Rebirth of the cool

How to spread the benefits of air-conditioning—without frying the planet

WHAT is the single most effective way to reduce greenhouse-gas emissions?Go vegetarian? Replant the Amazon? Cycle to work? None of the above. The answer is: make air-conditioners radically better. On one calculation, replacing refrigerants that damage the atmosphere would reduce total greenhouse gases by the equivalent of 90bn tonnes of CO2 by 2050. Making the units more energy-efficient could double that. By contrast, if half the world’s population were to give up meat, it would save 66bn tonnes of CO2. Replanting two-thirds of degraded tropical forests would save 61bn tonnes. A one-third increase in global bicycle journeys would save just 2.3bn tonnes.

Air-conditioning is one of the world’s great overlooked industries. Automobiles and air-conditioners were invented at roughly the same time, and both have had a huge impact on where people live and work. Unlike cars, though, air-conditioners have drawn little criticism for their social impact, emissions or energy efficiency. Most hot countries do not have rules to govern their energy use. There is not even a common English word for “coolth” (the opposite of warmth).

Yet air-conditioning has done more things to benefit humankind. Lee Kuan Yew, the first prime minister of Singapore, called it “perhaps one of the signal inventions of history”. It has transformed productivity in the tropics and helped turn southern China into the workshop of the world. In Europe, its spread has pushed down heat-related deaths by a factor of ten since 2003, when 70,000 more people than usual, most of them elderly, died in a heatwave. For children, air-conditioned classrooms and dormitories are associated with better grades at school (see International section).

Environmentalists who call air-conditioning “a luxury we cannot afford” have half a point, however, In the next ten years, as many air-conditioners will be installed around the world as were put in between 1902 (when air-conditioning was invented) and 2005. Until energy can be produced without carbon emissions, these extra machines will warm the world. At the moment, therefore, air-conditioners create a vicious cycle. The more the Earth warms, the more people need them. But the more there are, the warmer the world will be.

**Tool cool for comfort**

Cutting the impact of cooling requires three things (beyond turning up the thermostat to make rooms less Arctic). First, air-conditioners must become much more efficient. The most energy-efficient models on the market today consume only about one-third as much electricity as average ones. Minimum energy-performance standards need to be raised, or introduced in countries that lack them altogether, to push the average unit’s performance closer to the standard of the best.

Next, manufacturers should stop using damaging refrigerants. One category of these, hydrofluorocarbons, is over 1,000 times worse than carbon dioxide when it comes to trapping heat in the atmosphere. An international deal to phase out these pollutants, called the Kigali amendment, will come into force in 2019. Foot-draggers should ratify and implement it; America is one country that has not done so.

Last, more could be done to design offices, malls and even cities so they do not need as many air-conditioners in the first place. More buildings should be built with overhanging roofs or balconies for shade, or with natural ventilation. Simply painting roofs white can help keep temperatures down.

Better machines are necessary. But cooling as an overall system needs to be improved if air-conditioning is to fulfil its promise to make people healthier, wealthier and wiser, without too high an environmental cost.Providing indoor sanctuaries of air-conditioned comfort need not come at the expense of an overheating world.