# Saving the rainforest

Lesson code: IK5G-1M5B-DCNU-R ADVANCED

## 1 Warm-up

**What do you know about the importance of the world's rainforests?**

## 2 Key vocabulary

**What do you think the underlined words and phrases mean? In pairs, match them to their correct meaning below:**

1. The sounds of the forest were overwhelming — there was a constant cacophony of noise.
2. Illegal logging is threatening the existence of the rainforests.
3. There is a sanctuary for animals in the rainforest.
4. The ranger gave us a tour of the forest.
5. Deforestation results in the emission of greenhouse gasses.
6. I couldn't see the monkey. It was hidden by the tree canopy.
7. Nobody noticed the sound — it was so faint.
8. We need to find a deterrent to stop illegal logging.

a. a loud mixture of different unpleasant sounds
b. a person in charge of managing and protecting part of a public forest
c. a place where wildlife is protected
d. gases which cause a gradual warming of the surface of Earth
e. not very clear
f. something that discourages someone from doing something (the opposite of 'incentive')
g. the activity or business of cutting down trees
h. the highest branches of a tree, which provide cover from the sun

## 3 Before you watch

**You are going to watch Topher White talk about how a simple technological solution can be used to save the rainforests from illegal logging using a used cell phone (British English: 'mobile phone') and people on the ground (rangers). What do you think the simple solution is? Now watch the video to find out.**


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## 4 What do you remember?

**Choose the best answer for each question.**

1. What is difficult to hear in the Boreo rainforest?
   a. birds b. insects c. chainsaws

2. What was the 'big surprise' about the rainforest?
   a. There was a cell phone network.
   b. There was no technology.
   c. There was illegal logging.

3. What is the second highest contributor to climate change?
   a. deforestation b. cars c. industrial processes

4. What percentage of rainforest logging is illegal?
   a. 20% b. 50% c. 90%

5. Why is it a good idea to use cell phones to detect the sounds of chainsaws?
   a. They are cheap and full of sensors.
   b. They have the right shape.
   c. They are quiet.

6. Why was it challenging to build a solar panel to power the cell phones?
   a. There are too many clouds.
   b. Tree canopies block sunlight.
   c. Solar power doesn't work.

7. Why was it important to hide the devices up in the tree canopy?
   a. to protect them from the sun
   b. to stop monkeys from eating them
   c. to keep them hidden from loggers

8. How did people around the world respond to the news of this operation?
   a. They started sending their old mobile devices.
   b. They started singing.
   c. They wanted to personally get involved in the operation.


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## 5 Phrasal verbs in the video

**Look at the transcript of the talk. Complete the definitions below with the infinitive forms of phrasal verbs in the transcript.**

1. be very noticeable ***(P1)*** stick out
2. emerge, become known ***(P2)*** _____
3. find by chance ***(P3)*** _____
4. bring to activity, start ***(P4)*** _____
5. suggest or think of an idea or plan ***(P5)*** _____
6. bring within range of hearing ***(P6)*** _____
7. form the total of something ***(P8)*** _____
8. appear, arrive ***(P9)*** _____
9. get rid of something that you do not want any more ***(P10)*** _____
10. suddenly leave ***(P12)*** _____

**Now complete the sentences below with the phrasal verbs in their correct form:**

1. Advertising costs account for 40% of the company's total expenditure.
2. My mobile device's sound recorder managed to _____ a faint noise in the distance.
3. The meeting starts are 3pm. What time are you going to _____ ?
4. I decided to _____ my old laptop as I didn't need it anymore.
5. I _____ these old photographs while I was tidying my desk.
6. We need to _____ with a new plan to make money.
7. Nobody knows what happened to John. He just _____ without telling anyone.
8. The government wants to hide it, but I believe the truth will _____ one day.
9. With his orange hair, Patrick tends to _____ in crowds.
10. I couldn't _____ the gas heater because it was faulty.

## 6 Talking point

**Discuss any of the questions below.**

1. What do you think of Topher's solution?
2. How important is it to save rainforests?
3. What environmental problems are common in your country?


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## 3 Before you watch

**1 (0:20)** In the summer of 2011, as a tourist, I visited the rainforests of Borneo for the very first time, and as you might imagine, it was the overwhelming sounds of the forest that struck me the most. There's this constant cacophony of noise. Some things actually do stick out. For example, this here is a big bird, a rhinoceros hornbill. This buzzing is a cicada. This is a family of gibbons. It's actually singing to each other over a great distance.

**2 (0:58)** The place where this was recorded was in fact a gibbon reserve, which is why you can hear so many of them, but in fact the most important noise that was coming out of the forest that time was one that I didn't notice, and in fact nobody there had actually noticed it.

**3 (1:13)** So, as I said, this was a gibbon reserve. They spend most of their time rehabilitating gibbons, but they also have to spend a lot of their time protecting their area from illegal logging that takes place on the side. And so if we take the sound of the forest and we actually turn down the gibbons, the insects, and the rest, in the background, the entire time, in recordings you heard, was the sound of a chainsaw at great distance. They had three full-time guards who were posted around this sanctuary whose job was in fact to guard against illegal logging, and one day, we went walking, again as tourists, out into the forest, and within five minutes' walk, we stumbled upon somebody who was just sawing a tree down, five minutes' walk, a few hundred meters from the ranger station. They hadn't been able to hear the chainsaws, because as you heard, the forest is very, very loud.

**4 (2:03)** It struck me as quite unacceptable that in this modern time, just a few hundred meters away from a ranger station in a sanctuary, that in fact nobody could hear it when someone who has a chainsaw gets fired up. It sounds impossible, but in fact, it was quite true.

**5 (2:20)** So how do we stop illegal logging? It's really tempting, as an engineer, always to come up with a high-tech, super-crazy high-tech solution, but in fact, you're in the rainforest. It has to be simple, it has to be scalable, and so what we also noticed while were there was that everything we needed was already there. We could build a system that would allow us to stop this using what's already there.

**6 (2:42)** Who was there? What was already in the forest? Well, we had people. We had this group there that was dedicated, three full-time guards, that was dedicated to go and stop it, but they just needed to know what was happening out in the forest. The real surprise, this is the big one, was that there was connectivity out in the forest. There was cell phone service way out in the middle of nowhere. We're talking hundreds of kilometers from the nearest road, there's certainly no electricity, but they had very good cell phone service, these people in the towns were on Facebook all the time, they're surfing the web on their phones, and this sort of got me thinking that in fact it would be possible to use the sounds of the forest, pick up the sounds of chainsaws programmatically, because people can't hear them, and send an alert. But you have to have a device to go up in the trees. So if we can use some device to listen to the sounds of the forest, connect to the cell phone network that's there, and send an alert to people on the ground, perhaps we could have a solution to this issue for them.

**7 (3:37)** But let's take a moment to talk about saving the rainforest, because it's something that we've definitely all heard about forever. People in my generation have heard about saving the rainforest since we were kids, and it seems that the message has never changed: We've got to save the rainforest, it's super urgent, this many football fields have been destroyed yesterday. and yet here we are today, about half of the rainforest remains, and we have potentially more urgent problems like climate change.

**8 (4:04)** But in fact, this is the little-known fact that I didn't realize at the time: Deforestation accounts for more greenhouse gas than all of the world's planes, trains, cars, trucks and ships combined. It's the second highest contributor to climate change. Also, according to Interpol, as much as 90 percent of the logging that takes place in the rainforest is illegal logging, like the illegal logging that we saw. So if we can help people in the forest enforce the rules that are there, then in fact we could eat heavily into this 17 percent and potentially have a major impact in the short term. It might just be the cheapest, fastest way to fight climate change.



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**9 (4:43)** And so here's the system that we imagine. It looks super high tech. The moment a sound of a chainsaw is heard in the forest, the device picks up the sound of the chainsaw, it sends an alert through the standard GSM network that's already there to a ranger in the field who can in fact show up in real time and stop the logging. It's no more about going out and finding a tree that's been cut. It's not about seeing a tree from a satellite in an area that's been clear cut, it's about real-time intervention.

**10 (5:10)** So I said it was the cheapest and fastest way to do it, but in fact, actually, as you saw, they weren't able to do it, so it may not be so cheap and fast. But if the devices in the trees were actually cell phones, it could be pretty cheap. Cell phones are thrown away by the hundreds of millions every year, hundreds of millions in the U.S. alone, not counting the rest of the world, which of course we should do, but in fact, cell phones are great. They're full of sensors. They can listen to the sounds of the forest. We do have to protect them. We have to put them in this box that you see here, and we do have to power them. Powering them is one of the greater engineering challenges that we had to deal with, because powering a cell phone under a tree canopy, any sort of solar power under a tree canopy, was an as-yet-unsolved problem, and that's this unique solar panel design that you see here, which in fact is built also from recycled byproducts of an industrial process. These are strips that are cut down.

**11 (6:04)** So this is me putting it all together in my parents' garage, actually. Thanks very much to them for allowing me to do that. As you can see, this is a device up in a tree. What you can see from here, perhaps, is that they are pretty well obscured up in the tree canopy at a distance. That's important, because although they are able to hear chainsaw noises up to a kilometer in the distance, allowing them to cover about three square kilometers, if someone were to take them, it would make the area unprotected.

**12 (4:34)** So does it actually work? Well, to test it, we took it back to Indonesia, not the same place, but another place, to another gibbon reserve that was threatened daily by illegal logging. On the very second day, it picked up illegal chainsaw noises. We were able to get a real-time alert. I got an email on my phone. Actually, we had just climbed the tree. Everyone had just gotten back down. All these guys are smoking cigarettes, and then I get an email, and they all quiet down, and in fact you can hear the chainsaw really, really faint in the background, but no one had noticed it until that moment. And so then we took off to actually stop these loggers. I was pretty nervous. This is the moment where we've actually arrived close to where the loggers are. This is the moment where you can see where I'm actually regretting perhaps the entire endeavor. I'm not really sure what's on the other side of this hill. That guy's much braver than I am. But he went, so I had to go, walking up, and in fact, he made it over the hill, and interrupted the loggers in the act. For them, it was such a surprise -- they had never, ever been interrupted before -- that it was such an impressive event for them, that we've heard from our partners they have not been back since. They were, in fact, great guys. They showed us how the entire operation works, and what they really convinced us on the spot was that if you can show up in real time and stop people, it's enough of a deterrent they won't come back.

**13 (8:00)** So -- Thank you. (Applause)

**14 (8:08)** Word of this spread, possibly because we told a lot of people, and in fact, then some really amazing stuff started to happen. People from around the world started to send us emails, phone calls. What we saw was that people throughout Asia, people throughout Africa, people throughout South America, they told us that they could use it too, and what's most important, what we'd found that we thought might be exceptional, in the forest there was pretty good cell phone service. That was not exceptional, we were told, and that particularly is on the periphery of the forests that are most under threat. And then something really amazing happened, which was that people started sending us their own old cell phones. So in fact what we have now is a system where we can use people on the ground, people who are already there, who can both improve and use the existing connectivity, and we're using old cell phones that are being sent to us by people from around the world that want their phones to be doing something else in their afterlife, so to speak. And if the rest of the device can be completely recycled, then we believe it's an entirely upcycled device.



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**15 (9:06)** So again, this didn't come because of any sort of high-tech solution. It just came from using what's already there, and I'm thoroughly convinced that if it's not phones, that there's always going to be enough there that you can build similar solutions that can be very effective in new contexts.

**16 (9:32)** Thank you very much.



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## 1 Warm-up

*Encourage a short discussion. Possible response: By absorbing carbon dioxide, rainforests help to reduce the effects of worldwide climate change. In addition to the important role rainforests play in Earth's climate, they also are an important home to about half of the species of plants and wildlife on the planet.*

## 2 Key vocabulary

1. a 2. g 3. c 4. b 5. d 6. h 7. e 8. f

## 3 Before you watch

*Brainstorm ideas from the students and then play the whole video.*

## 4 What do you remember?

*Play the video again if necessary. Pause where appropriate to allow students to write down the answers.*

| | | | |
|---|---|---|---|
| 1. c | 2. a | 3. a | 4. c |
| 5. a | 6. b | 7. c | 8. a |

## 5 Phrasal verbs in the video

*Hand out a copy of the transcript to the students.*

| | | | | |
|---|---|---|---|---|
| 2. come out | 3. stumble upon | 4. fire up | 5. come up with | 6. pick up |
| 7. account for | 8. show up | 9. throw away | 10. take off | |

*Complete the sentences:*

| | | | | |
|---|---|---|---|---|
| 2. pick up | 3. show up | 4. throw away | 5. stumbled upon | 6. come up |
| 7. took off | 8. come out | 9. stick out | 10. fire up | |



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