ANGLAIS : Séquence « Air pollution »

A. Air travel pollution: from acknowledgement to solutions

# 1. Anticipation du thème à partir de l’écoute d’un document audio : « Air pollution needs to descend »

<https://www.scientificamerican.com/podcast/episode/airplane-pollution-needs-to-descend-13-10-06/>

* Écoute du document + relevé des mots clés + comparaison des informations relevées en binômes
* Restitution à l’oral en anglais des informations principales

# 2. Compréhension écrite : « Does flying harm the planet ? »

**Does Flying Harm the Planet? By Bryan Walsh TIME August 20 2007**

Given the rage that air travel can provoke in even the most tranquil among us these days, it may be surprising that riot police aren't a more regular feature at airports. But Sunday's pitched battle between roughly 500 environmental activists and a phalanx of baton-wielding police at London's Heathrow airport wasn't about long lines, delays, lost luggage or missed connections. Instead, the protesters — who had demonstrated outside Heathrow all of last week — were trying to draw travelers' attention to the impact on climate change of the carbon gases emitted by the aircraft in which they fly. A placard from one activist at Heathrow expressed it thus: "You Fly, They Die."

Airplanes operate on petroleum fuel, which means they release large amounts of carbon dioxide when they fly. Commercial air travel is currently responsible for a relatively tiny part of the global carbon footprint —just 3.5% of total greenhouse gas emissions, according to the Intergovernmental Panel on Climate Change. But the unique chemistry of high-altitude jet emissions may produce an additional warming effect, while the explosive growth in air travel makes it one of the fastest-growing sources of carbon gases in the atmosphere. And unlike energy or automobiles, where carbon-free or lower-carbon alternatives already exist, even if they have yet to be widely adopted, there is no low-carbon way to fly, and there likely won't be for decades.

"It's not so much where we are now, but where we'll be in 30 years' time," says Peter Lockley, head of policy development at the Aviation Environment Federation in London. "We need to bring global carbon emissions down rapidly, but this sector is just going to grow."

And grow. The Airports Council International estimates that the number of airline tickets sold per year will double to more than 9 billion by 2025. Much of the growth will come in rapidly developing Asia, where passenger numbers are increasing by 10% to 15% annually. The already badly overburdened Heathrow — the busiest airport in Europe — is pushing to open up a third runway by 2020, a move that touched off last week's protests.

Airplane manufacturers and airlines are working on ways to cut carbon emissions by raising fuel efficiency — building lighter and more aerodynamic planes, towing jets on the ground, and improving engine capacity. Designers are looking at running planes on biofuel, and Virgin Atlantic head Richard Branson has promised to build a biofueled jet by next year. But industry experts believe such incremental changes could improve efficiency by 1% or 2% a year at most, while passenger miles are set to grow at 5% to 6% annually. "We're left with a sustainability gap," says Roger Gardner, chief executive of OMEGA, a British study group looking at aviation and the environment.

Even as carbon emissions from air travel grow rapidly, scientists are investigating claims that they may double the warming effect because of the altitude at which they're emitted. As jets soar they leave behind contrails, vapor threads of condensation that can persist for hours, especially in colder areas, and behave like high-altitude cirrus clouds. Those clouds seem to have a net warming effect, trapping heat in the atmosphere. Planes also create ozone, a greenhouse gas that has a stronger warming effect at high altitudes than low. The science is still being nailed down, but the side effects of high-altitude emissions could double air travel's contributions to global warming, says Dan Lashof, science director for the Natural Resource Defense Council's Climate Center.

Though there's no technological silver bullet, there are policy options available to manage air travel emissions such as carbon cap and trade schemes. But those won't be simple: Air travel was left out of the Kyoto Protocol on curbing emissions in part due to the complexity of assigning national responsibility for gases spewed by international flights. Just getting governments to share air space more freely, which would allow planes to fly more direct routes and cut fuel consumption, has proven to be an ongoing headache.

So what's the solution? Perhaps that there is no solution, or at least no simple one — aside from just flying less, as the Heathrow activists demanded. And there's little sign of that happening, as air passenger numbers rose 6.3% globally through the first half of 2007. So, expect similar protests in the future. The activists at Heathrow threw out a moral challenge to those well-off on a global scale (anyone who can afford a JetBlue ticket) to stop flying in order to save the poor from the effects of climate change. It's not quite that simple, but until technology and policy catch up — which still seems a long way off — carbon emissions will only slow if consumers choose to use less energy, live more modestly, and fly less. In other words, stay at home to save the world.

# 3. Webquest:

Find as much information as you can about the « Solar impulse II project ». You must be able to report orally to the class for a 3-minute minimum speech time.

Mise en commun à l’oral des informations trouvées la séance suivante.

# 4. Compréhension orale :

« Richard Branson on biofuel breakthrough » <https://www.youtube.com/watch?v=w9ooa-irEpw>

# 5. Compréhension écrite : « Dutch airline fuels transatlantic flights using cooking oil »

**Dutch Airline Fuels Trans-Atlantic Flights Using Cooking Oil**

**The biofuel will help power the airline's trans-Atlantic flights for the first time.**

By Kharunya Paramaguru @KharunyaMarch 14, 2013

Travelers can now fly on trans-Atlantic commercial flights on a jumbo jet fueled in part by the same oil that was used to cook French fries and catfish. “The first question when we landed was, ‘Was it smelly?’ No, it wasn’t smelly,” said Jos Nijhuis, the president of the Schiphol Group — a Dutch firm investing in the airline KLM’s biofuel flight schedule — to the press last Thursday, when the airline completed the first of 25 round trips between New York and Amsterdam partially powered by cooking oil. Dutch airline KLM is no stranger to experimenting with biofuels. It has been using them on passenger flights in Europe since September 2011. However this is the first time the fuels – which are said to reduce carbon emissions by up to 80% — will be used on a regular trans-Atlantic flight schedule. According to the Air Transport Action Group, a global not-for-profit that represents the airline industry, if commercial aviation were to source even just 6% of its fuel supply by 2020 from biofuel, it would reduce its overall carbon footprint by 5%. The mix KLM is currently using on its flights is 25% biofuel compared to 75% jet fuel. “It’s indistinguishable on a molecular level” from the usual jet fuel, said Captain Rick Shouten to the press at the launch on Thursday. The biofuel came from waste cooking oil from Louisiana restaurants. Used to cook Cajun dishes such as catfish and cracklins, the leftover oil was refined and then trucked to JFK Aiport to help power the engines.

Though biofuels are regarded by the aviation industry as one of the best options in reducing its carbon footprint, it does have its problems. The fuel is expensive compared to normal kerosene jet fuel, costing roughly three times the price of the latter. The issue of using sustainable biofuels that do not have a negative impact on food crops and prices as well as land use is also a concern. The airline is hoping that as the use of biofuels, including sustainable biofuels, becomes more widespread, the price will drop. Hopefully the only problem the airline will have to deal with next is convincing passengers that their plane won’t smell like fries.

# 6.Tâche finale 1ère partie de la séquence. Expression orale en interaction

* Situation: The regional council with the backing of the government has decided to build a new airport in a rural area. There has been mounting tension between environment activists and the political powers in the past few weeks. To ease the tension a meeting has been organised involving Government officials, Airline PR managers and local environment activists.
* Before the debate : make a list of arguments and prepare questions to ask your opponents.

B. Air pollution in China

# 1.Anticipation du sujet à partir de photos + document vidéo :

<https://www.youtube.com/watch?v=Xv-kZehkNHg>

# 2. Compréhension écrite : « Can coal and clean air co-exist in China ? »

**Can Coal and Clean Air Coexist in China?**

**The furious growth of China fueled by burning coal takes a toll on health and the environment**

**By David Biello on August 4, 2008**

CHONGQING—Coal powers China. In addition to producing about 75 percent of its electricity, the dirty, black rock is burned everywhere from industrial boilers to home stoves. More than 4,000 miners die every year digging up the fossil fuel, shortages abound forcing curbs in electricity use, and the country's transportation infrastructure creaks under the weight of distributing it across the country.

But the Chinese reliance on coal is most visible in the air. Smog cloaks cities, rendering them all but invisible from the sky, which in many spots is little more than a blue patch amid a blanket of haze. And it's not just confined to China: as the pollution builds it forms a brown cloud, visible from space, that takes about a week to cross the Pacific to the western U.S., where it accounts for as much as 15 percent of the air pollution.

There is no true horizon in this inland port city where the majority of China's motorcycles are produced, one of several industrial goods produced here. This "furnace" of China, as it's known, is akin to the entire Rust Belt of the U.S. crammed into a single community of 30-plus million people (twice the size of the New York City metropolitan region)—and its residents breathe air filled with so much lung-clogging soot that it would fail both U.S. and European Union (E.U.) safety standards.

The choking smoke produced by all that coal burning insinuates itself into the lungs of Chinese men, women and children and costs China an estimated $100 billion in health costs associated with respiratory ills, according to the World Bank. Further, it can literally stunt the growth of the next generation in this city in the heartland of China, according to recent research from Frederica Perera of Columbia University and her colleagues.

The Chinese have been burning coal for centuries. Venetian trader and explorer Marco Polo said that one of the most surprising sights during his travels through Asia in the 13th century was the Chinese practice of burning a strange, black rock for heat—and the mountains along the Silk Road that smoldered due to underground coal fires, like the ones burning throughout the country today. In fact, these underground blazes burn through an estimated 20 million tons of coal a year, the equivalent of the entire coal production of Germany last year.

But that pales in comparison to the amount of coal mined and deliberately burned annually by the Chinese: some 2.5 billion tons—double the amount burned by the U.S.—and doesn't even include ever growing imports. Much of it goes to the country's 541 coal-fired power plants, which pumped out 554,420 megawatts of electricity last year, according to the State Electricity Regulatory Commission.

China is a developing country undergoing an energy transformation unprecedented in human history, but fired by an engineering optimism reminiscent of the U.S. in the 1950s. China opens one large coal-fired power plant a week on average to generate enough electricity to service its 1.3 billion population and fuel industries that manufacture cheap goods for the U.S. and Europe.

China has a plan designed to reduce pollutants such as sulfur dioxide, linked to climate change and breathing problems, by as much as 10 percent over the next five years. And part of that plan is simply shuttering small, inefficient coal plants and replacing them with larger ones, meaning the abundance of new coal power plants will actually help clear the air somewhat. "To close small plants, it will be very effective to improve air quality," says Greenpeace spokeswoman Sarah Liang.

But that still leaves a load of pollution: China this year surpassed the U.S. as the world's largest emitter of greenhouse gases behind global warming.

Despite the surfeit of smut, the average Chinese citizen is responsible for a fraction of the greenhouse emissions of the average American—and the country is not bound by any international treaty to reduce its emissions. Yet, the government has launched a pilot project to address the problem by capturing and storing the carbon dioxide (CO2) produced by using coal as a fuel for electricity generation at a power plant dubbed GreenGen.

The project in the port city of Tianjin will proceed in three phases. First, a consortium of power and coal companies will fork over funds to construct a so-called integrated gasification combined cycle (IGCC) power plant (in which coal is turned to gas and pollutants removed before burning) that is capable of producing 250 megawatts of electricity. Such technology could cut acid rain–causing sulfur dioxide emissions by more than 90 percent, smog-forming nitrogen oxides by 75 percent, and—ultimately—capture more than 80 percent of the CO2 normally produced by combustion, storing it in nearby depleted oil fields by 2015.

China's $1 billion GreenGen power plant became the world's leading clean coal technology project after the U.S. government in February pulled the plug on FutureGen, a similar program that lost steam as the costs for building the demonstration plant in Mattoon, Ill., skyrocketed. Yet, the U.N. Intergovernmental Panel on Climate Change (IPCC) and leaders of the world's eight richest nations, including President Bush, among others, have called the development of clean coal technology essential to preventing the consequences of climate change.

But completing GreenGen may yet prove a challenge as well. "There's no co-benefit to doing the carbon capture and storage," says energy technology expert Kelly Sims Gallagher of the Harvard Kennedy School of Government. "There's an argument for doing GreenGen in terms of research and getting experience with it but from a commercial point of view it doesn't make sense." The reason: it requires extra energy to turn the coal to gas and then to capture the CO2 as well—in effect requiring the burning of more coal to generate the same amount of electricity.

GreenGen is a for-profit power plant, so economic gains or losses will play a pivotal role in whether to proceed with the capture and storage portion. "It may well be in this environment where oil is above $100 a barrel that it is economically viable and valuable for nations that are rich in coal, like China, to use that coal and to sequester the CO2 for purposes of producing more oil," says Vic Svec, senior vice president of investor relations and communications at U.S. coal giant Peabody, which is also a part owner of GreenGen. The Chinese also "view it as being a long-term benefit to remove CO2."

# 3. Webquest:

Find significant information about the 2015 United Nations Climate Change Conference. Which were the participating countries? What was the content of the Paris Agreement? What goals are to be achieved?

* You must be able to report orally to the class for a 3-minute minimum speech time.
* Mise en commun à l’oral des informations trouvées la séance suivante