Taalkaart: Wind Power

Vaardigheid:
Luisteren, lezen en schrijven

Wanneer mag je met deze taalopdracht beginnen?
Zie eigen POP/ PAP (Study guide English)

Samenwerken of alleen?
Alleen (vervolg in tweetallen)

Niveau(s) volgens ERK (Europees Referentiekader)
Luisteren A2; lezen B1; gesprekken voeren A2/B1

Subvaardigheid beschrijving:

Lezen A2/B1:

- *Kan feitelijke teksten over onderwerpen uit de eigen werk- of leefomgeving lezen met een redelijke mate van begrip.*

Luisteren A2:

- *Kan relevante informatie uit korte, voorspelbare, luisterteksten begrijpen.*
- *Kan herkennen wat de hoofdpunten zijn van nieuwsberichten als er een duidelijke visuele ondersteuning is.*

Schrijven A2:

- *Kan heel eenvoudige persoonlijk brieven schrijven om dankbaarheid of verontschuldigingen over te brengen.*
- *Kan een korte, eenvoudige boodschap noteren als om herhaling of herformulering gevraagd kan worden.*
- *Kan korte, eenvoudige aantekeningen of boodschappen gerelateerd aan zaken van onmiddellijke noodzaak schrijven.*

Hoe lang ben je er mee bezig?
2 uur

Waar doe je deze taalopdracht?
Taal- en Rekencentrum, studieruimte en/of thuis

Taalopdracht

Read the instructions and do the exercises.

1. **Read** the text on the next page. Write down the definitions of the underlined words on the word list. Learn the words and their definitions. Practice the Dutch translation of the words in **WRTS.**
2. **Listen to** the video 'Wind Power' (Webquest/Introduction). Do the exercise on page 4.
3. **Read** the text on page 2 one more time and answer the following questions: (in English):
    1) What are the main characteristics of wind power?.
    2) Using your own knowledge on the topic, add 1-2 more fact(s) to the '*Wind Turbines Efficiency Facts*'.
    3) Try to describe how a wind turbine works.
    4) How would you explain the power-in-the-wind formula?
4. Find a list of statements on page 5. These are pros and cons of wind power. **Do the exercise** on page 5.
5. **Ask your classmate** to check your answers.
6. **Ask a (student) teacher** to check your work.

Informatiebronnen en leermiddelen

- Dictionary
- Tekst on sustainable energy and The Netherlands
- http://www.hollandtrade.com/sector-information/energy/?bstnum=4913
- http://www.government.nl/issues/energy/sustainable-energy

Wind Energy

Wind energy, also known as wind power, is the means of harnessing wind and turning it into electricity. Modern developments have increased the efficiency of wind energy, making it a viable power source, and the fastest growing power source globally.

Wind Turbines Efficiency Facts

- A modern wind turbine has a maximum capacity of around 2000 kilowatts (kW) or 2 Megawatts (MW).
- There are 8760 hours in a year (365 days x 24 hours).
- A 2 MW wind turbine will generate around 30% of its maximum theoretical capacity resulting in 5256 Megawatt hours (MWh) generated per turbine per year.
- Taking all of the above into consideration a wind turbine will generate enough green electricity for the average annual needs of around 1100 homes, using an average demand of 4700 kWh per house based on electricity consumption figures from Digest of UK Energy Statistics.
- Wind turbines usually operate 75-90% of the time – but not at full capacity.

Wind Turbines and the Energy in Wind

A turbine is a device for converting the energy in a moving fluid into mechanical rotating energy. There are big turbines at the bottom of dams that convert the energy from pressure and velocity in water into rotating mechanical energy to drive huge generators. There are turbines in jet engines and turbochargers that convert the velocity, pressure, and temperature, in engine exhaust gasses into mechancal energy. After going through the turbine the exhaust gas is cooler and has a lower pressure. There are steam turbines that convert the pressure and velocity and high temperature of super-heated steam into mechanical rotating energy to drive electric generators.
Wind turbines only take velocity or kinetic energy out of the wind. It's only the kinetic energy of the moving air molecules that we can convert to mechanical energy.

The formula below shows the variables that determine the power in the wind going into the wind turbine (not the power obtainable, because we can't get it all):

Word in context	English definition	Dutch translation (WRTS)
1. harnessing		
2. viable		
3. device		
4. fluid		
5. rotating energy		
6. pressure		
7. velocity		
8. exhaust		
9. kinetic energy		
10. molecules		
11. mechanical energy		
12. variables		
13. obtainable		
14. density		
15. blade		

Terms. Wind Power

Listen to the video. Look at the picture and name every part of the wind turbine. Fill in the chart below:

#	**Term**
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	
15.	

Pros and Cons

The following statements (pros and cons) are scrambled. Divide them into two columns: advantages (pros) and disadvantages (cons) of Wind Power.

- Clean energy, no fuel to drill, frack, mine, transport or burn
- As mentioned earlier, the wind is inconsistent, unsteady and unpredictable
- Wind power is not cheap and like many energy sources, rely on government subsidies to remain competitive.
- Renewable and sustainable
- Costs are relatively low and continue to decrease
- Wind farms are generally located in rural areas that might be otherwise picturesque. They are considered by some people to be an eyesore.
- Abundant domestic supply (16X current electric demand!)
- The power is essentially free once the infrastructure is paid for.
- Some people complain of noise from the turbines.
- Low life cycle carbon footprint. Breakeven in eight months.
- Wildlife impact. Not only birds, but bats have experienced fatalities.
- Can be used almost anywhere.
- Localized impact on night-time temperatures and weather

Pros	**Cons**
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.

Answer sheet:

Pros

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Cons

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