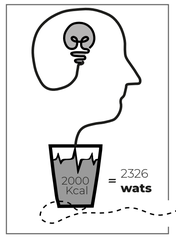
CROPERGY
ESSENTIAL SOURCE OF LIFE

Photosynthesis is a metabolic process that enables plants to synthesize its own **food** out of **CO2**, **water** and **sunlight** as the **primary energy source.** *What if this concept if applied to urban spaces in the form of a modular canopy garden half-way nature and technology?*

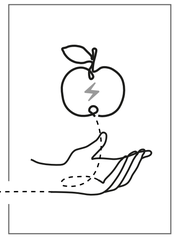
CROPERGY combines three systems to harvest energy from the same natural sources used by plants:
The **sun,** through **Organic Photovoltaic Panels OPVs**; **water** and **CO2,** through **PBR systems** *(Photo Bioreactor)*; and **soil**, through **PMF-C systems** *(Microbial Fuel Cells)*. This hybridization re-formulates the notion of human energy production to include **food** in addition to **electricity**. Thus, **CROPERGY** is designed to produce **power** available in **KWh**, and **food** in **kcal** for direct human consumption.

The **basic petal module** of the canopy garden proposed multiplies the crop production area by allowing plant to grow on the ground and also hanging. The design resembles the petal of edible flower **Hemera Kallos**, which is planted locally and will be exhibited during the **BUGA 23.** Single petal modules can function as discrete pieces of urban furniture or **pergolas** and **greenhouses** when assembled to fit specific site and function requirements. **CROPERGY** will meet the **energy demand** of **42%** of the new inhabitants in the study area, and bring new insights into the link between **water, plants, and power generation** for the **cities of tomorrow.**

30%
Of the global energy generated annually is used for agricultural production.



On average, a human being needs **2000 kcal** to survive on a daily basis.

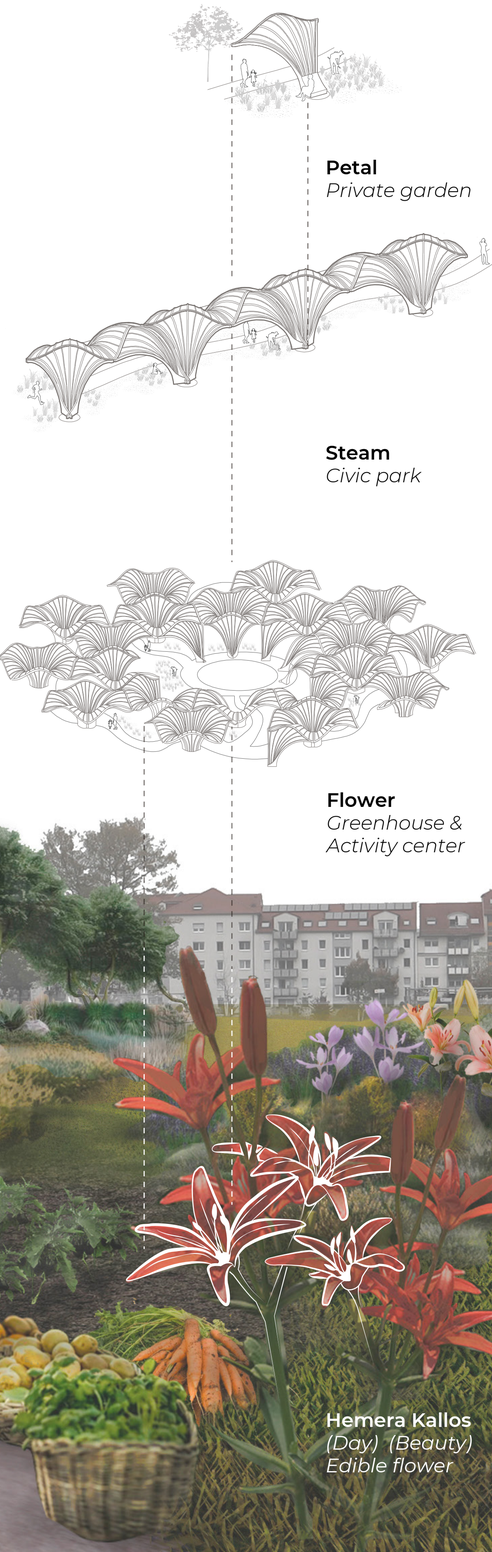


25%
Of the energy used by a human comes from plant sources.

Greenhouse cultivation
80% higher efficiency compared to traditional crops

Double cropping system
Higher productivity, twice the performance.

Aeroponic system
95% increased efficiency compared to traditional irrigation systems, greater water savings.



Petal
Private garden

Steam
Civic park

Flower
Greenhouse & Activity center

Hemera Kallos
(Day) (Beauty)
Edible flower