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Episode #035
Is The World Really Running Out Of Sand?
March 13, 2020

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[00:00:04] Hello, hello, hello, and welcome to English Learning for Curious Minds by Leonardo English, the show where you can learn fascinating things about the world while improving your English.

[00:00:16] I'm Alastair Budge and today we aren't going to be talking about sand.

[00:00:22] Specifically is the world really running out of it, and if so, why?

[00:00:30] Before we get right into the podcast, let me just remind those of you listening to this on Spotify, iVoox, Apple Podcasts or wherever you may get your podcasts that you can get a copy of the transcript and key vocabulary for the podcast over on the website, which is leonardoenglish.com.

[00:00:50] You can download the PDF of the transcript, you can read it on the website, and you can now follow it in animating form, which is a bit like subtitles, but way better.

[00:01:01] So it's super useful for following every single word and not missing a thing.

[00:01:07] And the key vocabulary explains tricky words, meaning you don't have to pause to look things up in a dictionary and making it even easier to learn new words and phrases.

[00:01:17] So do go and check that out.

[00:01:20] That's at leonardoenglish.com.

[00:01:24] Okay then.

[00:01:25] When you think of sand, you might think of a lovely beach with palm trees, or you might think of **rolling**[1] desert sand **dunes**[2], camels **trekking**[3] across them.

[00:01:39] And sand seems **infinite**[4], right?

[00:01:42] It's on beaches, it's in the desert, it's under the sea.

[00:01:46] It seems like it's everywhere.

[00:01:49] It's completely **implausible**[5], so unlikely, so unthinkable, that we might ever **run out**[6] of it.

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[1] (of hills) gently rising and falling

[2] a hill of sand near a beach or in a desert

[3] the activity of walking long distances on foot for pleasure

[4] without limits; extremely large or great

[5] difficult to believe, or unlikely

[6] to finish, use, or sell all of something, so that there is none left

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[00:01:58] But the reality is that we are.

[00:02:02] To keep up with the ever increasing **pace**[7] of development humans go through, we **consume**[8], **vast**[9] amounts of sand.

[00:02:13] After air and water sand is actually the third most used natural resource.

[00:02:21] And yes, even more than oil.

[00:02:25] I guess that you don't personally buy very much sand.

[00:02:30] I can't think of the last time that I went to the supermarket and bought a kilo or a tonne of sand.

[00:02:37] Yet sand is a **crucial**[10] ingredient for a lot of things that you probably do use.

[00:02:44] It's used to make wine, toothpaste, glass, computer chips, breast implants, cosmetics, paper, paint, plastics.

[00:02:56] Now I guess you might not consume all of those things, but I'm pretty sure you use some of them.

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[7] the speed at which someone or something moves, or with which something happens or changes

[8] to use fuel, energy, or time, especially in large amounts

[9] extremely big

[10] extremely important or necessary

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[00:03:03] But these things are actually relatively small, they are **small-fry**[11] compared to the one thing that uses up most of the sand.

[00:03:15] And that's for building, for **concrete**[12], and **asphalt**[13] for construction.

[00:03:20] Sand, which is normally referred to, normally called, **aggregate**[14] when talking from a construction point of view, it forms 80% of **concrete** and 94% of **asphalt**.

[00:03:36] So it's what goes into buildings, roads, car parks, **runways**[15], bridges, and almost anything that you might call 'construction'.

[00:03:50] And we use huge amounts of it.

[00:03:53] In fact, a report from the American Geological Institute said that a typical American house requires more than a hundred tonnes of sand, **gravel**[16], and crushed stone for the **foundation**[17], the basement, the garage, and driveway.

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[11] people or things that are not considered to be important

[12] a very hard building material made by mixing together cement, sand, small stones, and water

[13] a black, sticky substance, often mixed with small stones or sand, that forms a strong surface when it becomes hard

[14] small stones used in building

[15] a long, level piece of ground with a specially prepared smooth, hard surface on which aircraft take off and land

[16] small, rounded stones, often mixed with sand

[17] the structures below the surface of the ground that support a building

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[00:04:11] And more than 200 tonnes if you include the share of the street that runs in front of it.

[00:04:19] So, that's 200 tonnes of sand just for one house.

[00:04:25] And of course it's not just houses.

[00:04:27] We use concrete for almost every kind of construction project that goes on around the world.

[00:04:34] And every year, about two **cubic**[18] metres of **concrete** is created for every man, woman, and child on the planet.

[00:04:45] Nowhere is this more true than in the developing world, particularly in China and India.

[00:04:52] While cities in Europe and North America have had in some cases, centuries to develop and build housing for their **inhabitants**[19], in countries like China, the population growth and **urbanisation**[20] has been so fast that just a **phenomenal**[21] amount of **concrete** has been used to construct these cities of the future.

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[18] used in units of volume to show when the length of something has been multiplied by its width and height

[19] a person or animal that lives in a particular place

[20] the process by which more and more people leave the countryside to live in cities

[21] extremely successful or special, especially in a surprising way

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[00:05:20] To give you an idea of quite how much **concrete** China uses, China has about 18.5% of the world's population, just under 20% of the world's population, but it consumes half of the world's supply of **concrete**.

[00:05:39] In the three year period between 2011 and 2014, so just to **reiterate**[22], in just three years, China used more **concrete** than the US, the United States, did in the entire 20th century.

[00:05:59] China builds **vast** amounts of new apartment blocks, of course, but recently it has also **embarked**[23] on a huge new public **infrastructure**[24] project and created 146,000 kilometres of roads in a single year.

[00:06:19] And the amount of **concrete**, and therefore the amount of sand required to produce the materials for this is absolutely huge.

[00:06:29] China's largest sand producing site produces almost a million tonnes of sand per day.

[00:06:39] So, where is all this sand coming from?

[00:06:43] Do people just go to the desert with big **trucks**[25] and take it back to cities?

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[22] to say something again, once or several times

[23] started something new or important

[24] the basic systems and services, such as transport and power supplies, that a country or organisation uses in order to work effectively

[25] a large road vehicle that is used for transporting large amounts of goods

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[00:06:50] And if so, what's the big issue?

[00:06:52] The Sahara Desert is huge.

[00:06:54] It's almost 10 million kilometres squared, and about a third of the Earth's land area is desert.

[00:07:03] So can't we just go and get the sand from there?

[00:07:07] Unfortunately, no, we can't.

[00:07:10] The sand from the desert is very different to the type of sand that's needed for construction, for buildings.

[00:07:18] Sand from the desert is very **fine**[26] as it is constantly blown around by the wind, hitting other **grains** of sand, and so sand from the desert, the **grains**[27] of sand from the desert, are round, they're very **spherical**[28].

[00:07:35] And this might make it nice to walk in **barefoot**[29], make it nice to look at, but it's terrible for construction.

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[26] very thin or in very small pieces or drops

[27] a seed or seeds from a plant, especially a plant like a grass such as rice or wheat

[28] round, like a ball

[29] not wearing any shoes or socks

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[00:07:43] For construction, for **cement**[30], what you need is the rough kind of sand, the kind with **angular**[31] sides.

[00:07:55] This sand is normally found in the beds of lakes or rivers, and how it is collected is actually pretty simple.

[00:08:06] A boat normally just goes above it and **sucks it up**[32].

[00:08:11] But, as with any natural resource, the supply of this sand is **finite**[33] and it's getting harder and harder to find.

[00:08:21] Or at least harder and harder to find legally.

[00:08:26] What this has meant is it has led to the **emergence**[34] of sand **mafias**[35].

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[30] a grey powder that is mixed with water and sand to make mortar or with water, sand, and small stones to make concrete

[31] having or relating to one or more angles, not having smooth sides

[32] pulls it with great force

[33] having a limit or end

[34] the appearance

[35] a criminal organisation that began in Sicily and is active in Italy and the US, often used as a synonym for 'organised crime gang'

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[00:08:33] Criminal gangs that extract sand illegally, often **bribing**[36] police officers and officials to **turn a blind eye**[37], to pretend to not notice.

[00:08:47] Of course, **extracting**[38] hundreds of tonnes of sand isn't really something you can do without anyone noticing.

[00:08:54] It's pretty intensive and noisy work.

[00:08:58] And so in almost all cases, there seem to be **corrupt**[39] officials involved.

[00:09:05] Nowhere is this more true than in India where it's thought that the illegal sand business is worth $2.3 billion a year.

[00:09:17] When they aren't using large boats to **suck up** the sand, what happens is these sand **mafias**, they pay divers to go and get the sand, to dive down and get the sand, and it's thought that about 75,000 people are employed in India by these sand **mafias** to dive for sand in rivers.

[00:09:44] It's obviously a nasty, dangerous job, with divers working 12 hours a day and having to go down and dive up to 200 times in a single day.

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[36] to try to make someone do something for you by giving them money, presents, or something else that they want

[37] ignore something that you know is wrong

[38] to remove or take out something

[39] dishonestly using your position or power to get an advantage, especially for money

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[00:09:58] And of course, whether it's being **sucked up** by a large pipe or being collected by teams of divers, the removal of the sand from the river beds and the beds of the lakes has a pretty negative effect on the **ecosystem**[40].

[00:10:14] While scientists don't really know exactly the scale of the damage, they are in agreement that it is probably an **ecological**[41] disaster waiting to happen.

[00:10:26] And although sand is produced naturally, it is produced **over the course**[42] of thousands of years and the rate at which it's being consumed greatly **outstrips**[43], it's much greater than, the rate at which it is created.

[00:10:46] So what can we do about this?

[00:10:49] Well, unfortunately, there isn't a non-sand way of producing **concrete** at the scale with which it's needed to keep up with the construction boom.

[00:11:03] There is research that suggests that small **particles**[44] of plastic waste, what's called plastic sand, can replace some of the natural sand in concrete, but only about 10%.

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[40] all the living things in an area and the way they affect each other and the environment

[41] relating to ecology or the environment

[42] during

[43] to be or become greater in amount, degree, or success than something or someone

[44] an extremely small piece of matter

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[00:11:19] That may sound like a small amount, and of course it is only 10%, but it would be about 800 million tonnes of sand saved per year.

[00:11:31] There are also some theories that smarter uses of concrete, smarter buildings, will reduce the amount of concrete required, but this is just a **temporary**[45] reduction and by no means a solution.

[00:11:46] The reality is that scientists don't really understand the scale of the **ecological** destruction that our hunger for sand is causing.

[00:11:56] But they are all in agreement that we are going to be hearing a lot more about sand in the years to come.

[00:12:03] We have just two more stories about sand that I think help **reinforce**[46] the message.

[00:12:11] The Burj Khalifa, the tallest building in the world, **clocking in**[47] at 832 meters, is in Dubai.

[00:12:21] And Dubai, as you may know, was a small town in the middle of a desert until pretty recently.

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[45] not lasting or needed for very long

[46] to make something stronger

[47] usually used to refer to when you start work, but here is used for dramatic effect, and is just a synonym for 'is'

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[00:12:30] You might have thought, well, it's probably pretty easy to get sand to create **concrete** in Dubai.

[00:12:37] You almost can't move for the amount of sand that's around the city.

[00:12:41] It's a city in a desert.

[00:12:44] But the sand used for the concrete in the Burj Khalifa was **imported**[48] all the way from Australia.

[00:12:53] The sand nearby was considered too smooth.

[00:12:57] And secondly, if you need another example of some sand-related **excess**[49], the sand in almost all of Dubai's golf courses is also imported.

[00:13:09] The local sand is too soft and golf balls **sink**[50] too far into them.

[00:13:16] There is an estate called Jumeirah Golf estates and it has two courses, both designed by the famous golfer, Greg Norman.

[00:13:27] In the course called Earth, the **bunkers** have white sand imported from North Carolina in the USA.

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[48] to buy or bring in products from another country

[49] an amount that is more than acceptable, expected, or reasonable

[50] to (cause something or someone to) go down below the surface or to the bottom of a liquid or soft substance

[00:13:36] And in the course called Fire, the **bunkers**[51] have red-brown sand, which looks actually pretty similar to the real sand from the desert just across from the golf course.

[00:13:49] But in this case, the sand is from Ontario, in Canada.

[00:13:55] So, to conclude, we are using a **vast** amount of sand, just a **gargantuan**[52] amount.

[00:14:02] It's clear that we're using too much, but we don't really know exactly what our hunger for sand is doing to the environment and we don't know when it's going to run out.

[00:14:14] So with that **uplifting**[53] message comes the end of today's podcast.

[00:14:20] I hope it has at least proved to be an interesting look into the world of sand.

[00:14:27] And as a reminder, if you are looking for the transcripts and key vocabulary for the podcast, you can get that on the website, both in PDF and animating form.

[00:14:36] It's really worth checking out, so go and have a look if you haven't done so already.

[00:14:41] The link to go to is Lenardoenglish.com.

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[51] in golf, a hollow area of ground filled with sand, that is difficult to hit a ball out of

[52] very large

[53] making someone feel better

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[00:14:45] And as always, I'd love to know what you think of the show.

[00:14:48] You can find us on Facebook or Instagram and you can of course email us directly.

[00:14:54] So that's hi hi@leonardoenglish.com

[00:14:58] I'm Alastair Budge and you've been listening to English Learning for Curious Minds by Leonardo English.

[00:15:04] I'll catch you in the next episode.

[END OF PODCAST]

Key vocabulary

Word	Definition
Rolling	(of hills) gently rising and falling
Dunes	a hill of sand near a beach or in a desert
Trekking	the activity of walking long distances on foot for pleasure
Infinite	without limits; extremely large or great
Implausible	difficult to believe, or unlikely
Run out	to finish, use, or sell all of something, so that there is none left
Pace	the speed at which someone or something moves, or with which something happens or changes
Consume	to use fuel, energy, or time, especially in large amounts
Vast	extremely big
Crucial	extremely important or necessary
Small-fry	people or things that are not considered to be important
Concrete	a very hard building material made by mixing together cement, sand, small stones, and water

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Asphalt	a black, sticky substance, often mixed with small stones or sand, that forms a strong surface when it becomes hard
Aggregate	small stones used in building
Runways	a long, level piece of ground with a specially prepared smooth, hard surface on which aircraft take off and land
Gravel	small, rounded stones, often mixed with sand
Foundation	the structures below the surface of the ground that support a building
Cubic	used in units of volume to show when the length of something has been multiplied by its width and height
Inhabitants	a person or animal that lives in a particular place
Urbanisation	the process by which more and more people leave the countryside to live in cities
Phenomenal	extremely successful or special, especially in a surprising way
Reiterate	to say something again, once or several times
Embarked	started something new or important
Infrastructure	the basic systems and services, such as transport and power supplies, that a country or organisation uses in order to work effectively

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Trucks	a large road vehicle that is used for transporting large amounts of goods
Fine	very thin or in very small pieces or drops
Grains	a seed or seeds from a plant, especially a plant like a grass such as rice or wheat
Spherical	round, like a ball
Barefoot	not wearing any shoes or socks
Cement	a grey powder that is mixed with water and sand to make mortar or with water, sand, and small stones to make concrete
Angular	having or relating to one or more angles, not having smooth sides
Suck it up	pulls it with great force
Finite	having a limit or end
Emergence	the appearance
Mafias	a criminal organisation that began in Sicily and is active in Italy and the US, often used as a synonym for 'organised crime gang'
Bribing	to try to make someone do something for you by giving them money, presents, or something else that they want
Turn a blind eye	ignore something that you know is wrong

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Extracting	to remove or take out something
Corrupt	dishonestly using your position or power to get an advantage, especially for money
Ecosystem	all the living things in an area and the way they affect each other and the environment
Ecological	relating to ecology or the environment
Over the course	during
Outstrips	to be or become greater in amount, degree, or success than something or someone
Particles	an extremely small piece of matter
Temporary	not lasting or needed for very long
Reinforce	to make something stronger
Clocking in	usually used to refer to when you start work, but here is used for dramatic effect, and is just a synonym for 'is'
Imported	to buy or bring in products from another country
Excess	an amount that is more than acceptable, expected, or reasonable
Sink	to (cause something or someone to) go down below the surface or to the

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	bottom of a liquid or soft substance
Bunkers	in golf, a hollow area of ground filled with sand, that is difficult to hit a ball out of
Gargantuan	very large
Uplifting	making someone feel better

We'd love to get your feedback on this podcast.

What did you like? What could we do better?

What did you struggle to understand?

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