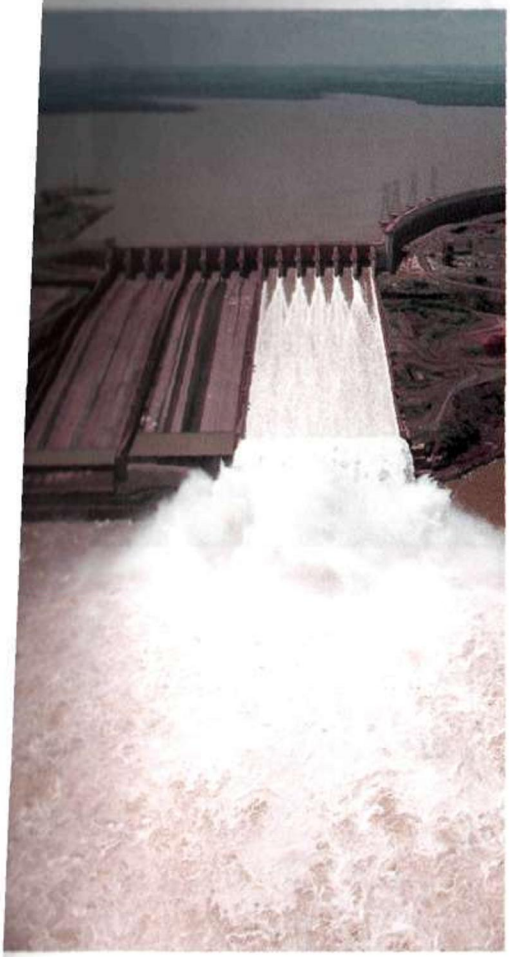


Reading

IELTS tasks: true/false/not given; labelling a diagram

1 Work in pairs. Look at the picture and try to answer the questions.

1 What is it?

2 Where is it?
A Turkey B North America C South America D China

3 How much power does it produce? Enough for …
A a town. B a city. C a region. D a country.

4 What topics do you think the reading passage will contain?
A The advantages of hydropower.
B How a hydroelectric power station works.
C Different kinds of hydroelectric power station.
D Other (what?).

Achieve IELTS: predicting

One way to help you understand a passage is to think about the main ideas before you begin to read it.

1 Read the title and think about what the passage contains.
2 Look at any pictures or diagrams before you read the passage.

Now read the passage and check your answers to question 4.

Hydropower: the fascinating facts

Hydroelectricity is a renewable energy source, since the water flowing in rivers comes from rain or snow. Worldwide, about 24 per cent of the world's electricity is produced by hydropower plants and more than 1 billion people are supplied with power from these plants. Today the largest hydroelectric project in the world is the Itaipu Dam on the border of Brazil and Paraguay, supplying approximately 25 per cent of Brazil's power and 78 per cent of Paraguay's power. However, China's massive Three Gorges Dam will be the largest when it has been completed.

There are six main components to a hydroelectric power station. First, the dam. Most hydropower plants have a dam to contain water, creating a large reservoir of water behind the hydroelectric station. Dams are usually placed where water descends from a height, as the energy that is generated from water depends not only on the volume but also on the difference in height between the dam and the water outflow. This height difference is called the head. For this reason, dams are built as high as possible to produce the maximum electrical energy. However, some early hydroelectric systems used the flow of water over an existing waterfall, with no dam needed; for example, a large amount of electricity is generated by Niagara Falls.

Second, the intake where gates on the dam are opened and water is pulled through the penstock

– a pipe that leads to the turbine. Water pressure is built up as it flows through this pipe. Third, and perhaps the most important component, is the turbine. The turbine has large blades, which are moved by the flow of the water and are attached to a generator above it through a drive shaft. The most common type of turbine for hydropower plants is the Francis Turbine, which looks like a big disc with curved blades.

The Francis Turbine

The fourth major component is the generator. As the turbine blades are moved by the water, so are a series of magnets inside the generator. These giant magnets move past copper coils, producing electricity. Fifth, the electric current inside the powerhouse is taken to the transformer and converted to a higher-voltage current. The current is then taken out of the hydroelectric station via power lines. Finally, the water that has been used to generate power is released through an outflow – the water is carried through pipelines and rejoins the river.

An alternative method of hydroelectric power generation is via a pumped storage plant. An example of this is Dinorwig in Wales. This requires two reservoirs: an upper reservoir where water is stored to provide power; and a lower reservoir where water enters from the upper reservoir after being used for power generation. Using a reversible turbine, water is pumped back up to the upper reservoir when the demand for electricity is not as great. The advantage of this kind of hydroelectric power station is that electricity can be generated at times of greatest demand.

2 Read the passage again. Do the statements agree with the information given in the reading passage?

Write: TRUE if the statement is true according to the passage.
FALSE if the statement is false according to the passage.
NOT GIVEN if the statement is not given in the passage.

1 Hydroelectric power stations supply a large number of people with electricity. _____
2 Hydroelectric power stations produce some pollution. _____
3 The amount of electricity produced depends on the amount of water only. _____
4 Early hydroelectric dams were built on waterfalls. _____
5 All hydroelectric power stations release water back into a river. _____

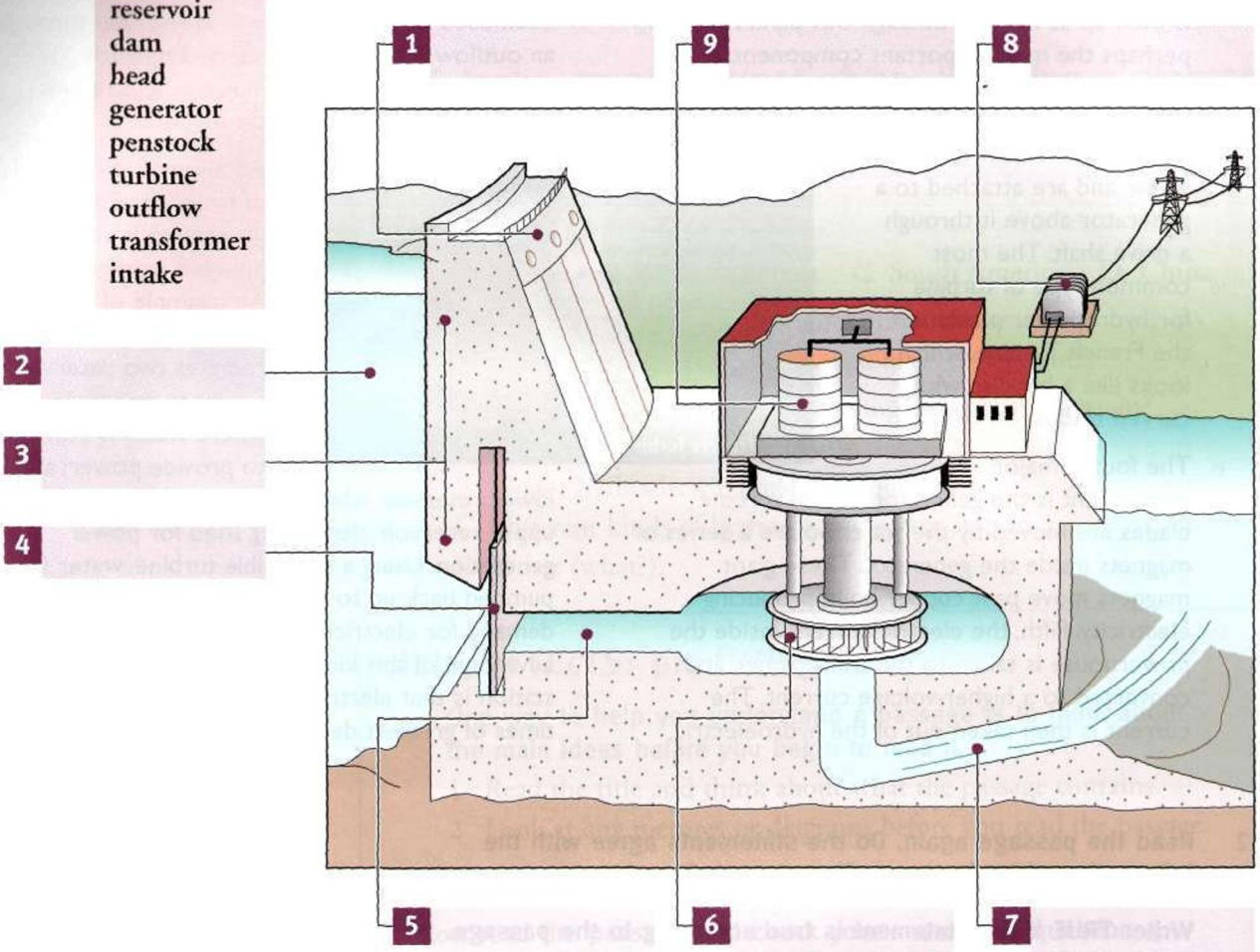
3 Find words in the reading passage which mean ...

1 a machine used to generate electricity.
2 an obstacle used to stop water flowing.
3 a large amount of water usually collected by stopping the flow of a river.
4 a machine that moves when water hits it and powers a generator.
5 a device that changes the power of an electric current.

B

reservoir
dam
head
generator
penstock
turbine
outflow
transformer
intake

Now read the passage again. Label the diagram using the words in B.



Language study: present passive

4 **Study the examples and explanations.**

dams ***are built*** *as high as possible*
the water that ***has been used*** *to generate power is released*

We use the passive structure to put the important information at the beginning of the sentence. We can use the passive when the subject is obvious, not known or not important.

subject + *be* (*not*) + past participle

about 24 per cent of the world's electricity is produced ***by*** *hydropower plants*
energy that is generated ***from*** *water*

We use *by*, *via*, *through* or *from* to include the thing or person that causes the action.