

Sustainable development facts questionnaire (SDFQ)

Based on the factual information available in the game the Sustainable development facts questionnaire (SDFQ) was created as a pre- post-test of the children knowledge of sustainability before and after using the application. The SDFQ (see below) was pilot tested with 48 children between grades 4 and 5.

1. Which factors need to cooperate to create a sustainable city? Place a cross in front of the correct answer (only one answer is correct)

- Economical and social factors
- Economical, social, and environmental factors
- Environmental and social factors
- Economical, environmental and technological factors

2. How is a city's sustainability affected by energy generation? Circle Right or Wrong for each of the propositions below:

- Right/Wrong** - Power plants have environmental costs because they affect the environment
- Right/Wrong** - Different energy sources all have the same influence on a city's economy
- Right/Wrong** - Power plants cost too much and are therefore not part of a sustainable city

3. A small coal power plant: Place a cross in front of the correct answer (only one answer is correct)

- Uses water power to create a stable energy stream
- Uses the sun and creates a lot of energy
- Produces electricity by burning coal. It is small, cheap, and influences the environment negatively
- Does not affect the air quality but has to store uranium

4. Circle Right or Wrong for each of the propositions below:

- Right/Wrong** - Policies only have a positive effect on the environment
- Right/Wrong** - Policies do not cost anything
- Right/Wrong** - It is smart to introduce policies when one is planning a city
- Right/Wrong** - Policies can affect a city's economy negatively

5. Indicate which policies can help to decrease the use of non-renewable resources (such as oil). Circle Right or Wrong for each of the propositions below:

- Right/Wrong** - CO2 taxes
- Right/Wrong** - Electric car grid
- Right/Wrong** - Energy education programs
- Right/Wrong** - Ecotourism program
- Right/Wrong** - Fund for sustainable technology

6. Order the following power plants according to their influence on the environment. Use 1, 2, 3 and 4 (each number once). 1 is least influence, 4 most:

- Small coal power plant
- Water power plants
- Nuclear power plant
- Windmills

7. Which investments can help to decrease the use of non-renewable resources, such as oil? Place a cross in front of all correct answers (there can

be more than one)

- Recycling stations
- Solar roofs
- Better isolation
- Metro station
- Better uranium storage

8. Improving the economy by building e.g. commercial constructions influences: Place a cross in front of the best answer (only one answer is correct)

- The economy improves but it is bad for the environment, and for the use of renewable and non-renewable forms of energy.
- The economy improves but the use of non-renewable energy increases.
- The economy improves but it is bad for the environment.
- The economy improves but it is bad for people's wellbeing, the environment, and the use of non-renewable forms of energy.

9. Public services, such as hospitals, police, and fire departments can improve people's wellbeing if: Place a cross in front of all correct answers (there can be more than one)

- They are built close to residential areas so that many people have access to them.
- They are constructed near forests to balance the distribution of constructions in a city.
- These services have costs in terms of energy and oil, so they should not be part of a sustainable city.

10. By changing some behaviors, citizens can directly influence the city sustainability. Circle Right or Wrong for each of the behaviors below:

- Right/Wrong** - Buy organic/biologically grown food
- Right/Wrong** - Use public transport
- Right/Wrong** - Eat vegetarian food

The pre-test and post-test versions of the questionnaire contain the following questions from those listed above:

Pre-test	Post-test
1	3
2a,b,c	4b, 4c
4a,d	5a,b,c,d,e
6	8
7a,b,c,d,e	10a,b,c