ESL ENGLISH LESSON (60-120 mins) – 10th January 2012

Sahara desert sun to power Europe

The Sahara desert in North Africa is vast. So is its desert sunshine. If that could be harvested the potential it offers as an energy producing region is huge. The idea is now within reach of actually happening - using new technologies to capture the sun in the Sahara desert, converting it into energy and transmitting the power generated to Europe. A group in Germany called *Desertec*, who have heavyweight commercial backers such as Deutsche Bank and Siemens, have chosen Morocco to embark on a huge commercial venture to do just this. Solar power will be created for Europe; creating clean energy and jobs. The ambitious programme is feasible. Desertec expects to see the first electricity flowing through undersea cables from Morocco in 2014. Its stated goal however is to power 100% of local needs in Morocco and 15% of European demand by 2050.

The idea has attracted critics who question whether such a vision is possible or even necessary. Many North African countries have vast uninhabited areas of land, some of which could be used for solar conversion. A power network will need to be established. The security of which presents some challenges for those involved in the project. For example, nomads stealing solar components or the technological and political challenges of transporting and delivering electricity over such a vast area. North Africa today already has electric grids. So it is already possible to transmit electricity over vast areas. Desertec intend to work with Medgrid, a French based scheme to enable the construction of a Mediterranean system. They hope to use a system of concentrated solar power (CSP), a process in which sunlight concentrated by mirrors heats water, which produces steam to drive a turbine. Crucially, the heat can be stored, allowing a secure supply even when the sun is not shining.

In the last few years CSP has been getting cheaper. But not as quick as photovoltaic (PV) power – the use of solar panels to convert sunshine directly into electricity. The German Aerospace Centre estimates that solar thermal power stations will become competitive with their fossil fuel equivalents between 2020 and 2030. This will allow Desertec to market its 2050 vision of US$400m to attract investment from the market in a very natural way. Germany's decision to phase out nuclear power is also likely to drive demand. Morocco is the only North African country without significant oil and gas deposits. The energy providers will need to do more directly for their population. The Arab Spring has shown up other issues…

Category: Business / Solar energy / Sahara desert
Level: Intermediate / Upper intermediate

EXERCISES

1. Solar energy: Think of three things you know about solar energy? Go round the room swapping details with others.

2. Dictation: The teacher will read four to six lines of the article slowly and clearly. Students will write down what they hear. The teacher will repeat the passage slowly again. Self-correct your work from page one - filling in spaces and correcting mistakes. Be honest with yourself on the number of errors. Advise the teacher of your total number of errors. Less than five is very good. Ten is acceptable. Any more is room for improvement! More than twenty - you need to do some work!

3. Reading: The students should now read the article aloud, swapping readers every paragraph.

4. Vocabulary: Students should now look through the article and underline any vocabulary they do not know. Look in dictionaries. Discuss and help each other out. The teacher will go through and explain any unknown words or phrases.

5. The article: Students should look through the article with the teacher.

a) What is the article about?
b) What do you think about the article?

6. Geography: Sahara desert: Where is the Sahara desert? Locate Morocco in it. What other countries are in it? Draw a map on the board then **look on Google maps** to help you.

7. Solar energy: In pairs think of five things about solar energy. Then add five sources of energy. Write them below. Discuss together. What are your conclusions?

Solar energy	Sources of energy
1	1
2	2
3	3
4	4
5	5

The teacher will choose some pairs to discuss their findings in front of the class.

8. Let's roleplay 1: Sahara FM: In pairs/groups. One of you is the interviewer. The others are one of the following people. You are in the *Sahara FM* radio studio. Today's interview is about: *Solar energy.*

1	Someone with solar energy	3	A journalist
2	Desertec spokesperson	4	A Medgrid spokesperson

The teacher will choose some pairs to roleplay their interview in front of the class.

9. Let's think! In pairs. On the board write as many words as you can to do with ***Sahara desert***. *One-two minutes.* Compare with other teams. Using your words compile a short dialogue together.

10. Let's roleplay 2: In pairs. You are in a bar in a dusty Sahara desert town. Start a conversation about solar energy. *5-minutes.*

11. Let's do 'The Article Quiz': Have the students quiz each other in pairs. They score a point for each correct answer and half a point each time they have to look at the article for help. See who can get the highest score!

Student A

1) Name the desert.
2) Where is the desert?
3) Name the companies.
4) What has shown up other issues?
5) What present some challenges?

Student B

1) Where is *Desertec* from?
2) What is CPS?
3) What is PV?
4) Who does Desertec intend to work with? Why?
5) What does the Sahara desert offer?

12. Solar energy: Think of three advantages and three disadvantages of solar power from North Africa. Write them below. Discuss together with your partner.

Advantages	Disadvantages
1	1
2	2
3	3

The teacher will choose some pairs to discuss their findings in front of the class.

13. Presentation: In pairs, groups or individually: Prepare in class or at home a two minute presentation on: ***Solar energy***. Stand at the front of the class to give your presentation to the class. The class can vote on the best presentation. Class – After the presentations go through the good and weak points on each presentation. Learn from the results.

14. Business case: In pairs, prepare a brief business case for exporting electricity from North Africa to Europe. Explain some challenges you might face.

15. Let's write an e-mail: Write and send a 200 word e-mail to your teacher about*:* ***Solar energy from the Sahara****.* Your e-mail can be read out in class.

16. Sentence starters: Finish these sentence starters. Correct your mistakes. Compare what other people have written.

a) Solar energy _____

b) The Sahara _____

c) Energy _____

DISCUSSION

Student A questions

1) Did the headline make you want to read the article?
2) Do you use solar energy in your house?
3) Do you think more people will convert to solar energy?
4) Why is solar energy so important these days?
5) How do you see solar energy developing?
6) What advise would you give Desertec?
7) Would you like to construct the solar panels in North Africa? Explain.
8) What challenges will there be for Desertec?
9) Does Europe really need solar power from Africa? Explain.
10) What type of energy use do you use? Why?

Student B questions

1) What does the last sentence in the article mean? (The Arab Spring has shown up other issues…)
2) Have you learnt anything in today's English lesson?
3) Why is electricity so expensive?
4) Should electricity companies reduce their charges?
5) What is wrong with using fossil fuels as power?
6) What happens when the sun does in when using solar power?
7) Is your government offering you an incentive to convert to solar power?
8) Is solar power the right way forward in energy creation?
9) What risks are there with using solar power from Africa in Europe?
10) Did you like this discussion?

SPEAKING

Let's discuss! Solar power

Allow 10-15 minutes – As a class / small groups / pairs / 1 to 1

20 things about solar power – discuss together

The teacher can moderate the session.

GAP FILL: READING:

Put the words into the gaps in the text.

Sahara desert sun to power Europe

The Sahara (1)_____ in North Africa is vast. So is its desert sunshine. If that could be harvested the potential it offers as an energy producing region is huge. The idea is now within reach of actually happening - using new technologies to capture the sun in the Sahara desert, converting it into (2)_____ and (3)_____ the power generated to Europe. A group in Germany called *Desertec*, who have heavyweight commercial backers such as Deutsche Bank and Siemens, have chosen Morocco to embark on a huge commercial (4)_____ to do just this. Solar (5)_____ will be created for Europe; creating clean energy and jobs. The ambitious programme is (6)_____. Desertec expects to see the first (7)_____ flowing through undersea cables from Morocco in 2014. Its stated goal however is to power 100% of local needs in Morocco and 15% of European (8)_____ by 2050.

transmitting

feasible

electricity

demand

desert

energy

power

venture

The idea has attracted critics who question whether such a vision is possible or even necessary. Many North African countries have vast uninhabited areas of land, some of which could be used for (1)_____ conversion. A power (2)_____ will need to be established. The (3)_____ of which presents some challenges for those involved in the project. For example, nomads stealing solar components or the technological and political (4)_____ of (5)_____ and delivering electricity over such a vast area. North Africa today already has electric (6)_____. So it is already possible to transmit electricity over vast areas. Desertec intend to work with Medgrid, a French based scheme to (7)_____ the construction of a Mediterranean system. They hope to use a system of concentrated solar power (CSP), a process in which sunlight concentrated by mirrors heats water, which produces steam to drive a turbine. Crucially, the heat can be stored, allowing a secure supply even when the (8)_____ is not shining.

grids

network

transporting

security

sun

challenges

solar

enable

GAP FILL: LISTENING

Listen and fill in the spaces.

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GRAMMAR

Put the words into the gaps in the text.

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The Sahara desert in North Africa is vast. So is its desert sunshine. (1)__ that could be harvested (2)__ potential it offers as an energy producing region is huge. The idea is now within reach of actually happening - using new technologies to capture the sun in the Sahara desert, converting (3)__ into energy and transmitting the power generated to Europe. A group in Germany called *Desertec*, (4)__ have heavyweight commercial backers such as Deutsche Bank and Siemens, have chosen Morocco to embark on a huge commercial venture to do just this. Solar power will be created for Europe; creating clean energy (5)__ jobs. The ambitious programme is feasible. Desertec expects to see the first electricity flowing through undersea cables from Morocco (6)__ 2014. (7)__ stated goal however is to power 100% of local needs in Morocco and 15% of European demand (8)__ 2050.

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SPELLING TEST

The teacher will ask the class individually to spell the following words that are in the article. Afterwards, check your answers with your teacher, using the following ratings: **Pass = 12, Good = 15, Very good = 18, Excellent = 20**

1	desert	11	whether
2	necessary	12	ambitious
3	uninhabited	13	potential
4	challenges	14	heavyweight
5	established	15	energy
6	technological	16	fossil fuel
7	through	17	significant
8	actually	18	equivalents
9	commercial	19	turbine
10	electricity	20	concentrated

LINKS

http://www.bbc.co.uk/news/world-africa-15984493
http://www.economist.com/node/13982870
http://www.guardian.co.uk/environment/2009/mar/11/sahara-solar-investment-copenhagen
http://www.consumerenergyreport.com/2009/03/13/sahara-solar-panels-can-power-the-entire-europe/
http://www.africaportal.org/articles/2011/04/04/solar-power-prospects-north-africas-sahara-desert
http://www.withouthotair.com/

ANSWERS

GAP FILL: Sahara desert sun to power Europe: The Sahara **desert** in North Africa is vast. So is its desert sunshine. If that could be harvested the potential it offers as an energy producing region is huge. The idea is now within reach of actually happening - using new technologies to capture the sun in the Sahara desert, converting it into **energy** and **transmitting** the power generated to Europe. A group in Germany called *Desertec*, who have heavyweight commercial backers such as Deutsche Bank and Siemens, have chosen Morocco to embark on a huge commercial **venture** to do just this. Solar **power** will be created for Europe; creating clean energy and jobs. The ambitious programme is **feasible**. Desertec expects to see the first **electricity** flowing through undersea cables from Morocco in 2014. Its stated goal however is to power 100% of local needs in Morocco and 15% of European **demand** by 2050.

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