Version 0.4.1.0 - [English]

Current riddles :

Residential

Mobility

Agriculture

Industry

Energy

Game version : V0.4.1.0

This version of the eco-dex is destined to be modified and updated during the whole project development.

Please be sure to always use the **version associated** with the current version of your game.
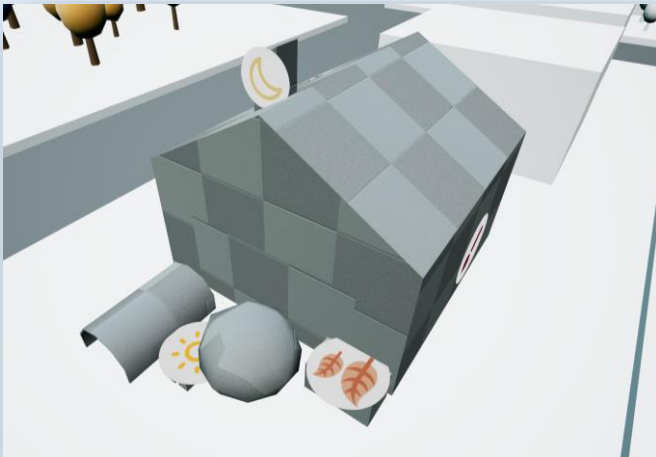
ECO-DEX

Maintenance Manual of the Flying Station

This version of the eco-dex is a prototype

Residential sector

The district is divided into three types of zones:

Housing

Public green spaces

Facilities

→ Review each type of zone to set up the necessary improvement incentives or actions thanks to the available buttons.

Advice buttons : among the 14 symbols, 6 are available and 4 have to be activated

If one element later shows the usefulness of the button, **activate it** !

Housing and gardens	
ᛨ	Encourage the installation of ecological heating systems in homes
ᚱ	<mark>Avoid</mark> burning biomass in gardens.
ᚴ	Install solar panels.
◇	Have <mark>environmentally friendly</mark> insulation.
↑	Use of non-emissive materials for construction & renovation.
ᛉ	Encourage the use of very dry wood for wood heating.

Green area	
⇄	Treat green spaces against allergenic plants.
ᛘ	Promote and apply good practices concerning wildfire.

Facilities	
ᛈ	Develop biomass combustion plants.
ᚠ	Develop support structures for the renovation of buildings.
ᛏ	Develop communication around health risks due to air pollution.
ᚷ	Add green spaces and parks close to public structures.
ᚲ	Develop green waste disposal areas.
ᛘ	Develop communication around selective sorting, recycling and zero waste lifestyles.

Housing and gardens

→ Check the current state of the house and garden parts and activate buttons accordingly for your territory.

Example: If a polluting heating is used, and if the heating improvement button is present, activate it!

	Chimney		Combustible storage		Garden		Roof		Wall linings
✦	Recent and/or efficient wood heating (less fine particles emissions in the air).	🍂	Moist wood.	🌱	Smoke from green waste combustion.	⚙	Heat loss, insufficient insulation.	🌑	Lining supplies emitting indoor air pollution.
💡	Oil heating (emitting greenhouse gases).	🐾	Well dried wood			💧	High humidity inside the house, poor or too watertight insulation.	💨	Supplies used unknown, likely emetrics of indoor air pollutants.
🌙	Gas heating (emitting greenhouse gases).					📦	High performance insulation.	🖌	Renovation in progress with lining without emission of pollutants in indoor air.
🔥	Inefficient or old wood heating (high emissions of fine particles in the air).					☀	Good conditions for solar panels (but no one installed)		
⚡	Heat pump								

Green spaces: allergy and fire risk management

Allergic risks

If allergenic trees or plants are present, enable the corresponding button.

Fire risk

In order to avoid the risk of forest fires, which generate large amounts of fine particles, decision-makers must ensure the maintenance of the massifs (size, presence of cuts).

In the resort, a green space can be considered safe if the index remains **below 10**.

➜ Please estimate the risk of fire with the table opposite. If the risk is proven and the corresponding action button is available, activate it.

| Color of the tree or plant	Allergic risk	Fire risk
Green	No	+0 per item
Blue	No	+1 per item
Orange	Yes	+0 per item

Facilities

→ Check if these facilities exist in the district. For each missing, if the corresponding button to build it is available, activate it!

Urban heat islands reduction	Waste management			Sensibilisation	

Urban heat islands reduction
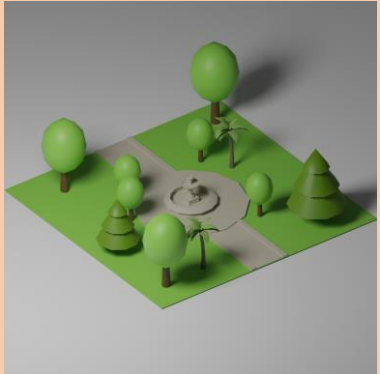
Urban green spaces

Waste management
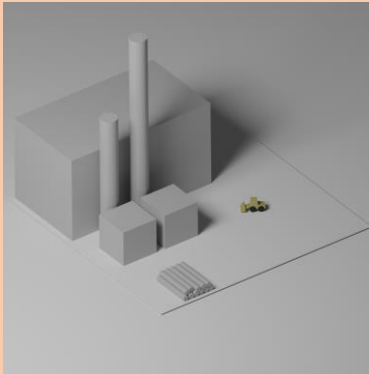
==Biological waste disposal producing biogas for energy production (avoiding unefficient wet waste transport and burning)==
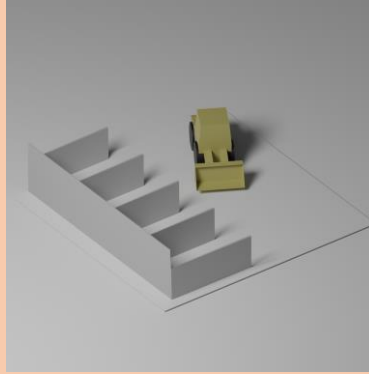
==Green waste disposal (avoiding the large emission of particules green waste burning)==
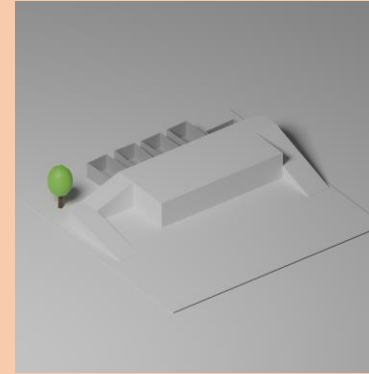
Sorting and recycling plant

Sensibilisation
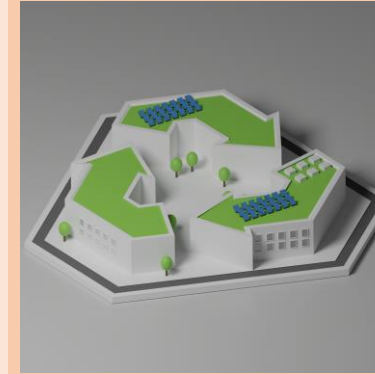
Communication center around recycling, selective sorting & zero waste lifestyles

Temporary installation to raise citizens' awareness about air pollution and its associated health risks.

Mobility machine

Road guide

You help the technician to make the pawn reach the destination (little flag). Paths are represented by 2 shapes. It will be necessary to choose **the best choice** of transport according to the **air quality cost** of the road taken.
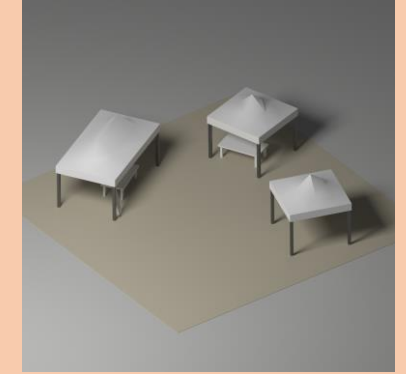
Start	Road description	Destination	Cost
●	Road used by many users. We advise you to use carpooling.	●	1
●	Road of less than 500m belonging to an urban area. Walking or cycling recommended!	▲	0
●	City Car Renting service.	■	2
▲	Due to the lack of additional transport or charging device, this road is only accessible by thermal engine car, consuming 3 movements.	▲	3
▲	Due to the lack of additional transport or charging device, this road is only accessible by thermal engine car, consuming 3 movements.	●	3
▲	Road under 3 km long. Presence of many bike paths. Use of the bike recommended.	■	0
■	Area served by buses.	■	1
■	Tramway available for this road.	▲	1
■	Presence of an electric vehicle charging station, its use is recommended.	●	2

The Train

The "Train" button allows to connect two nonadjacent places of the same type, if and only if they are **separated by two different similar shapes**.

Example : Going from the first triangle to the other costs 1 move.

Mobility machine – Transport types

Remember that every path as a cost corresponding to an impact on air quality.

Walk

Car

City car renting

Carpooling

Electric / Hydrogen Car

Tram

Bicycle

Bus

Train

⚠ **Warning :** You have a maximum amount of moves you can make to go to your destination. If you reach this threshold, you will have to restart from the beginning !

Industry machine

Modules guide

Remember, your role is to understand which modules are **available** to the technician so that you can choose together the ones you want to plug to your industry machine.

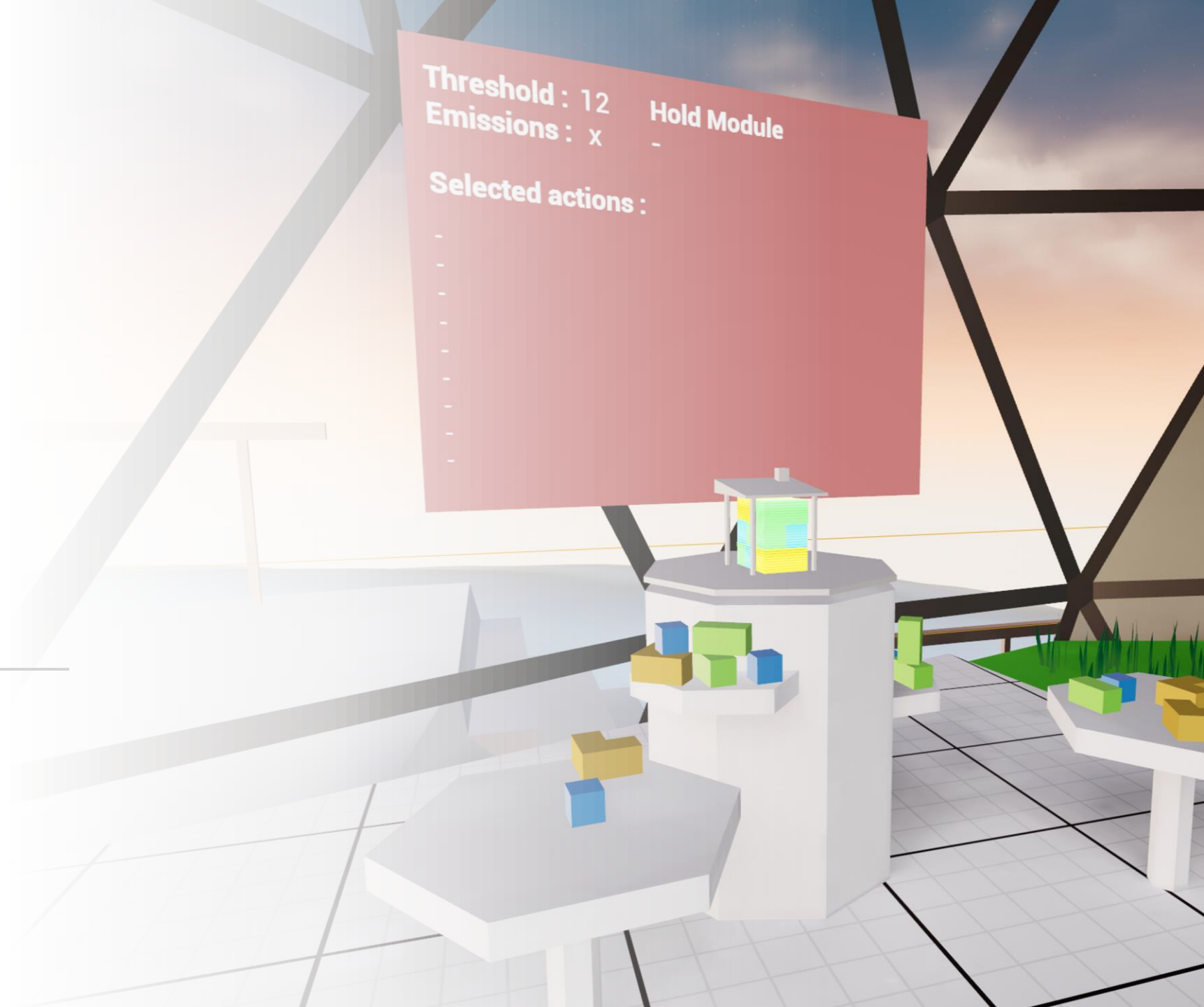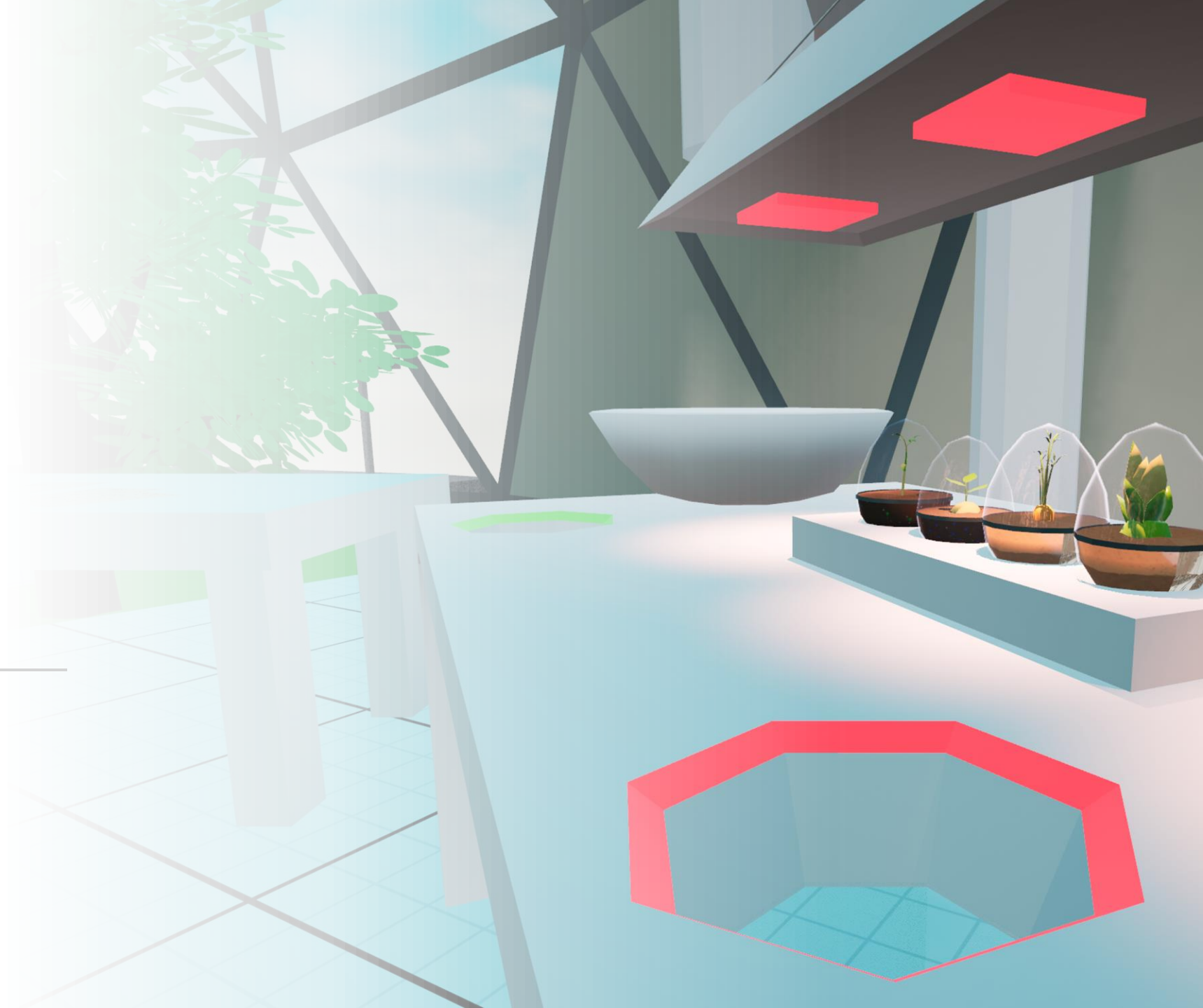| ID	Description	
MOD-001	Support professionals in the implementation of energy-efficient buildings.	-5
		-5
MOD-003	Use eco-responsible services or products.	-3
MOD-004	Purchases of products that do not comply with eco-responsible rules.	3
		-5
MOD-005	Cooperation with federations & producers to promote energy efficiency processes.	-3
MOD-006	Space for burning biomass & waste in the open air.	2
MOD-007	Deposit for biomass & industrial waste.	-2
MOD-008	Installation of mechanical recycling infrastructure	0
MOD-009	No communication around recycling and/or reducing the consumption of natural resources.	6
MOD-010	No treatment of wastes at the end of the production line.	4

ID	Description	
MOD-011	End-of-line treatment to reduce emissions of polluting gases.	-3
MOD-012	Integrate selective sorting into your lifestyle & use non-recyclable waste recovery companies.	-5
MOD-013	Reintegrate communication between Citizen & Companies.	-5
MOD-014	Do not take into account the opinion of consumers.	5
MOD-015	Switch to selective sorting	-5
MOD-016	Maximum use of natural resources to boost productivity.	5
MOD-017	Use of harmful products without post-consumer waste management.	5
MOD-018	Installation of chemical recycling infrastructure. Check its compliance.	-5
MOD-019	Installation of an organic recycling infrastructure.	-2
MOD-020	No promotion of the circular economy.	5

Agriculture Machine

Fertilizers & Good Practices

You must find the **correspondence between eggs and farm** profiles.

Please ask the technician for description of the soils in the eggs to define which types of fertilizer is used.

Combinations of fertilizers are possible!

Description.
Anthropized soil: very packed soil, potential presence of heavy metals and construction debris, low water infiltration. Distinguishable by **small green particle** in the soil. **Dangerous !**
Poor soil: little organic matter, little biological activity, requires large fertilizers. Distinguishable by **small blue particles** in the soil. **Dangerous !**
Rich soil: brown soil, lots of organic matter, high activity of micro-organisms, good nitrogen/carbon balance

List of things that can be improved in a farm :

● No short circuits & local agricultural projects.
● No presence of agroecology infrastructures.
● Distance between fields and dwellings lesser than 20 metres.
● Stubble burning on crop land.
● More than 30% of food for cattle is imported from countries outside UE.
● No use of good farming techniques: Permaculture, agroforestry, etc.
● No respect of natural harvest period

3 bad points are enough to consider a farm profile as defective.

Harvest period in *normal** conditions

Name	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Carrots	X	X	X	X	X	X	X	X	X	X	X	X
Mandarins	X	X									X	X
Strawberries						X	X	X				
Endives	X	X	X	X								X
Potatoes	X	X	X	X	X	X	X	X	X	X	X	X
Beans						X	X	X	X	X		
Coliflowers	X	X	X						X	X	X	X
Tomatoes						X	X	X	X	X		
Apples	X	X	X			X	X	X	X	X	X	x

*In case of no human intervention

Energy Production machine
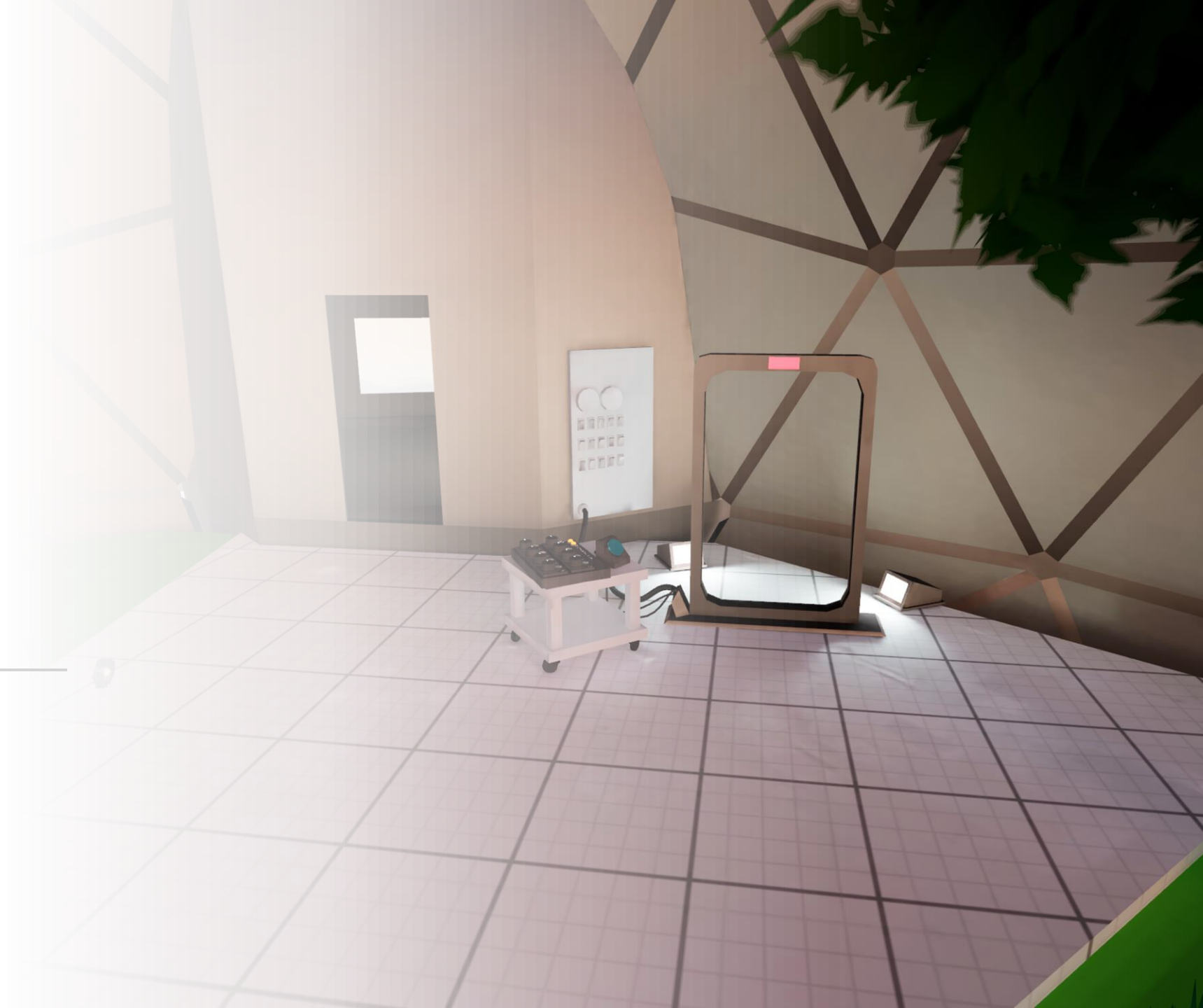
Production means

Potentiometers represent production means and help you choose how much energy you want to produce using each tool.

Find the balance **to match the production requirements** without **exceeding the emission** threshold

The territories do not all have the same means of production!

Symbols	Prod. mean	Emissions (kgCO2e/kWh) (FRANCE)	Emissions Multiplicator (kgCO2e/kWh)
	Nuclear	0.006	1
	~~Propane/butane~~	0,2715	45.25
	Wind Turbine	~0.015	2.5
	Geothermal energy	0,045	7.5
	Photovoltaic	0.0439	7.3
	Biogas	0,0163	2.7
	Natural Gas	0,243	40.5
	Hydro electricity	0.006	1
	Oil extraction	0,73	122
	Coal power plant	1,06	177
	Wood	0,013	

Production means

Potentiometers represent production means and how many of them you want to install

Find the balance **to match the demand** without exceeding **the surface available** and **the emission threshold**