



PLANET
CHANGE

Air pollution

Exercise sheet



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Planet change is the short name of an EU Erasmus+ project aimed at VET teachers and their students. With small activities, the idea is to create awareness about sustainability and acquire 21st century skills. All this is done in a technical context, mostly from space technology.

www.planetchange.eu



Exercise sheet: Welcome to my (polluting life)

Adapted from "Whirling, Swirling Air Pollution: 24 Hours of Edgar's Air Pollution", available at: <https://scied.ucar.edu/sites/default/files/documents/WhirlingSwirlingAirPollution-24HoursEdgarPollutionStory.pdf>

Instructions

Standard application

Here, you'll find three tables:

- The **first** one serves as an example: you will read about a person's – Maria - life and how each step of their daily routine has an impact on the air pollutants emissions. It's a very simplified routine, just for inspiration!
- In the **second** one, we ask you to do the same, but now for your own life. Feel free to add any rows you need to the table, in order to have a real overview of all the things you do every day. You should categorise your actions into 5 types of air pollution sources:
 1. gasoline-burning vehicles and engines
 2. electricity from fossil fuels like coal
 3. activities that launch particles in the air like fires
 4. products that release chemicals into the air (like hygiene and cleaning products)
 5. consumption and daily habits (food, textile, transportation processes and waste disposal).
- For each action and respective source of pollution you identify in your daily life, you'll receive **+3, +2 or +1 pollution points**, depending on the action. For each **sustainable alternative** (e.g. you go to school by bike), **you can subtract 3, 2 or 1 points (-3, -2, -1)**. In order to know how to fill the table with the actions, their pollution impact, and their alternatives, **you should consult this "list of daily polluting actions and sustainable alternatives"**, to see what applies to you and get an idea of what you can add. This list also explains how to distribute points, according to the action/activity.
- In the **fourth** table, you'll need the collaboration of an elder member of your family. Ask them to help you fill the table according to their routine, and categorise the actions according to the pollution they issue, as you did for your own daily life.



Adapted application

Here, you'll find three tables:

- The **first** one serves as an example: you will read about a person's – Maria - life and how each step of their daily routine has an impact on the air pollutants emissions. It's a very simplified routine, just for inspiration! Don't pay attention to the types of pollutants, but to the actions that she does.
- In the **second** one, we ask you to do the same, but now for your own life. Feel free to add any rows you need to the table, in order to have a real overview of all the things you do every day. You can go to the list of daily polluting actions and possible alternative actions and select what also applies to your life, or see the type of things that you can add to your life. You can also take ideas for sustainable alternatives. You should fill in your daily routine and then see what is pollutant or not. For each action and respective source of pollution you identify in your daily life, you'll receive **+3, +2 or +1 pollution points**, depending on the action. For each **sustainable alternative** (e.g. you go to school by bike), **you can subtract 3, 2 or 1 points (-3, -2, -1)**. Remember to consult the "**list of daily polluting actions and sustainable alternatives**" to see which points to attribute to which action.
- In the **forth** table, you'll need the collaboration of an elder member of your family. Ask them to help you fill the table according to their routine, and categorise the actions according to the pollution they issue, as you did for your own daily life.



Exercise Table

Table 1. Maria's Life

Date:						
Time	Action	Description of action	Action or activity (and, if pollutant, its source)	Pollutant points (+3, +2 or +1, depending on the action)	Sustainable alternative points (-3, -2 or -1, depending on the instructions)	Total of points (per line)
6:00 am	Taking a long, hot shower	Maria gets up to get to work. First of all, she needs a long, hot and comforting shower. The system she uses to heat the water is fueled by natural gas; moreover, she uses shampoos and other products that release polluting chemicals.	<ul style="list-style-type: none"> Shower: Burning natural gas Used natural products (read the labels) 	+3 (for the gas) +3 (for the long shower) +2 (for the very hot temperature)	-2 (used natural products)	6



7:15 am	Preparing breakfast	<p>For breakfast, Maria prepares toast and coffee, which requires her to use a stove and a coffee machine. Both supplies use electricity, coming from a power plant where coal is burned releasing air pollution.</p> <p>When arriving at the office, she is indecisive about whether she should turn on the air conditioning or a fan - it's a very hot day! A friend tells her that the fan is a better solution, so she goes for it.</p>	<ul style="list-style-type: none"> • Stove and coffee machine: Burning coal • Choosing a fan over air conditioning 	+3 (for the stove and coffee machine)	-2 (chose a fan over air conditioning)	1
12 pm	Having lunch	<p>Maria forgot her lunch at home, so she drove to a nearby McDonald's and ordered a meat burger.</p> <p>She takes a friend with her, however, so they don't have to drive using two cars.</p>	<ul style="list-style-type: none"> • Using a Car: Burning gasoline • Choosing over-processed fast-food: Consumption habits • Choosing a meat burger: Consumption habits • Burning gasoline: Sharing a car 	+3 (burning gasoline using the car) +3 (fast food) +3 (meat burger)	-3 (shared a car)	6



6 pm	Arriving home, cleaning	<p>Maria arrives exhausted from work, but she still has some things to do before relaxing. She uses her cleaning products to give a new look to her kitchen and also takes the plastic out, not recycling it.</p> <p>However, Maria learnt with her grandfather how to compost using garden leaves and waste, and so she deposited these remains in her composting bin.</p>	<ul style="list-style-type: none"> Using a car: Burning gasoline Using cleaning products: Products that release chemicals Not recycling plastic: Waste disposal Waste disposal: Composting 	+3 (car) +3 (using cleaning products) +2 (not recycling)	-3 (Composting)	5
9 pm	Watching TV and browsing on the Internet	<p>Finally relaxing! It's been a long day. Maria watches TV and scrolls a bit on her phone. On Instagram, she sees an interesting ad and ends up ordering a new dress which will be shipped from China to Portugal. Running the television and using the Internet requires power from the coal-fired power plant. The production process of the dress, as well as shipping it from so far away will burn fossil fuel and release air pollution. It will also involve plastic, which will most likely end up in the landfill.</p>	<ul style="list-style-type: none"> Ordering a product coming from another country: Burning gasoline Using the Internet for a long time: Burning coal Ordering a fast-fashion product, whose production uses a lot of resources and energy: Consumption habits Fast-fashion and packaging: Consumption Habits Transportation: Burning fuel 	+3 (ordering the product) +2 (using the internet for a long time) +3 (ordering fast-fashion) +2 (plastic that comes with the product) +3 (transportation chosen)		13
Total of points						30



Table 2. Your life

Now it's your time! Fill in the table (duplicate the table as necessary, depending on the number of days you are going to register)

Date:						
Time	Action	Description of action	Polluting action and source of the pollution	Pollutant points (+3, +2 or +1, depending on the action)	Sustainable alternative points (-3, -2 or -1, depending on the instructions)	Total of points (per line)
Total of points						

(ADD ROWS AS NECESSARY)



Table 3. Your life (*adapted)

Time	Action	Description of action	Which actions were pollutant?	Pollutant points (+3, +2 or +1, depending on the action)	Sustainable alternative points (-3, -2 or -1, depending on the instructions)	Total of points (per line)
Total of points						

(ADD ROWS AS NECESSARY)



Tabela 4. Other Generation's Life

(note: if preferable, when a student is using the adapted table, the same can be used for the adult as well, to facilitate the comparison)

Date:						
Time	Action	Description of action	Polluting action and source of the pollution	Pollutant points (+3, +2 or +1, depending on the action)	Sustainable alternative points (-3, - 2 or -1, depending on the instructions)	Total of points (per line)
Total of points						

(ADD ROWS AS NECESSARY)

