4b Skyscraper farms

VIDEO

Reading & Listening

1 10.4.1 10.5.2 Look at the picture. Then, listen to the sentences and repeat. What do you think a skyscraper farm is? How does it work? Read the text to find out.

Growing Up

Stories of The Hanging Gardens of Babylon, one of the seven wonders of the ancient world, tell of a structure with lush green gardens on different levels many metres high. [1] However, as our modern consumer society continues to drain the world of its resources, the population rises and food prices soar, a modern-day equivalent may soon be springing up in your neighbourhood!

According to UN statistics, by the year 2050, the population of planet Earth will have risen to over 9 billion and feeding all these people will require extra farmland the size of Brazil! Finding this agricultural land will be a real challenge, but one that some creative scientists believe they have solved with the idea of vertical farming. [2] Just as an apartment block has different storeys, a vertical farm will have many different floors growing a variety of fruit and vegetables. [3] The walls will be made of glass to allow in sunlight and instead of soil, the produce will be grown in a solution of nutrients and water.

Dr Dickson Despommier, a professor at Columbia University, points out that just one 30-storey building could provide food for 10,000 people. [4] But as well as offering a solution to possible food shortages, this idea is environmentally friendly. Often, by the time food arrives on your plate, it will have been travelling for days or even months! Vertical farms, however, will go up in the centre of the city. [5] So, we'll save on transport costs, burn less fossil fuels and we'll all be eating fresh local produce from the skyscraper next door!

[6] Crops nearer the glass would get more light which means they would grow quicker than crops farther away. The only whole floor to get direct sunlight would be the top one. Possible solutions include having a permanent light source on every floor like the ones we now have in industrial greenhouses. At the moment, the cost of building and lighting these modern Hanging Gardens of Babylon is far too high. [7] Mankind has been farming horizontally for over 15,000 years, but now almost 80% of our farmland is already in use. Isn't it about time we started growing up?

How to consume less and produce more

- Convert the rooftop of your block of flats into a garden and grow your own vegetables.
- Use window boxes to grow fruit and veg like tomatoes, peppers and strawberries.
- Some communities are getting together and starting their own community farms on pieces of wasteland. You could get involved in a local project like this or even start one of your own!

Check these words

wonder, structure, lush, long gone, drain, rise, soar, equivalent, spring up, vertical farming, solution, nutrients, food shortage, environmentally friendly, powered, transport costs, local produce, permanent light source, industrial greenhouse, mankind, horizontally, consume, convert, wasteland

2 10.4.7 **Read the text again and for each gap (1-7) choose from the sentences A-H the one which best fits each gap. There is one extra sentence.**

A The idea isn't without its problems though.
B However, that doesn't mean we won't be able to do it soon.
C These are long gone.
D We are already using too much of our farmland.
E "With about 160 of these buildings, you could be feeding all of New York," he says.
F The idea is actually very simple.
G They will be powered by solar and wind energy.
H On one floor there will be lettuce, on the next carrots, and so on.

3 10.4.5 10.5.2 **Choose the correct word. Check in your dictionaries.**

1 Finding enough food to feed the world is a big **challenge/test.**
2 The population on Earth has **raised/risen** in recent years.
3 Many new businesses are **springing up/open up** in the area.
4 We need to **save/conserve** on transport costs.
5 The machine is **powered/controlled** by solar power.
6 Ulan's busy job sometimes **drains/exhausts** him of his energy.
7 The farm shop sells fresh **produce/outlet** such as beans and corn.
8 Fuel prices are **advancing/rising** at the moment; prices have nearly doubled since last year.

4 10.3.7 10.5.2 **Fill in:** *local, real, costs, vertical, friendly, food, wind, direct.* **Use the phrases to make sentences, as in the example. Tell your partner.**

1 *food* shortages
2 environmentally .....
3 ..... challenge
4 ..... turbines
5 ..... farming
6 ..... produce
7 transport .....
8 ..... sunlight

If the population continues to rise, there might be food shortages.

Grammar see p. GR10

Future perfect – Future perfect continuous

5 10.6.8 **Read the theory and find examples of all the future tenses in the text in Ex. 1.**

We use the **future perfect** (will have + past participle) to describe an action that will be finished before a stated future time. *They **will have finished** making the roof garden before the end of next week.* (active voice) *The apartment **will have been built** by the end of the year.* (passive voice)
Time expressions used with the future perfect: before, by, by then, by the time, until/till (in negative sentences)
We use the **future perfect continuous** to emphasise the duration of an action up to a certain time in the future. *By next month, James **will have been working** at the farm for five years.*
Time expression often used with the future perfect continuous: By ... for

6 10.6.8 **Put the verbs in brackets in the *future perfect* or *future perfect continuous*.**

1 By the end of the year, we ..... **(live)** in this house for 10 years!
2 The rooftop of the new building ..... **(convert)** into a garden by next year.
3 Sanzjar ..... **(work)** as a gardener for 30 years by the time he retires.
4 I can't meet you at 6 o'clock. I ..... **(not finish)** work by then.
5 ..... **(we/find)** a solution to food shortages by 2050?

7 10.3.5 10.6.8 **Write:** ***two things you hope you will have done by the time you're 30, two things you will have been doing for over five years by the end of this year* and *two things that will probably have been invented by the end of the century.*** **Tell your partner.**

Speaking & Writing

8 10.2.1 **Listen and read the text again. What did you learn from the text? Tell your partner.**

9 10.1.9 THINK! **Why are vertical farms a good idea? How can they benefit society? Tell the class.**

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