

► remained constant, eliminating 1.3bn tonnes of food waste could mean \$750bn less in sales for farmers—the value which the UN's Food and Agriculture Organisation ascribes to all the food spoiled or lost annually between farm and fridge. More durable consumer products could mean that fewer have to be made, potentially hurting manufacturers' volumes. More Uber rides may ultimately lead to fewer people buying cars of their own. Less need to ferry merchandise could hit shipping companies, too. The Club of Rome study found that, in Poland, where many people continue to be employed in agriculture, more productive use of resources could potentially destroy jobs overall.

Politicians in most rich countries may calculate that repatriating offshored factory jobs to plants back home where recovered materials are reprocessed is a vote-winner. But it may be less appealing to their counterparts in poorer places where workers found employment in manufacturing. Research by Garth Frazer of the University of Toronto found that clothes donated to Africa harmed African garment-makers. Between 1981 and 2000 second-hand imports explain two-fifths of the decline in African apparel production and half of the fall in garment-industry employment. South Africa has restricted imports of used Western garb. Six countries of the East African Community are considering a ban. China already has one.

You can't refuse

This leads to a final concern about "closing the loop" of circularity: that it can ring-fence parts of economy from globalisation. As Mr Abbasov of Scrapo laments, the circular economy rarely crosses borders. Sometimes, as in the case of the Chinese ban on foreign recovered plastic and paper, ring-fencing seems to be the explicit objective. But it can also be an unintended consequence. New repair shops would by their nature be more local. Recyclers often gripe about national and international rules which, by not drawing a clear distinction as to what is hazardous, raise transport costs and hamper trade. For second-hand electronics, which are treated as waste even if they are in perfectly good working order, regulations make it several times costlier to freight within most countries and almost impossible to send abroad. "Our industry has been in almost constant strife with regulators," grumbles Ranjit Singh Baxi, president of the Bureau for International Recycling.

Such concerns are real. But they are not insuperable. For a start, other things are never constant. Populations grow; by 2050 Earth will have 2bn more consumers and mouths to feed. As people become richer, they consume more. In poor places like Leso-

tho, whose citizens waste little, consumption can increase by a lot before it comes close to Western levels—especially if it is accompanied by improvements in rubbish collection. African garment-workers deserve assistance, but shoppers there benefit from cheap, decent-quality foreign wear. And "circular" industries create employment in their own right.

Even if Club of Rome or McKinsey forecasts prove wide of the mark, history teaches that reshaping the economy creates more work than it destroys. Waste disposal generates just 0.1 job per 1,000 tonnes, compared with two jobs recycling the same amount, according to one study. A single Kenyan e-recycling programme is estimated to have generated over 2,000 jobs within four years of its launch. Recycling and repair industries could go global, too. Platforms like Scrapo or MerQbiz lubricate the exchange of recyclables across borders, showing that circular economies are not inherently protectionist.

The right response is therefore to experiment, not eschew resource efficiency. As this report has illustrated, there are signs that this is happening. Cities in the developing world are trying to get better at collecting rubbish and making sure that as little as possible goes to waste. The Chinese import ban is stirring many people in the West to relearn how to recycle. Campaigners and entrepreneurs are chivvying them along. Governments, especially in the West, are crafting "circular" strategies. By 2035 all EU states will be required by law to recover 65% of their rubbish, from an average of 40% today. America under Donald Trump is an exception, but American cities and states are compensating by helping people sort their rubbish and send less to the landfill.

Yet, while rich countries are cleaning up at home, they are only beginning to deal with the fact that (as with carbon emissions) they have exported their throwaway Industrial Revolution model around the world, outsourcing their waste to developing countries. Westerners continue to enjoy products that are made elsewhere, and whose disposal does not affect them personally. Rather than being smug about how well they are doing at home, they need now to encourage the developing world in its quest for a less wasteful growth model.

Some middle-income countries appear willing to listen (see chart). China's latest five-year plan reaffirms its commitment to a "circular economy" and last year's party congress called for the creation of a "waste-free society". Indonesia, Nigeria and other emerging economies are emulating developed ones by making producers help pay for managing the waste created by their own products.

Most have a long way to go before they emulate Taiwan. Poor countries must prepare to cope with an increase in waste as they develop a middle class consuming at Western levels. Only when they see that proper handling of solid waste can aid prosperity will the global tide of rubbish be stemmed. ■



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Source: World Bank

*Purchasing-power parity