THE CARRYING CAPACITY OF THE NETHERLANDS (2 HAVO/VWO)

*In the new edition of **buiteNLand,** EduGIS is used in the chapter on the topic of **carrying capacity** for second year vmbo and havo/vwo. The second year books (new edition) will be available from the 2009-2010 school year. The assignments are now available to everybody as an EduGIS module.*

ak buiteNLand

THE ENVIRONMENT IN THE NETHERLANDS

Zoom out until you're at the scale level for the whole of the Netherlands. This means that you have a map on which you can see the whole of the Netherlands.

Click on *Add a layer to the map.*

- Choose the category *Environment*.

1a What is smog? (look this up, if you don't know what it is)

1b What materials / gasses does smog consist of?

Nitrogen can be airborne, such as nitrogen dioxide (NO2) but can also settle (deposit) on the ground.

Click on map layer *Concentration of nitrogen dioxide*. Open the legend.

Now click on map layer *Traffic* (also under the category *Environment*). Open the legend.

Switch map layers a couple of times and look at the patterns on the maps. If necessary, change the level of transparency of the map layers.

100% ▾ 70% ▾

- Set the map layer 'Nitrogen concentration' back to 0% transparency.

Make the traffic map layer (temporarily) invisible.

1c Is the traffic (motorway system) pattern still visible on the map showing the nitrogen concentration in the air? Explain your answer.

- Click on *Add a layer to the map.*
- Choose the category *Land use* then choose *Percentage of agriculture*.
- Switch map layers a couple of times and look at the patterns on the maps. If necessary, change the level of transparency of the map layers.

1d Is the pattern for 'Percentage of agriculture' still visible on the map for nitrogen dioxide concentration in the air? Use the north of the Netherlands to explain your answer.

- Click on *Add a layer to the map.*
- Choose the category *Environment* then choose *nitrogen deposits*.
- Also choose the *Traffic* layer.
- Switch map layers a couple of times and look at the patterns on the maps. If necessary, change the level of transparency of the map layers.

1e   Is the traffic (motorway system) pattern still visible on the map showing nitrogen deposits? Explain your answer.

 Close the *Traffic* map layer.

- Click on *Add a layer to the map.*
- Choose the category *Agriculture* then choose *Livestock per km2*
  Switch map layers a couple of times and look at the patterns on the maps. If necessary, change the level of transparency of the map layers.

1f   Is the pattern for livestock per km^2 still visible on the map for nitrogen deposits? Explain your answer.

- Click on *Add a layer to the map.* Choose the category *Environment* then choose *Ammonia*.
- Switch map layers a couple of times and look at the patterns on the maps.

1g   Which of the following statements are true?

I   There is a spatial link between areas with concentrations of ammonia and nitrogen deposits. [true / false]
II   If there is a lot of factory farming in a certain area there is a good chance that there will be high levels of ammonia deposits. [true / false]

2.
You have seen that by applying various map layers, spatial links can be discovered. Based on your own choice of layers, you are going to decide which elements are spatially linked and which are not. To do this, you have to find the odd word out.
To help you, sometimes there is a hint in brackets with the category of the map layer.

  A   sand / potentially high acid deposits (environment) / clay (soil type)
  B   Rijnmond / Friesland / potentially high acid deposits
  C   low population density / lots of traffic / high concentration of nitrogen dioxide
  D   high emission of sulphur dioxide / Tilburg / IJmuiden / Rijnmond / Vlissingen
  E   high emissions of sulphur dioxide / Oost-Brabant / overfertilisation
  F   percentage agriculture / traffic / high population density

3   By using different map layers you have already traced a number of links. Make the right combinations in table 1.

    A   B   C   D   E   F

TABLE 1

A	Presence of high concentrations of nitrogen dioxide (NO2) in the air	1	The presence of large numbers of livestock per km^2
B	Presence of high levels of nitrogen deposits	2	Power plants / oil refineries / traffic
C	Low to no ammonia deposits	3	The presence of lots of traffic
D	High emissions of sulphur dioxide	4	Lots of particulate matter
E	High emissions of carbon dioxide	5	No factory farming
F	Type of soil	6	Speed of overfertilisation / acidification

ENVIRONMENTAL RESEARCH IN YOUR OWN NEIGHBOURHOOD

It has become clear that some natural cycles are threatened in the Netherlands too. In this assignment, we are going to compare threats in your environment with the environment of somebody in your family, or someone you met on holidays somewhere else in the Netherlands. {mospagebreak} The idea is that you choose an environment that is very different to yours. If you don't know anybody that lives somewhere completely different to you, you still need a noticeably different area for your research. A student from Rotterdam could compare his or her environment with somebody from the West-Frisian Islands and somebody from a village in the Peel region could compare his or her environment with somebody in the Randstad or Zeeland.

4a Write down the names of two municipalities that you are going to compare in table 2 (next page). Use the *Grote Bosatlas* if necessary.

For research on the damage to the environment, choose maps from the following categories: population density, soil type, land use, environment and agriculture.

4b In the table, write down the figures given in the legend.

4c Write down a plus sign in each section if your own environment was better and a minus sign if your environment scored lower.

4d Add up the plusses and the minuses. My environment is [more / less] threatened than the environment in another part of the Netherlands.

4e Explain your score in relation to your other environment by looking at several spatial links. Hint: refer to table 1 (assignment 3).

4f Would you like to exchange your environment for the other environment? Support your answer.

TABLE 2

		Environment Municipality _____	Environment elsewhere in the Netherlands Municipality _____	**Plus or minus**
1.	Population density per km^2			
2.	Predominant soil type			
3.	Percentage agriculture			
4.	Ammonia			
5.	Nitrogen deposits			
6.	Nitrogen dioxide concentration in the air			
7.	Sulphur dioxide concentration in the air			
8.	Particulate matter in the air			
9.	Carbon dioxide concentration in the air			
10.	Livestock per km^2			

Number of plusses:

Number of minuses: