



TRADITION



NATURE



NEW ENERGY

Country / City

University / School

Academic year

Title of the project

Authors

Portugal, Guimarães

University of Minho, School of Architecture

2019/2020 | 4th year

reNEWable Energy

Ana Sofia Ramos, Giulia Ursino, Sofia Carvalho



## TECHNICAL DOSSIER

|   |   |
|---|---|
| Title of the project                    | <b>reNEWable Energy</b>   |
| Authors                                 | <b>Ana Sofia Ramos, Giulia Ursino, Sofia Carvalho</b>           |
| Title of the course                     | <b>Atelier 2A- Territory</b>                                    |
| Academic year                           | <b>2019/2020   4th year</b>                                     |
| Teaching Staff                          | <b>Marta Labastida Juan, Marisa Carvalho Fernandes</b>          |
| Department/Section/Program of belonging | <b>Mestrado integrado Arquitetura.</b>                          |
|   | <b>Escola Arquitetura Universidade do Minho (MiArq-EAUM)</b>    |
| University/School                       | <b>MiArq-EAUM. University of Minho, School of Architecture.</b> |



Written statement, short description of the project in English, no more than 250 words

**The strategy is to make the most of natural resources and through infrastructures installed in the territory we intend to introduce new sustainable systems to the population so that in the future it is possible to replace fossil resources (those responsible for climate change with Co2 emissions).**

**As it is not possible to force the local population to adhere to renewable systems, we decided to act on local production (a strong characteristic of the territory), trying to bring the community closer together, and to demonstrate that it is now possible to live through natural resources. We created a pine forest on the coast line, which reduces the carbon dioxide in the atmosphere, creates a new natural public space, fixes the dunes and serves as a windshield for agricultural fields. Forest residues from the maintenance of the pine forest, and from existing forests are taken to a biomass fabric that intends to transform this material into compost. This way we would have a local organic fertilizer that aims to replace chemicals. The fabric will be supported by a set of three offshore wind farms (similar to the windfloat project in Aguçadoura, Portugal). We have also created two production areas (in which one is for the community), both self-sustainable with the use of solar panels. Community production uses sargasso (a local characteristic) and organic waste from the city as fertilizers.**

**These systems will create sustainable organic production that in the future intends to expand, according to the population's adherence to natural resources.**

For further information

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# CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

Barcelona

September 2020

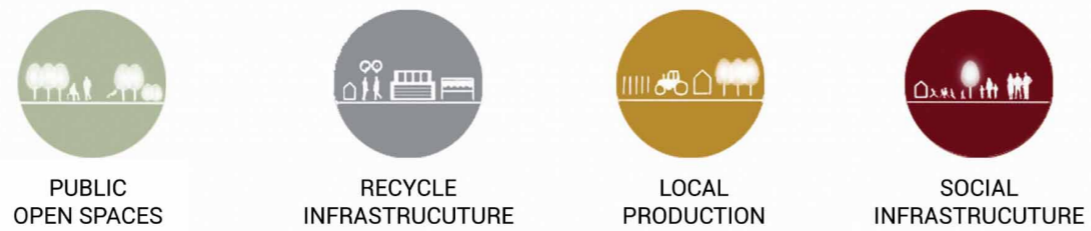
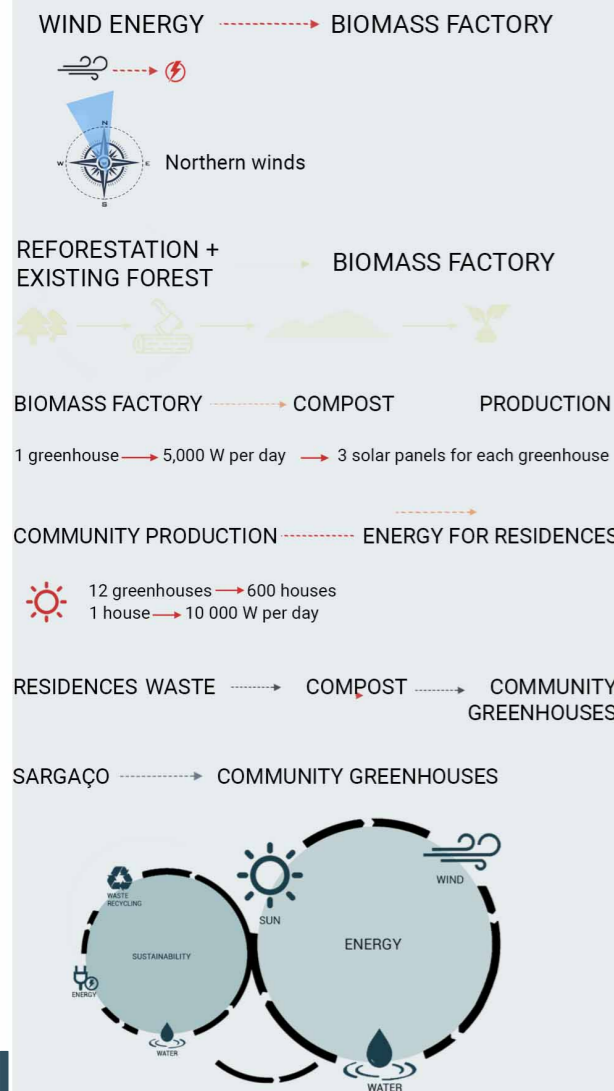
SCHOOL PRIZE



Photo of the site - dunes



Photo of the site - production area

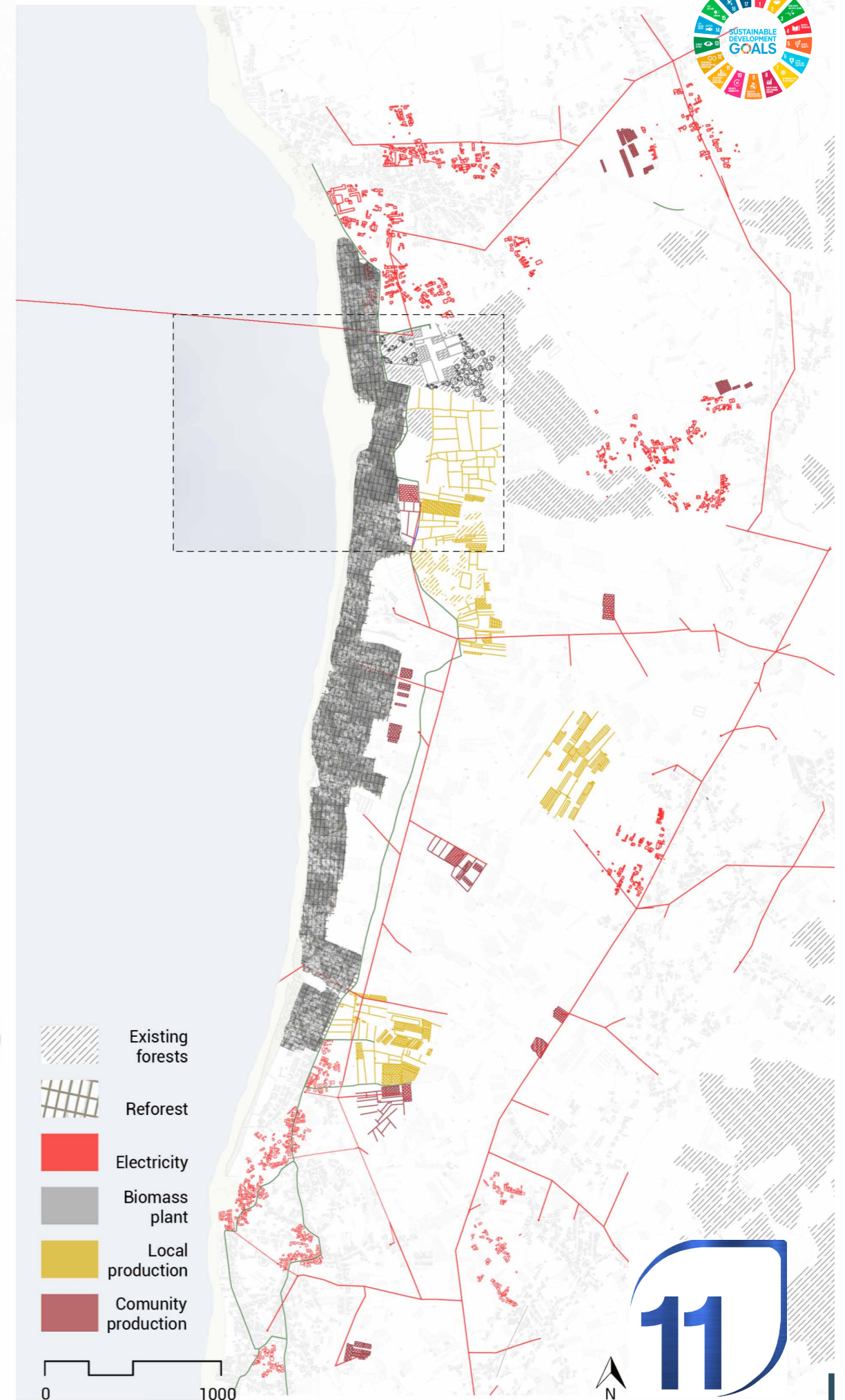
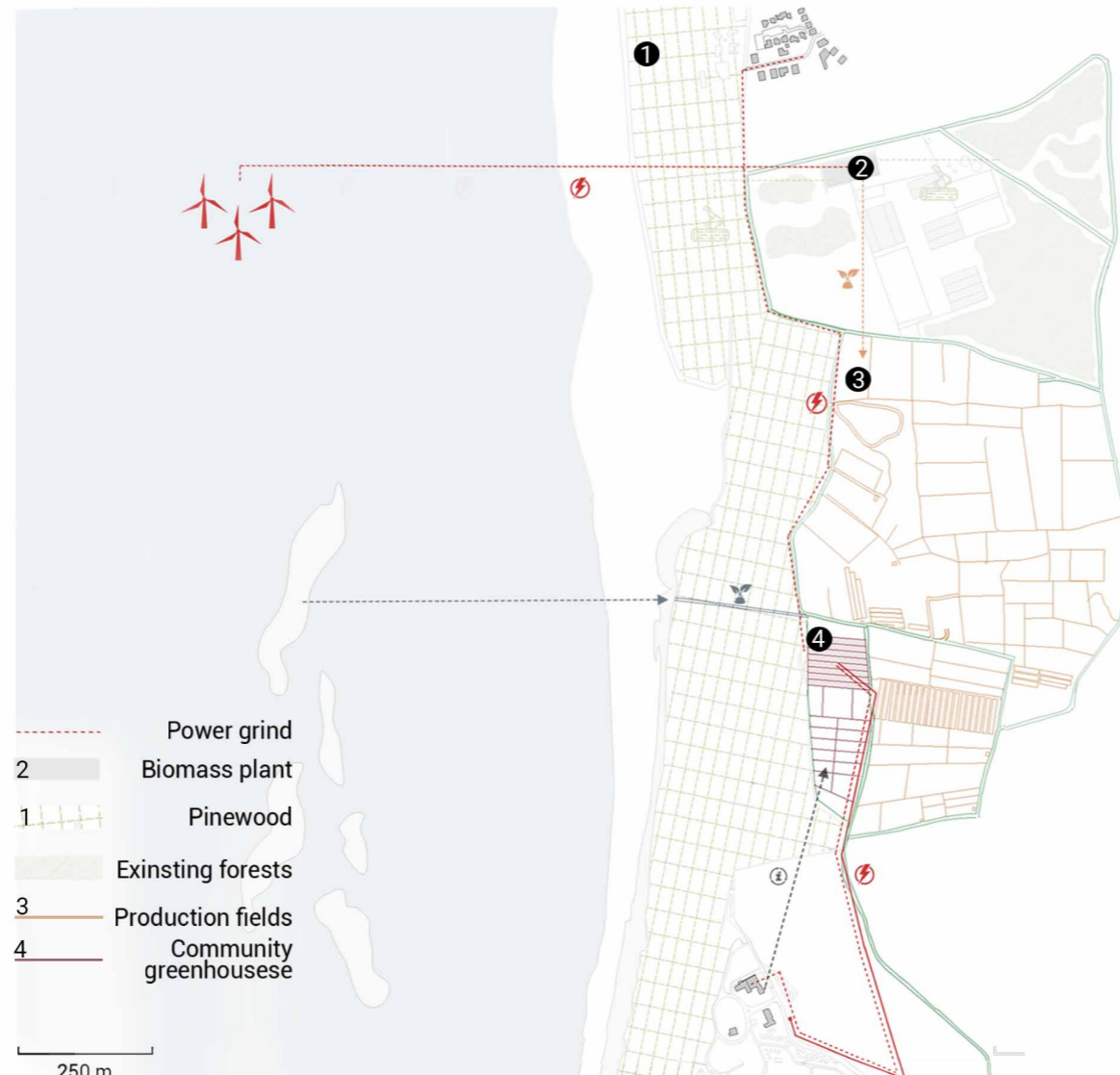


Strategy

The territory being studied is located in the north of Portugal, between Apúlia and Aguçadoura. It is a place characterized by agriculture, its proximity to the sea, and its associated activities such as fishing and catching seaweed (Apanha do Sargaço).

The intervention strategy is to make the most of natural resources and through new infrastructures to make the territory sustainable.

As it is not possible to intervene directly on the population, the idea is to create sustainable production as a means of approach (this being a strong feature of the place). This space will be a way for the population to get to know the new renewable systems, evaluate their effectiveness and then use them in their daily lives.



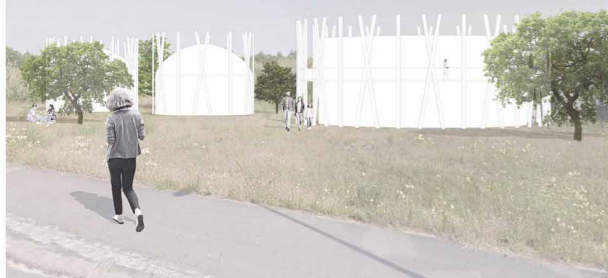
The first step was the creation of a pine forest, planted in an area of dunes and on a current golf course. This reforestation has a total of 108 hectares, which serves as a new public space, a new ecosystem and as a windshield for agricultural fields. It is a slow process, with the pine taking approximately 40 years to reach its maximum height (25/30 meters). The maintenance of the pine forest serves for it to grow healthy, where the forest residues that will be used in a Biomass Plant arise from. (Section 1)

108 HA = 135,000 trees in total  
 1 tree = 15.6 Kg of CO2  
 108HA = 2106 tons of CO2 per year



Photomontage: Pine forest - windshield / new ecosystem / public space.

The creation of a biomass factory serves to transform forest waste from existing forests (as well as, in the future, from the reforested area) into organic compost, which will be used in the production area. (section 2). The use of organic compost is of great importance, since it regenerates a large part of CO2 emissions. The biomass plant is self-sustainable, operated with



Photomontage - Biomass factory



Photomontage - Production field

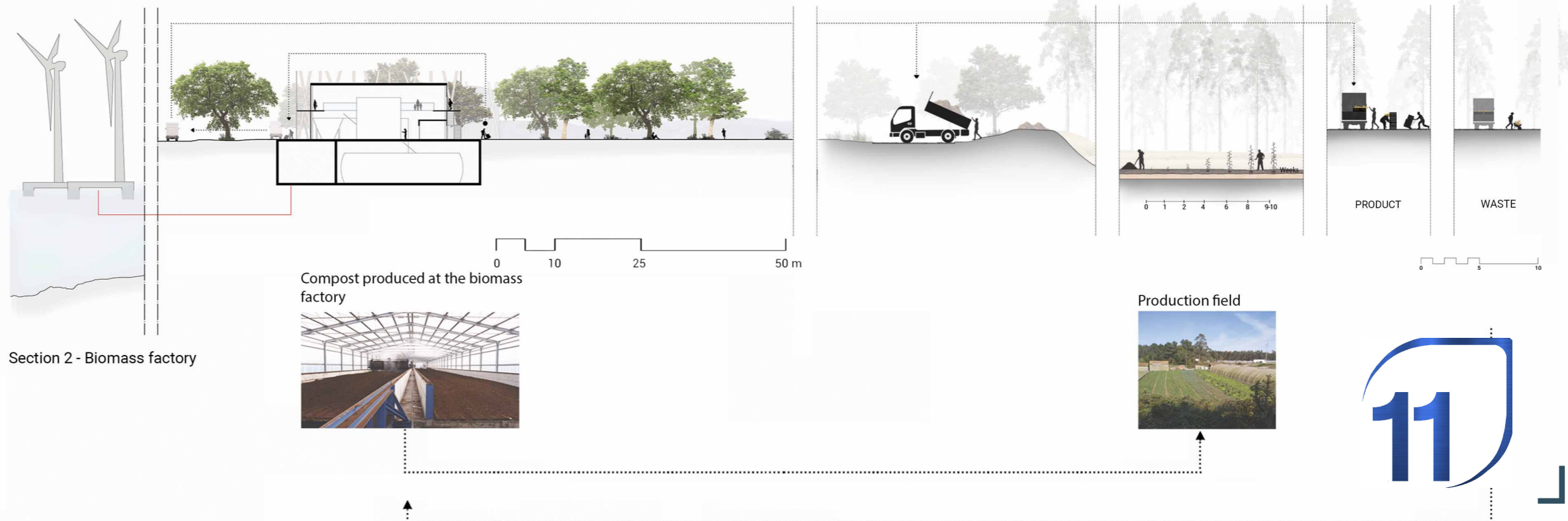
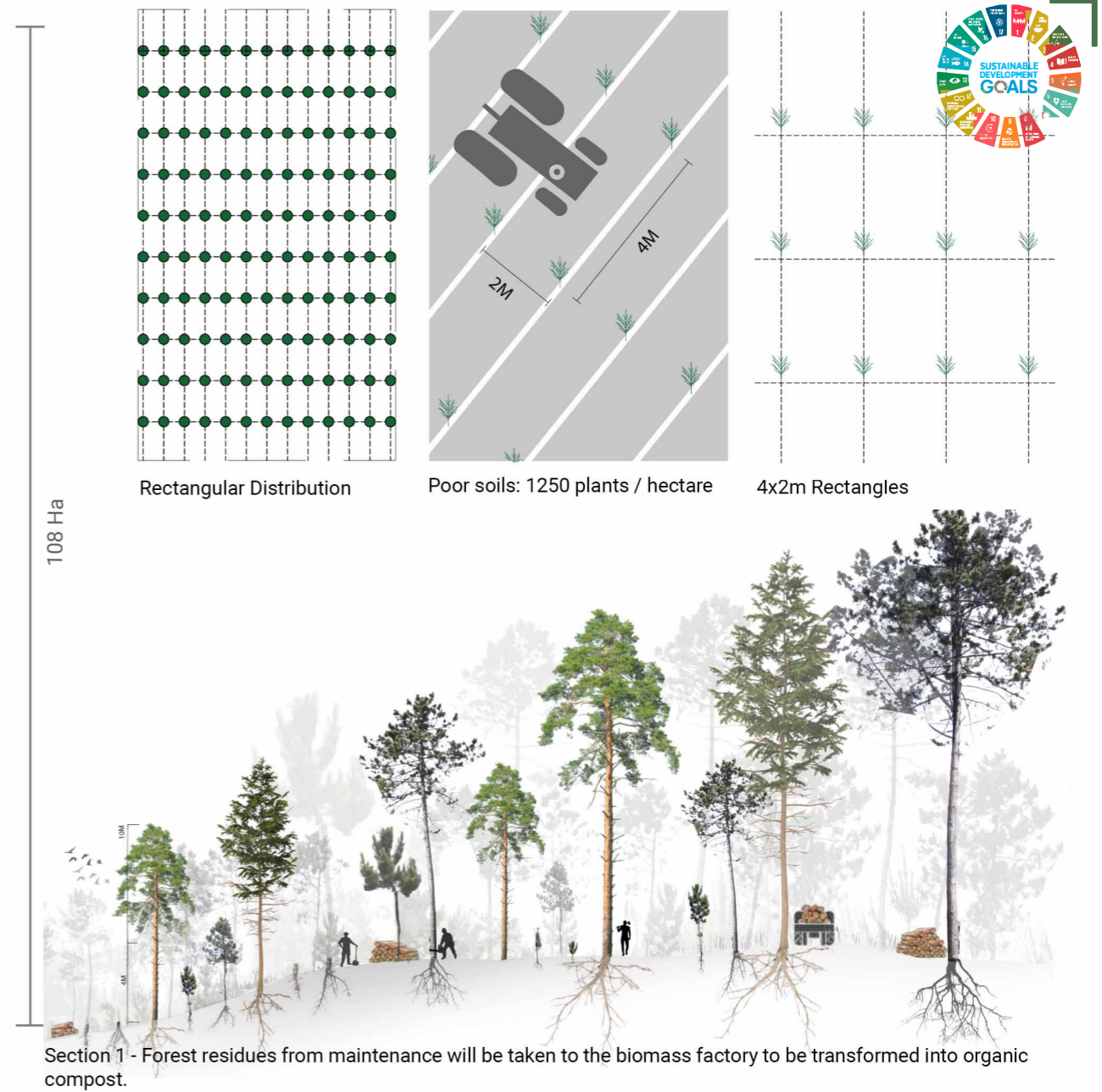


Dunes

Golf course

Dunes

Reforested area





Greenhouses and community production spaces serve mainly to bring the population closer to an increasingly sustainable space. Through the creation of solar panels installed in greenhouses, the energy collected will be used as a source of electrical energy for the city of Apulia. (Section 3)

AN 11X110M STOVE HAS 210 SOLAR PANELS.

EVERY GREENHOUSE NEEDS 3 SOLAR PANELS TO BE SELF-SUSTAINABLE

EACH GREENHOUSE CONSUMES PER DAY  $\approx$  5000W

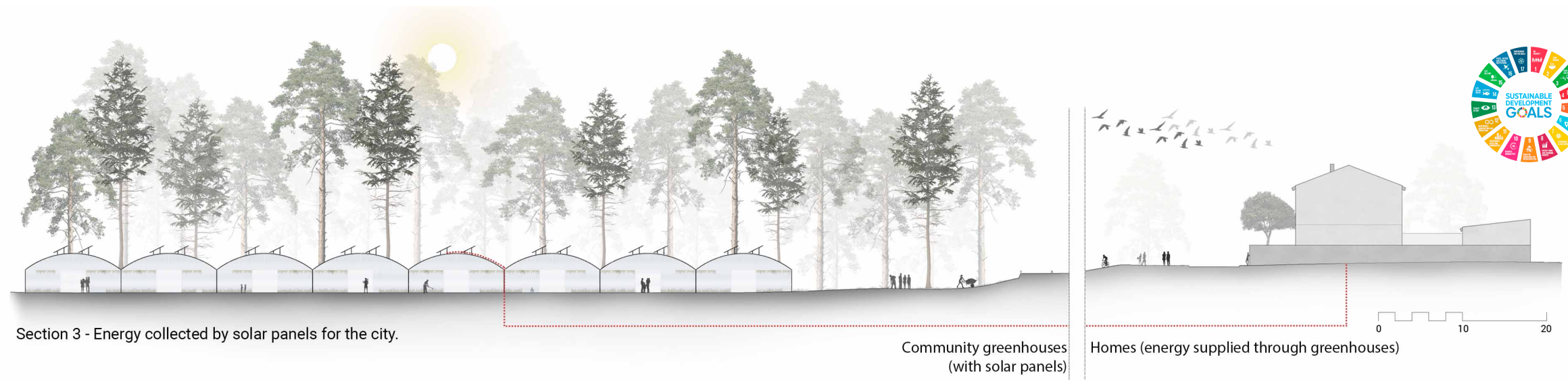
AN 11 X 110M GREENHOUSE HAS TOTAL CAPACITY FOR, IN THE FUTURE TO SUSTAIN 828.

AN 11 X 51 M GREENHOUSE HAS TOTAL CAPACITY TO SUSTAIN 600 HOUSES IN THE FUTURE.

**X 12**  
CAPABLE OF SUSTAINING 414 HOUSES (ELECTRICITY)

10 000 W / DAY

1715W / DAY (  $\approx$ 7H)



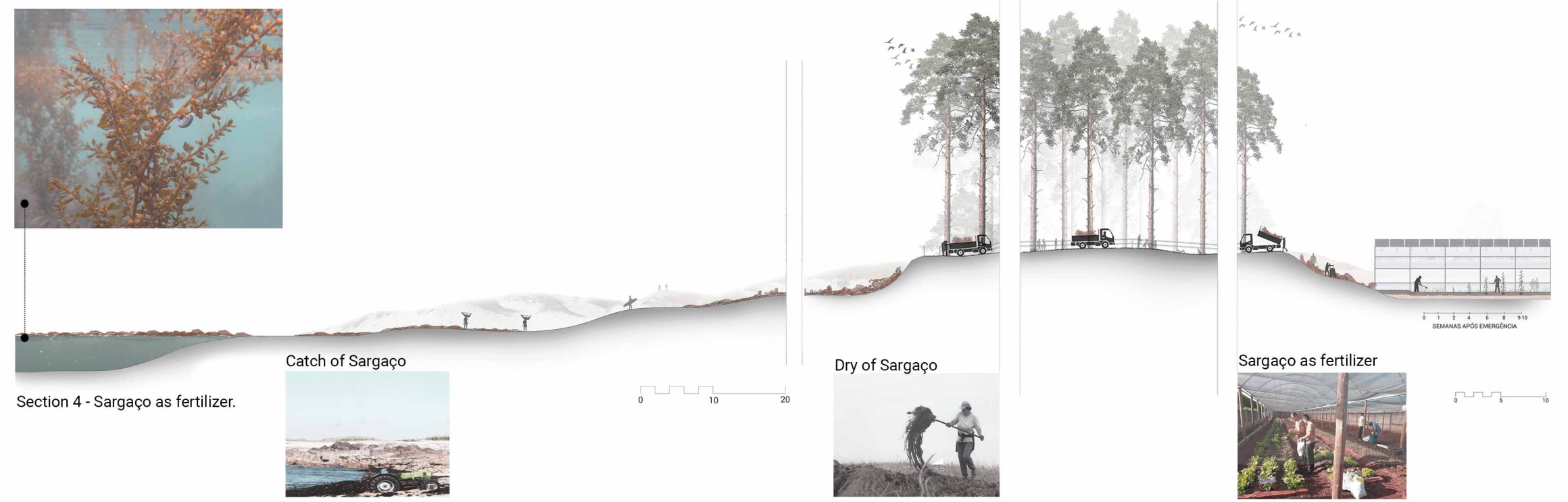
Section 3 - Energy collected by solar panels for the city.

Community greenhouses (with solar panels)

Homes (energy supplied through greenhouses)

“Apanha do Sargaço” is a historical activity for the people of Apúlia, characterized by its harvesting, drying, where it is then taken to the fields. In this way, community production will use the sargaço itself as fertilizer for their agricultural fields. This route is also characterized by the passage through the pine forest, a public space that allows people to observe this whole process. (Section 4)

Like sargaço, organic waste generated in the pine forest (a social space) and in the city will also be used as compost in the fields of community production. They will function as community waste for the community. (Section 5)

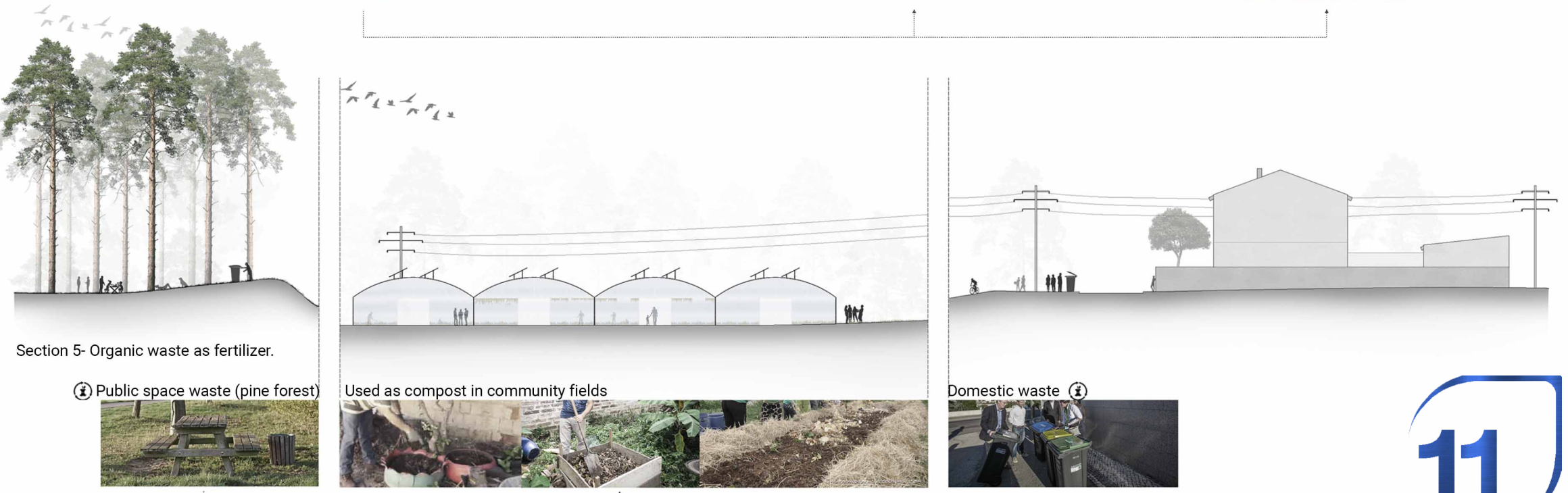


Section 4 - Sargaço as fertilizer.

Catch of Sargaço

Dry of Sargaço

Sargaço as fertilizer



Section 5 - Organic waste as fertilizer.

Public space waste (pine forest)

Used as compost in community fields

Domestic waste



Photomontage - View from the Pine forest to the "Apanha do Sargaço"



Photomontage - Community Production