London had breached its annual limit on toxic air pollution just five days into 2017, due to toxic nitrogen dioxide levels in Lambeth.⁷²

67 Seltenrich (2013) 'Is incineration holding back recycling?', *The Guardian* www.theguardian.com/environment/2013/aug/29/incineration-recycling-europe-debate-trash

68 Ibid

69 Gov.UK (2017) *UK statistics on waste* www.gov.uk/government/statistics/uk-waste-data

70 Ecoprog (2016) *Waste to energy 2016/2017* <http://ec.europa.eu/environment/waste/waste-to-energy.pdf>
www.ecoprog.com/fileadmin/user_upload/leseproben/extract_ecoprog_market_report_WtE_2016-2017_ecoprog.pdf

71 Eunomia (2014) *UK 2030 recycling already limited to 66% – and falling* www.eunomia.co.uk/uk-2030-recycling-already-limited-to-66-and-falling

72 Carrington D (6 January 2017) 'London breaches annual air pollution limit for 2017 in just five days', *The Guardian* www.theguardian.com/environment/2017/jan/06/london-breaches-toxic-air-pollution-limit-for-2017-in-just-five-days

**THE UK SHOULD SEIZE THIS
OPPORTUNITY TO POSITION ITSELF
AS A LEADING PROPONENT OF
A CIRCULAR ECONOMY**

The broader international policy context is shifting too. The EU does not see a future role for incineration in the circular economy and recommends member states turn their backs on incineration. As recently as 26 January 2017, the EU indicated a shift in policy away from supporting waste-to-energy.⁷³ It stated that 'priority is given to waste prevention, reuse, separate collection and recycling' to achieve the targets of the European Commission's Circular Economy Package. The UK government has already said it will follow EU waste regulations after Brexit. Opponents of a £180 million incinerator planned for East Tullos near Aberdeen say new EU directives could make it obsolete before it is operational.⁷⁴ The Paris Climate Agreement which came into force in 2016 is another pressing reason to review the suitability of waste incineration as a strategy to deal with greenhouse gas emissions from waste and combat climate change.

All these concerns must surely apply to developing nations too – and to the UK's role in helping them shape a sustainable future for themselves. For now, the UK is wide open to accusations of double standards as it encourages and provides loans for UK businesses to implement incineration projects across the world, through UK Export Finance and UKTI.⁷⁵

The UK should seize this opportunity to position itself as a leading proponent of a circular economy domestically and internationally. In doing so, it will help to create jobs, reduce greenhouse emissions and improve air pollution and people's health, rather than locking its waste management system into incineration. It could, for example, work alongside governments currently developing their NAMAs, redirecting them away from waste-to-energy options and towards genuinely renewable approaches. The UK is at a pivotal point in its history. As it redefines its position on the world stage, it can become a world leader in helping to create resilient, healthy and green societies less dependent on aid. It can and must draw a line in the sand and safeguard the future of our own nation too.



Waste pickers at a dump near Port-au-Prince, one year after Haiti's earthquake.

Richard Hanson/Tearfund

73 European Commission (2017) 'Communication on the role of waste-to-energy in a circular economy' <http://ec.europa.eu/environment/waste/waste-to-energy.pdf>

74 King J (7 March 2017) 'Incinerator could become £180million white elephant, warn European lawmakers', *Press and Journal* www.pressandjournal.co.uk/fp/news/aberdeen/1188061/incinerator-could-become-180million-white-elephant-warns-european-lawmakers

75 See the following webpages: www.gov.uk/government/news/uk-firms-secure-lucrative-green-construction-contract-with-government-support and www.gov.uk/government/collections/environment-sector-export-help

Recommendations

The UK government should:

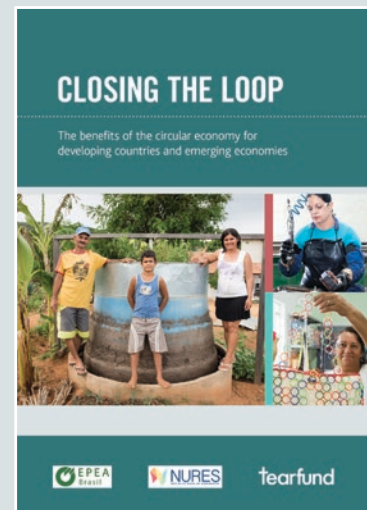
- position itself as a leading proponent of a circular economy:
 - domestically, by committing to establish an enabling environment in which circular approaches are supported and incentivised, and
 - internationally, by supporting and funding circular economies in developing countries, rather than locking waste management systems into incineration
- ensure the soon-to-be privatised Green Investment Bank no longer funds incineration domestically and incineration is no longer eligible for public loan guarantees

The EU and the UK should:

- ensure that no EU or UK official development aid supports incineration projects, but instead promotes alternative circular economy solutions such as 3Rs and Zero Waste cities. They should invest in developing small and medium sized enterprises in the recycling and renewable energy sectors.
- ensure that subsidies given to renewable energy do not include incineration projects
- call for international climate finance mechanisms and related programmes such as the NAMAs to stop funding incineration and prioritise investment in techniques such as advanced recycling and composting, circular economy practices relating to repair and re-design, and Zero Waste city concepts
- build on growing public concern about waste incineration and support additional awareness-raising campaigns for consumers in developing country cities on waste reduction, sustainable lifestyles and waste separation at source
- help build municipalities' capacity to develop and run integrated waste management systems

FURTHER READING

Visit www.tearfund.org/circular to download *Closing the loop*, Tearfund's research report on the circular economy.



SMOKE SCREEN

Why the UK must turn its back on incineration and embrace the circular economy as a solution to the global waste crisis



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