**Waste disposal challenges**

Emerging economies are rapidly adding to the global pile of garbage

 (1) The offices of *Miniwiz* in central Taipei display all the trappings of a vibrant startup. The large open space on the 14th floor of an office block overlooking Taiwan’s capital is full of youngsters huddled around computer screens. A common area downstairs includes a video-game console, a table-tennis table and a basketball hoop. But a hint that this is not just another e-commerce venture comes from neatly sorted sacks packed with old plastic bottles, CDs and cigarette butts.

(2) Rather than peddle brand-new virtual products, *Miniwiz* derives value from physically repurposing old rubbish. Chairs in the conference room began life as plastic bottles, food packaging, aluminium cans and shoe soles. The translucent walls separating it from executives’ offices owe their amber-like quality to recycled plastic mixed with discarded wheat husks. Coffee is served in glasses made of broken iPhone screens. Arthur Huang, the company’s 40-year-old founder and chief executive, who holds a M.A. degree in architecture from Harvard, first tried setting up shop in New York in the mid-2000s. That effort failed when he discovered that few Americans shared his obsession with limiting the world’s waste. By contrast, many of his fellow Taiwanese do. The island is a poster child for recycling, recovering 52% of rubbish collected from households and commerce, as well as 77% of industrial waste, rivalling rates achieved by South Korea, Germany and other top recycling nations (America recycles 26% and 44% respectively). **Its** recycling industry brings in annual revenues of more than $2bn.

(3) For more than two centuries since the start of the Industrial Revolution, Western economies have been built upon the premise of “take, make, dispose”. But the waste this created in 20th-century Europe and America was nothing compared with the rubbish now produced by emerging economies such as China. According to a World Bank report, in 2016 the world generated 2bn tonnes of municipal solid waste (household and commercial rubbish)—up from 1.8bn tonnes just three years earlier. **That** equates to 740 grams (1lb 6oz) each day for every man, woman and child on Earth. That number does not include the much bigger amount produced by industry. Industrial solid refuse contains more valuable materials like scrap metal and has long been better managed by profit-seeking firms. And then there is the biggest waste management problem of all: 30bn tonnes of invisible but dangerous carbon dioxide dumped into the atmosphere every year.

(4) As people grow richer, they consume—and discard—more. Advanced economies make up 16% of the world’s population but produce 34% of its rubbish. The developing world is catching up fast. On current trends, the World Bank projects, by mid-century Europeans and North Americans will produce a quarter more waste than they do today. In the same period, volumes will grow by half in East Asia, they will double in South Asia and triple in sub-Saharan Africa. The annual global total will approach 3.4bn tonnes.

(5) Clearly, waste generation is increasing too fast, and needs to be decoupled from economic growth and rising living standards. That will require people to throw away less and reuse more—to make economies more “circular”. This can only happen if people “equate the circular economy with making money”. “Take, make, dispose” must now shift to “reduce, reuse, recycle”, although the amounts of hard-to-recycle materials are enormous.

**Virtuous recycle**

(6) Global waste may not present as apocalyptic a challenge as climate change, and it may be easier to solve. This is because local action to clean it up and recycle it can lead to immediate local effects. That can in turn transform into a virtuous cycle of change. People are more likely to take action if they can quickly see the results of their change in behaviour. All the more so because reducing waste offers two benefits not just one. It not only removes an affliction (solid waste) but, unlike tackling smog, **it** also creates a tangible benefit at the same time, in the shape of the recycled materials that can be reused. On top of that, solid waste (the only type discussed in this report) is a visible eyesore. It is hard for anyone to deny that it exists.

(7) That does not mean it will be easy to move to a more circular economy. Currently 37% of solid waste goes to landfill worldwide, 33% to open dumps, 11% to incinerators. Some goes to compost heaps. Two-thirds of aluminium cans are currently recycled in America, but only 10% of plastic. All told, only 13% of municipal solid waste is recycled globally. Everyone agrees that this is far too little.

(8) The urgency of the problem is not in dispute. In 2018, India’s Supreme Court warned that Delhi, the country’s capital, is buried under “mountain loads of garbage”. When dumps or landfills catch fire, as more than 70 have in Poland over the sweltering summer of 2018, noxious smog smothers their surroundings. Toxic runoff can permeate soils and poison waterways. Some rivers in Indonesia are so blanketed with litter that it completely conceals the water beneath. According to the United Nations, diarrhoea rates are twice as high in areas where waste is not collected regularly, and acute respiratory infections are six times as common.

(9) Discharged into seas, rubbish can return to wreak havoc on land. In August 2018, the Arabian Sea spewed 12,000 tonnes of debris and litter onto the shores of Mumbai in two days. Or it can despoil the ocean. Fishermen in the Arabian Sea complain they net four times as much plastic as fish. The “great Pacific garbage patch”, an Alaska-sized ocean gyre in the north Pacific Ocean, where currents channel all manner of flotsam, may contain 79,000 tonnes of plastic debris. Greenhouse gases from the waste industry, mainly emitted by chemical reactions in landfills, could account for 8-10% of all climate-changing emissions by 2025. Left unchecked, this garbage risks overwhelming the planet.

(10) The good news is that around the world politicians and the public appear increasingly alert to the economic, ecological and human costs of waste, as well as to the missed opportunities **it** presents. Many governments in the developing world are grasping that spending less—or nothing—on waste management means paying more for things like health care to treat its effects. In the developing world, only half of all municipal waste is collected. In low-income countries as much as 90% ends up in open dumps. Lowering these proportions requires more investment in waste infrastructure such as managed landfills or low-polluting incinerators. Taiwan’s example shows that **these** can be clean and need not discourage recycling.

(11) Rich countries already have such facilities, and more. They need to improve the recovery of valuable materials from their waste streams. For two decades they have relied on emerging economies, primarily China, to recycle their refuse. Over the past 25 years, the world deposited 106m tonnes of plastic in Chinese ports for recycling. The system ran aground in January 2018 when China banned imports of virtually all plastic and unsorted paper, out of concern for its environment. **This** left Western waste-managers with tonnes of unwanted rubbish—and left policymakers with piles of unanswered questions about how to boost the capacity of domestic recyclers, and ultimately change citizens’ carefree approach to waste.

(12) Politicians in Europe and American states and cities—if not Donald Trump, America’s distinctly “ungreen” president—are issuing ambitious recycling targets and trying to revamp the way they manage their rubbish. Green entrepreneurs are dreaming up clever—and lucrative—ways to manage and reuse it. Multinationals are toying with resource-light business models based on service contracts rather than product sales. And many consumers are adopting leaner lifestyles.

(13) But municipal budgets are tight everywhere. Trade tiffs can dampen legitimate exchange of scrap (as recycled waste is also known). Regulations for handling waste are necessary but can be obscure. Policymakers have yet to devise a way to boost large-scale investment in recycling, which is discouraged by periodic declines in the cost of primary commodities, with which recyclers compete. And some worry that switching to a more circular economy will harm those built on the old model.

(14) These problems are real but not insurmountable. In the 1990s, economic growth, rising living standards and soaring consumption outpaced Taiwan’s capacity to clean up its waste, earning it the unflattering moniker of “garbage island”. As recently as 1993, nearly a third of Taipei’s rubbish was not even formally collected and virtually none was recycled. By 1996 two-thirds of landfills were nearing capacity. In the face of mounting protests the government undertook to erect 24 incinerator plants to burn the waste instead, at a cost of $2.9bn. It also incentivised the Taiwanese to produce less rubbish in the first place. Under an “extended producer responsibility” (EPR) scheme, manufacturers and brands began to contribute to the cost of their products’ disposal, either through paying a fee into a fund earmarked for waste management or sometimes by managing the waste themselves. The less recyclable the product, the more expensive for the company. The scheme continues today. Households are charged for the amount of general mixed waste they produce but not for paper, glass, aluminium or other recyclables. **Those** caught dumping their trash illegally face hefty fines and public shaming. A typical Taiwanese person now throws out 850 grams daily, down from 1.15kg 20 years ago.

(15) Half a century after environmentalists first began imploring consumers to reduce, reuse and recycle, similar exhortations are now echoing from San Francisco to Shanghai. And the world, drowning in garbage, has begun to listen.

Abridged, from *The Economist*, 29 September, 2018

**Exercise 1, A.** Study the meaning of the following expressions used in the article:

**To owe some qualities to** (l. 10) – to have some qualities because of…

**To set up shop** (l. 13) – to establish oneself in a business

**A poster child** (l. 15) – a person or thing that represents a particular quality or activity

**A virtuous cycle/circle** (l. 42) – a complex chain of events that reinforce themselves and lead to favorable results. Cf. a vicious cycle /circle is a chain of events leading to detrimental results.

**To wreak havoc** (l. 64) to cause great damage

**To account for** (l. 70) serve as a reason or explanation for something

***Practice using these expressions in sentences of your own.***

**B.** The nouns below are used when we talk about things that are no longer usable or needed by individuals or industries. Note similarities and differences between the meanings of these words

**waste**  damaged, defective, or superfluous material produced by a manufacturing process:

**garbage**  discarded or useless material=trash

**trash**  something worth little or nothing = rubbish

**rubbish**  useless waste or rejected matter

**litter** trash, waste paper or garbage lying scattered about

**refuse** something worthless or useless= garbage, trash

**debris**  the remains of something broken down or destroyed, something discarded

**junk**  old iron, paper, glass or other waste that may be used in some other form again

**Exercise 2: Vocabulary practice**

1. Match the words from the text with their meanings.
2. \_\_\_\_Venture (l. 5) a. scrapped
3. \_\_\_\_Peddle (l. 7) b. goods
4. \_\_\_\_Discarded (l. 11) c. make efforts to deal with a problem
5. \_\_\_\_Decouple (l. 37) d. toxic
6. \_\_\_\_Tackle (l. 47) e. enterprise
7. \_\_\_\_Tangible l. 47) f. change
8. \_\_\_\_Noxious (l. 59 ) g. disassociate
9. \_\_\_\_Revamp (l. 92) h. trade
10. \_\_\_\_Commodities (l. 100) i. palpable
11. **Antonyms** Match the words from the text with those that mean the opposite.
12. \_\_\_\_\_Translucent (l. 9) a. explicit
13. \_\_\_\_\_Dispose of (l. 40) b. admit
14. \_\_\_\_\_Deny (l. 49) c. drop
15. \_\_\_\_\_Conceal (l. 60) d. opaque
16. \_\_\_\_\_Acute (about disease) l. 62 e. expose
17. \_\_\_\_\_Obscure l. 98 f. keep
18. \_\_\_\_\_ Decline l. 99 g. increase
19. \_\_\_\_\_ Soar (103) h. chronic

**Exercise 3: References**

What do the following pronouns refer to?

1. Its, line 18 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. that, line 25 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. it, line 47 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. it, line 49 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. it, line 74 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. these, line 79 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. this, line 86 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. those, line 114 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Exercise 4:** Complete the following statements using information provided in the article. Do not quote directly from the text.

1. The main principle behind the activities of Miniwiz is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The founder of Miniwiz was disappointed to find that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Household rubbish is less attractive for recyclers than industrial waste because \_\_\_\_
4. In order to turn economies generating enormous amounts of waste into circular economies, we have to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Solid waste may be easier to tackle than emissions of toxic gases because \_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and because

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. As a result of trash discarded into rivers, lakes and seas \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Currently used methods of waste disposal can be made more effective and less harmful, but this would require \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Having realized the difficulties and hazards of waste disposal, the rich world began to\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; however this practice cannot continue unabated after \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Today, as a response to danger posed by excessive generation of waste, governments began \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, businesses started \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and some indivividuals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Incentives created in Taiwan to eradicate carefree attitudes to the waste problem make businesses\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

and encourage households to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Exercise 5: Comprehension** Circle the correct completion of the following statements.

1. As follows from paragraph 1, Miniwiz offices
2. are typical of any hi-tech start up.
3. are almost indistinguishable from numerous other start-up companies.
4. look as if the company employed primarily middle-aged workers.
5. have a show room displaying leisure-time and sports facilities to its customers.
6. look untidy with empty plastic bottles and old CDs strewn around.
7. In its effort to be environment-friendly *Miniwiz*
8. doesn’t spare efforts to sell the waste it generates.
9. focuses on recycling plastic.
10. collaborates with similar companies in the U.S.A.
11. adapts discarded objects and natural waste to new uses.

3. As compared to other countries, Taiwan

a. is ahead of the top recycling nations.

b. is on a par with the world leaders of recycling.

c. lags behind the U.S.A.

d. collects more waste from households but less from industries.

4. Discussing different types of waste, the author

1. singles out massive emissions of carbon dioxide as the gravest problem.
2. advocates the “take, make, dispose” approach as the most reasonable one today.
3. criticizes European and American households and commercial companies for exceeding the amount of rubbish created by industries.
4. explains why municipal waste is more attractive for recyclers than industrial waste.
5. suggests that thanks to profit-seeking companies the solid-waste disposal problem has been solved.

5. According to the forecasts of the World Bank, by the mid-21st century

1. The current trend in waste generation volume will reverse.
2. developing nations will become more affluent and will discard less.
3. volumes of rubbish produced by Europeans and North Americans will quadruple.
4. The growth of volumes of waste in East Asia will equal that in South Asia.
5. Sub-Saharan Africa will surpass South Asia in the rate of waste growth.

6. The reader can infer that circular economy

1. is routinely associated with profiteering.
2. will thrive only if living standards keep improving.
3. is yet to win popular support.
4. is viable only in the absence of hard-to-recycle materials.

7. Which of the following is **NOT** mentioned among the factors that may facilitate waste disposal solutions?

1. Positive effects of recycling promise quick local benefits.
2. People are more responsive to the need to change their behavioral patterns if the results are tangible and fast.
3. Public awareness of solid-waste problems is gradually growing.
4. Reuse of recycled materials makes consumers more selective in what they purchase.

8.According to the data provided in the article,

1. landfills are currently the prevailing type of waste disposal.
2. thermal treatment is preferable to keeping waste in open dumps.
3. in hot weather incinerators trigger fires.
4. multiple fires that occurred in landfills in Poland have caused a jump in respiratory diseases in the population.

9.Waste dumped into the sea

1. quickly decomposes in brine.
2. may be washed back ashore by the tides.
3. is accumulating primarily in the Southern hemisphere.
4. exceeds a hundred thousand tons in the Pacific Ocean alone.
5. Prevents fishermen in the Arabian sea from using nets.

10.Which of the following accounts for a growing alertness of politicians in the developing world to the urgency of finding solutions to waste management? They

1. are concerned about growing protests of municipalities that have no funds for garbage collection.
2. hope to get high profits from importing unwanted rubbish of the rich world.
3. count on utilizing valuable materials that are dumped together with rubbish.
4. come to realize that failure to invest in recycling leads to higher costs of medical care.

11. In applying more ecological approaches to waste disposal and recycling countries may be confronted with a variety of problems:

I. restricted municipal budgets.

II. growing awareness among consumers that lifestyles should be more economical.

III. carefree attitudes of the lay public to the overproduction of waste.

IV. cyclic development of economies which is not always favorable for investing in

 recycling.

V. multinational corporations reject changes in their business models.

**a. I and II b. III and V c. II and IV d. I, III and IV e. II, III and V.**

12. Taiwan was labeled a “garbage island” in the period when

a. it produced goods of low quality.

b. its economy was in recession.

c. waste disposal couldn’t catch up with a rise in consumption.

d. the capacity of landfills was used up completely.

13. Which of the following is **NOT** mentioned among the Taiwanese regulations creating incentives for individuals and companies to be careful with waste production and disposal?

a. waste disposal is taxed.

b. companies that produce highly recyclable products are subsidized.

c. the more mixed waste is produced, the higher the charges paid by the households.

d. there is no charge for separated recyclable garbage.

e. violators of the regulations face penalties.

**Discussion**

1. What trends do the following events and phenomena illustrate?
* The World Bank regularly prepares reports about waste generation.
* The increase in waste production in Sub-Saharan Africa is projected to outpace that in Europe and North America.
* China banned import of plastic and unsorted paper.
1. What initiatives have been put forward in Israel in the past decade to change the approach to waste discharging?
2. What can be done to increase public awareness of the virtues of leaner lifestyles?