

# Climate Wise Schools and Students (2024-1-ES01-KA220-SCH-000251082)

Topic: Eco Travel (Compiled by Greek partner)



Level: Middle School

Time: 45' (Warm Up Activities and TASKS 1 & 2) +45' (TASKS 3 & 4) +45' minutes (TASK 5 & Wrap Up)

Objectives: Students will be able to:

- Understand the link between transportation and CO<sub>2</sub> emissions / climate change
- Understand how our daily travel choices affect the planet
- Choose environmentally friendly and realistic transportation options in everyday life by comparing different travel options for short urban trips using criteria of carbon emissions, cost, time, and accessibility, and recommending the best option for a given scenario with evidence-based justification.

Disciplines: Science and Technology, Ecology

Materials: Tablet PC or Smart Board /Notebook, Worksheets

## Activities and Practices:

### Warm Up Activities:

In the beginning, we present to the students the following video:

**“How Our Transport Choices Affect Climate Change”**

<https://youtu.be/MHRa5Td67RM>

Next, we project a short, vivid scenario: "You need to get from school to a grocery store 4 kilometers away with heavy groceries. It's 4:15 pm on a rainy weekday." Ask: "Which travel mode would you pick and why?" Have students submit via quick poll or shout-outs.

Then we have a discussion about: **“How do our daily travel choices affect the planet?”**

**Main Activities:**

We present to the students the scenario/question titled: “The journey of the Green Traveler”.

Nikos, the main character of our story, is a 15-year-old student who needs to travel three different routes:

- From home to the city center
- From school to the community sports center
- From home to the supermarket and back home

Students will work in teams of 3-4 and help Nikos make environmentally friendly and realistic choices for his transportation.

**TASK 1**

In order to choose the team leaders, students answer the following quiz individually. The top ranking and fastest students will become the team leaders.

<https://wordwall.net/resource/104539889>



By the means of the wheel in the link, each leader gets a character for his/her team. Then the teams are formed (each student spins the wheel and the character in the wheel matches the leaders with their teams).

<https://wordwall.net/resource/104540518>



## **TASK 2**

Nikos need to travel 5 kilometers from home to the city center on a weekday afternoon. He is travelling alone and carrying a backpack.

## **TASK 3**

Nikos and two of his friends need to travel 7 kilometers from school to a community sports center in the late afternoon. The route has few bike lanes and busy traffic. One of his friends has a temporary mobility limitation (injured leg). It is windy and they are carrying sports bags.

## **TASK 4 - Independent Practice (Final Round)**

Nikos needs to travel 2 kilometers from home to a supermarket and back home. On his way back home, he is carrying heavy groceries, the weather is rainy and it is getting dark. There is a bus stop near the supermarket, but service is every 30 minutes.

For **TASK 2 - TASK 3 - TASK 4** each team/student will be given:

- A one-page data sheet containing travel modes and emissions, cost estimates (per Km or flat fares) and average speeds for urban conditions (It can be easily adjusted to reflect local conditions)
- Worksheets for calculations in order to decide the best mode for this trip.
- Data on how they win badges / points.

Then each team/student will present to the classroom the chosen travel mode and justify their choices. Teams earn badges and points by using correct data, thinking about fairness, and proposing creative solutions.

One-Page Data Sheet –Eco mobility (Values are indicative and can be easily adjusted to reflect local conditions)

**All distances are measured in kilometers (km). Values are simplified for classroom use and comparison.**

### Travel Modes & Emissions

Mode of Travel	CO <sub>2</sub> Emissions (kg CO <sub>2</sub> / passenger-km)	Average Speed (km/h)	Typical Cost
Walking	0.00	4–5	€0
Bicycle	0.02	12–15	€0
E-scooter	0.04	15–18	~€0.20 / km
Public Bus	0.08	20	€1.60 flat fare
Car (single occupant)	0.30	30	~€0.20 / km
Carpool (2 people)	0.15	30	~€0.10 / km per person

### Notes & Assumptions

- Bus emissions are shared per passenger.
- Carpool emissions are divided by number of passengers.
- Bicycle and e-scooter emissions include production amortized over time.
- Travel time depends on traffic, weather, and infrastructure.

### Accessibility & Equity Considerations

**When choosing a travel mode, consider: Mobility limitations - Heavy luggage or groceries - Weather conditions - Cost affordability - Safety (sidewalks, bike lanes, lighting)**

## Calculation Templates (Student Worksheets)

### Template 1: Emissions Calculation

**Scenario:** \_\_\_\_\_

Item	Value
Distance (km)	_____ km
Emissions rate (kg CO <sub>2</sub> / km)	_____
Number of passengers	_____
<b>Total emissions</b>	$(\text{Distance} \times \text{Rate}) \div \text{Passengers} = \text{_____ kg CO}_2$

### Template 2: Cost Calculation

Item	Value
Distance (km)	_____ km
Cost per km or fare	_____ €
<b>Total cost</b>	$\text{Distance} \times \text{Cost} = \text{_____ €}$

### Template 3: Travel Time Estimation

Item	Value
Distance (km)	_____ km
Average speed (km/h)	_____
<b>Estimated time</b>	$\text{Distance} \div \text{Speed} = \text{_____ hours} (\approx \text{_____ minutes})$

### Template 4: Evidence-Based Justification

**Chosen travel mode:** \_\_\_\_\_

**Use 4–5 sentences to explain: Why this option is environmentally efficient -How the numbers (emissions, cost, time) support your choice - One equity, accessibility, or safety consideration**

### Optional: Improvement Proposal

**One policy or infrastructure change that would make an eco-friendly option more realistic for this trip:**

**Teacher Tip: Encourage students to clearly state assumptions (weather, traffic, passengers) to ensure fair comparisons.**

## **How You Earn Badges**

During **The journey of the Green Traveler**, you earn badges by demonstrating different skills while solving travel scenarios.

Badges reward quality of thinking, not just speed or the “right answer.”

## **Eco-Efficiency Badge**

**What it rewards:** Environmentally responsible decision-making

You earn this badge when you:

- Correctly calculate carbon emissions using the provided data sheet
- Compare at least two travel options using numerical evidence
- Select a travel mode with low or reduced CO<sub>2</sub> emissions
- Clearly reference numbers (distance, emissions, cost) in their justification



✓ *Focus:* accuracy, data use, environmental impact

## **Equity Awareness Badge**

**What it rewards:** Fairness, accessibility, and safety awareness

You earn this badge when you:

- Consider accessibility needs (mobility limitations, heavy luggage, age, safety)
- Explain how cost, safety, or usability affects different travelers
- Show that the “best” option may change depending on who is traveling



✓ *Focus:* inclusive thinking and real-world context

## **Creativity Badge**

**What it rewards:** Innovative and flexible problem-solving

You earn this badge when you:

- Propose a multimodal solution (e.g., bus + walking)
- Suggest a policy or infrastructure improvement (bike lanes, better buses, safer crossings)
- Present ideas in a clear, original, or engaging way



✓ *Focus:* creativity grounded in realistic solutions

#### ☰ Badge–Rubric Connection

Rubric Criterion	Points	Linked Badge
Accurate calculations & data use	0–4	🌱 Eco-Efficiency
Evidence-based comparison	0–2	🌱 Eco-Efficiency
Accessibility / equity / safety	0–2	♿ Equity Awareness
Creativity & improvement ideas	0–2	💡 Creativity

**Total: /10 points**

**Badges / points are awarded by the teacher**

#### TASK 5

Create a short campaign mini-poster (digital or paper) persuading peers to adopt one eco-mobility behaviour (e.g., "Try a Car-Free Monday"). Poster must include at least one calculated comparison (emissions or cost) and a local action step (e.g., where to find safe bike routes or add bike lanes near the school).

**Wrap Up:** Quick debrief: Each team shares one insight they learned. Teacher projects a summary rubric and announces winning teams/badges. Exit ticket: On index card, students write one sentence: "My travel choice changed today because ....." and hand its in.

In the end students get to do solve riddles based on CO<sub>2</sub> data, transport and sustainability in a digital **ESCAPE ROOM**.

<https://view.genially.com/694958256ceca1922610bd8b/interactive-content-escape-the-city-climate-and-sustainable-mobility>

**Assignment:** Students create a one-week sustainable travel plan for themselves.

**Assessment:** Teacher assesses the comprehension of students' orally and ask them to assess their performance with a self-assessment form.

**Players' Journey**    **On boarding: Warm-Up Activities**  
                                 **Scaffolding: Task 1 - Task 4**  
**Mastery:**            **Task 5 - Assignment**

**Gamification Elements:** Group work in teams, Cooperation, Rewards (Badges), Fun Elements (digital activities, ESCAPE ROOM)

### References

1. <https://sustainability.vvisitgreece.gr>
2. [http://www.natural\\_greece.gr](http://www.natural_greece.gr)
3. <https://www.hzjz.hr/wp-content/uploads/2023/09/EMW.pdf>
4. <https://mzom.gov.hr/istaknute-teme/odgoj-i-obrazovanje/srednjoskolski-odgoj-i-obrazovanje/prijevoz-ucenika-srednjih-skola/2039>
5. <https://cikloturizam.hr/wp-content/uploads/2021/04/Razvoj-biciklistickih-ruta-u-cilju-povecanja-sigurnosti-prometa-na-cestama-prezentacija-1.pdf>
6. <https://www.journal.hr/lifestyle/putovanja/prijedlozi-za-vikend-izlet/>
7. <https://www.eko.lijepa-nasa.hr/eko-skole/ciljevi-zastite-okolisa-u-programu-ekoskole>
8. <https://www.fzoeu.hr/hr/sufinanciranje-nabave-energetski-ucinkovitijih-vozila/7713>
9. [https://www.in.gr/2024/04/30/english-edition/athens-public-transport-system-gets-green-facelift/?utm\\_source=chatgpt.com](https://www.in.gr/2024/04/30/english-edition/athens-public-transport-system-gets-green-facelift/?utm_source=chatgpt.com)
10. [https://news.gtp.gr/2025/02/05/greek-ministries-team-up-to-form-national-cycling-strategy/?utm\\_source=chatgpt.com](https://news.gtp.gr/2025/02/05/greek-ministries-team-up-to-form-national-cycling-strategy/?utm_source=chatgpt.com)
11. [https://alternative-fuels-observatory.ec.europa.eu/transport-mode/road/greece/incentives-legislations?utm\\_source=chatgpt.com](https://alternative-fuels-observatory.ec.europa.eu/transport-mode/road/greece/incentives-legislations?utm_source=chatgpt.com)
12. [https://www.greeknewsagenda.gr/gr-eco-islands-smart-and-sustainable-greek-islands/?utm\\_source=chatgpt.com](https://www.greeknewsagenda.gr/gr-eco-islands-smart-and-sustainable-greek-islands/?utm_source=chatgpt.com)
13. [https://www.anariev.com/electric-vehicle-charging-infrastructure-in-greece/?utm\\_source=chatgpt.com](https://www.anariev.com/electric-vehicle-charging-infrastructure-in-greece/?utm_source=chatgpt.com)
14. <https://share.google/41mAsGTaIueXeF2WO>
15. <https://share.google/vjrNMBkDrn8Z3I7i1>
16. <https://share.google/CvOLNNDG3M2yOcGnR>
17. [https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/participacion-publica/estrategia\\_esp\\_movilidad.html?utm\\_source=chatgpt.com](https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/participacion-publica/estrategia_esp_movilidad.html?utm_source=chatgpt.com)

18. [https://transition-pathways.europa.eu/tourism/news/spain-allocates-funds-boost-sustainable-mobility-2025?utm\\_source=chatgpt.com](https://transition-pathways.europa.eu/tourism/news/spain-allocates-funds-boost-sustainable-mobility-2025?utm_source=chatgpt.com)
19. [https://www.iberdrolaespana.com/sustainability/environment/sustainable-mobility?utm\\_source=chatgpt.com](https://www.iberdrolaespana.com/sustainability/environment/sustainable-mobility?utm_source=chatgpt.com)
20. [https://managenergy.ec.europa.eu/managenergy-discover/managenergy-news/moveletur-sustainable-tourism-electric-mobility-es-2023-05-03\\_en?utm\\_source=chatgpt.com](https://managenergy.ec.europa.eu/managenergy-discover/managenergy-news/moveletur-sustainable-tourism-electric-mobility-es-2023-05-03_en?utm_source=chatgpt.com)
21. [https://nnomadz.com/sustainable-transportation-options-for-eco-tourists-in-spain/?utm\\_source=chatgpt.com](https://nnomadz.com/sustainable-transportation-options-for-eco-tourists-in-spain/?utm_source=chatgpt.com)
22. [https://es.wikipedia.org/wiki/Premios\\_Mu%C3%A9vete\\_Verde?utm\\_source=chatgpt.com](https://es.wikipedia.org/wiki/Premios_Mu%C3%A9vete_Verde?utm_source=chatgpt.com)
23. <https://www.moep.gov.mk/en/node/1714>
24. <https://www.moep.gov.mk/mk-MK/informacii/turizam>

### Videos

1. <https://www.youtube.com/watch?v=teeDJ1kliUA>
2. <https://www.youtube.com/watch?v=v6lHIWbpHLM>
3. <https://www.youtube.com/watch?v=-2ucZe-LcW8>
4. <https://www.youtube.com/watch?v=6abY4JiY9r4>
5. <https://www.youtube.com/watch?v=aSu74clHQKQ>