LIGHT POLLUTION – ONE PROBLEM, DIFFERENT NIGHT WORLDS

Workshop Plan Introducing the "Connect for Global Night" Project

Duration: 60 minutes
Age group: 15–19 years
Number of participants: 5–15 people
Format: in-person workshop
Location: Poland, Tunisia

Main objective

Raise young people's awareness of light pollution as a contemporary global environmental challenge and develop their ability to recognize its local and global consequences.

Specific objectives

Participants:

- understand what light pollution is;
- understand that light pollution is a local, national, and global issue;
- analyze differences in the appearance of the night sky in different parts of the world;
- compare examples from Poland and Tunisia;
- interpret light pollution maps;
- become familiar with the Bortle scale as a tool for describing night-sky quality;
- understand the importance of collecting environmental data;
- formulate questions and hypotheses that can be tested during subsequent measurements;
- recognize the relationship between local lighting decisions and broader environmental processes;
- identify possible individual and community actions;
- develop a sense of agency and responsibility for the environment.

Co-funded by the European Union

The project is funded by the European Union under the DEAR (Development Education and Awareness Raising) programme.

Polish aid

The project is co-financed from the state budget under the Polish development cooperation of the Ministry of Foreign Affairs of the Republic of Poland.

CONNECT FOR GLOBAL CHANGE

Natural Sciences / Physics / Astronomy

After the session, the participant:

- explains what light pollution is;
- explains why artificial light makes astronomical observations more difficult;
- recognizes differences between natural and artificial light environments;
- knows the basic principles for describing night-sky quality;
- understands why measurements are needed for an objective assessment of the environment.

Geography / Environmental Education

The participant:

- analyzes the spatial distribution of light pollution;
- interpretuje mapy zaświetlenia;
- compares night-sky conditions in different regions;
- recognizes the relationship between human activity, infrastructure, and environmental conditions;
- understands that different communities may experience the same global problem in different ways.

Global Education / Civic Education

The participant:

- understands the concept of global interdependence;
- recognizes the connection between local actions and global environmental challenges;
- can look at an issue from the perspectives of different communities;
- understands the importance of international cooperation;
- proposes actions to reduce light pollution at the individual, local, and community levels;
- recognizes their own ability to influence their surroundings.

Digital and Technical Competences

The participant:

- interprets basic data visualizations;
- uses light pollution maps;
- understands why data should be collected according to defined principles;
- prepares for the later use of a light detector.

Co-funded by the European Union

The project is funded by the European Union under the DEAR (Development Education and Awareness Raising) programme.

Polish aid

The project is co-financed from the state budget under the Polish development cooperation of the Ministry of Foreign Affairs of the Republic of Poland.

CONNECT FOR GLOBAL CHANGE

Social and Intercultural Competences

The participant:

- works in a group;
- presents their own observations and arguments;
- listens to other perspectives;
- is willing to compare the experiences of young people from Poland and Tunisia;
- recognizes the diversity of environmental and social conditions.

TEACHING METHODS

- **Expository: presentation, brief explanation, facilitator's commentary.**
- **Problem-based: questions prompting reflection, formulation of hypotheses.**
- **Practical: analysis of photos, maps, and data; preparation for measurement.**
- **Interactive: brainstorming, discussion, work in small groups.**
- **Inquiry-based: observation, comparison, formulation of questions and hypotheses.**
- **Participatory: jointly developing solutions and ideas for action.**

MATERIALS NEEDED

1. Photos of the night sky – examples of night skies from different parts of the world (**Attachment 1**).
2. Short video about light pollution (optional): https://www.youtube.com/watch?v=zicrM7JRuME
3. Graphic showing the Bortle scale (**Attachment 2**).
4. World light pollution map: lightpollutionmap.info
5. Worksheet "One Problem – Different Consequences" (**Attachment 3**).
6. Laptop and projector / interactive whiteboard.
7. Whiteboard or flipchart.
8. Markers / sticky notes.
9. Phone or computer with access to light pollution maps – if technically feasible.

Co-funded by the European Union

The project is funded by the European Union under the DEAR (Development Education and Awareness Raising) programme.

Polish aid

The project is co-financed from the state budget under the Polish development cooperation of the Ministry of Foreign Affairs of the Republic of Poland.

CONNECT FOR GLOBAL CHANGE

SESSION PLAN

Time	Description	Notes
10 min	**Introduction: Does the night look the same everywhere?**	
	The facilitator welcomes the participants and shows two or more photos of the night sky depicting places with different levels of artificial lighting (Attachment 1).	Do not provide the answer immediately.
	Question: "What do you notice?"	Possible answers: different numbers of visible stars, different sky brightness, the Milky Way visible/not visible, a glow over the city.
	The facilitator then asks: "Do you think everyone in the world has the same access to a dark night sky?"	Question opening up the global perspective.
	Further questions: "What might the appearance of the night sky depend on?" "Does more light always mean better living conditions?" "Can a lack of light be a problem?"	It is important to avoid presenting light as inherently negative. The problem is its improper, excessive, or unnecessary use.
	The facilitator introduces the concept of light pollution.	A short video can be used as supporting material.
10 min	**One Problem – Different Consequences**	
	Participants are divided into 4 groups. Each group is assigned one area: astronomy / people and health / nature and biodiversity / energy and infrastructure.	Attachment 3.
	Task: "How can excess artificial light affect this area?"	Groups write down 2–3 examples.
	After 4–5 minutes, each group presents its ideas.	The facilitator records the answers on the board.
	Summary: Light pollution is not exclusively a problem for astronomers. It affects many aspects of the environment and social life.	Particular emphasis on health, circadian rhythms, plants, animals, and biodiversity.

Co-funded by the European Union

The project is funded by the European Union under the DEAR (Development Education and Awareness Raising) programme.

Polish aid

The project is co-financed from the state budget under the Polish development cooperation of the Ministry of Foreign Affairs of the Republic of Poland.

CONNECT FOR GLOBAL CHANGE

10 min	**Poland and Tunisia – Two Night Worlds**	
	The facilitator shows maps of nighttime lighting in Poland and Tunisia (lightpollutionmap.info).	If the workshop takes place in Tunisia, the session can similarly begin with Tunisia.
	Questions: "What do you notice?" "Which areas are the brightest?" "Where would you expect darker skies?"	Participants do not need to know the answers. The aim is to observe and formulate hypotheses.
	The facilitator asks: "What might account for the differences between particular places?"	Possible factors: size of the settlement, infrastructure, population density, how lighting is used, access to energy.
	Problem question: "Does the same environmental problem have to look the same in different parts of the world?"	Introduction to the concept of global interdependence.
	In the center of the board, the phrase NIGHTTIME LIGHT appears. Participants create a network of associations: energy → cities → infrastructure → health → nature → astronomy → quality of life.	The facilitator emphasizes that the individual elements are interconnected.
10 min	**How can we find out what is really happening in our area?**	
	The facilitator shows the Bortle scale (Attachment 2).	Here, the Bortle scale is used as an example of a way to describe night-sky quality.
	Participants look at examples of different sky classes and try to arrange them from darkest to brightest.	It is not necessary to memorize all nine classes.
	The facilitator asks: "Can we accurately determine how bright the night sky is based only on a photo or our own impression?"	Leading into the concept of measurement.
	Then: "How could we test our assumptions?"	Expected answer: by taking measurements and collecting data.
	The facilitator introduces the idea of a light detector that participants will build in the next stage of the project.	The device is not built yet.
	Key message: "If we want to talk about a problem based on facts, we need data."	Preparation for Project Activities 3 and 4.

Co-funded by the European Union

The project is funded by the European Union under the DEAR (Development Education and Awareness Raising) programme.

Polish aid

The project is co-financed from the state budget under the Polish development cooperation of the Ministry of Foreign Affairs of the Republic of Poland.

CONNECT FOR GLOBAL CHANGE

5 min	**Summary: From Observer to Researcher**	
	Participants complete three sentences:	
	"Today I learned that…"	
	"I was surprised that…"	
	"I would like to find out whether…"	The last sentence should lead to subsequent measurements.
	The facilitator summarizes: "We do not have to guess what the problem looks like. We can observe it, measure it, compare the data, and use it to decide what we can do."	Transition to the next stages of the project.

REFLECTION QUESTIONS

1. Understanding the problem

- What is light pollution?
- Is all artificial light pollution?
- Why is the night sky brighter in some places?
- How would our lives change if we did not have access to natural darkness?

2. Impact on the environment

- How does light pollution affect astronomy?
- How can it affect animals?
- How can it affect plants and ecosystems?
- How can it affect people and their circadian rhythms?
- Why is light pollution an environmental issue, not just an astronomical one?

3. Poland and Tunisia

- What did you notice when comparing the maps of Poland and Tunisia?
- Do you expect the night sky to look the same in both countries?
- What might account for the differences?
- Does a greater amount of artificial light always mean greater development?
- Does a smaller amount of artificial light always mean poorer living conditions?
- What information would be needed to answer these questions based on data?

Co-funded by the European Union

The project is funded by the European Union under the DEAR (Development Education and Awareness Raising) programme.

Polish aid

The project is co-financed from the state budget under the Polish development cooperation of the Ministry of Foreign Affairs of the Republic of Poland.

CONNECT FOR GLOBAL CHANGE