



LAMB TO THE SLAUGHTER

De-carbonizing the Meat Manufacturing Industry



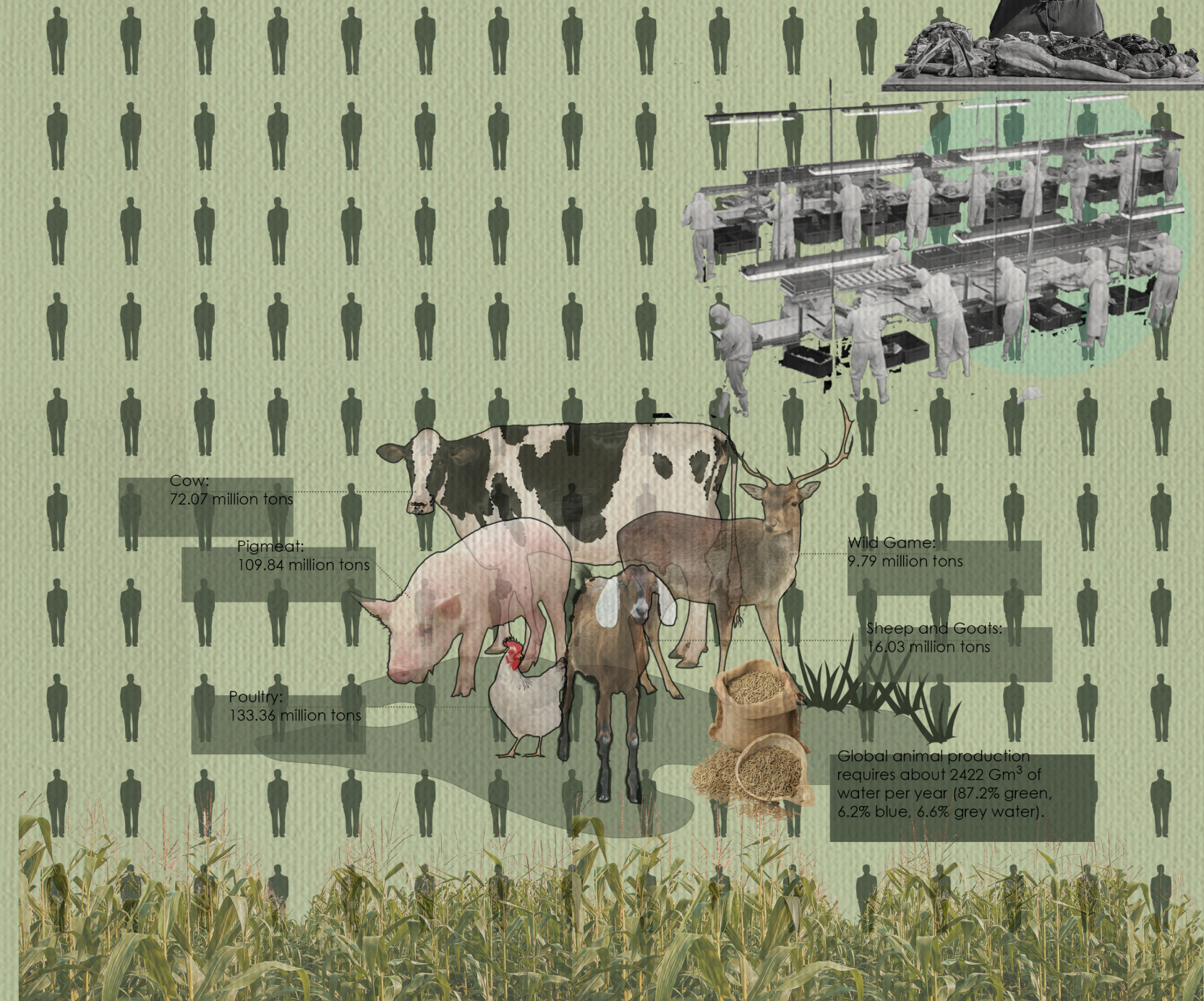
The global population, 7.3 billion today, is expected to surpass 9 billion by 2050. The Food and Agriculture Organization (FAO) has forecast that in 2050, 70% more food will be needed to fulfill the demand of the growing population.



The current land usage for agriculture needed for animal feed is 5 billion hectares, which is approximately 5 times the land area of USA. This land requirement is projected to increase by 25% by the year 2050, putting a great strain on land availability, and forestry.

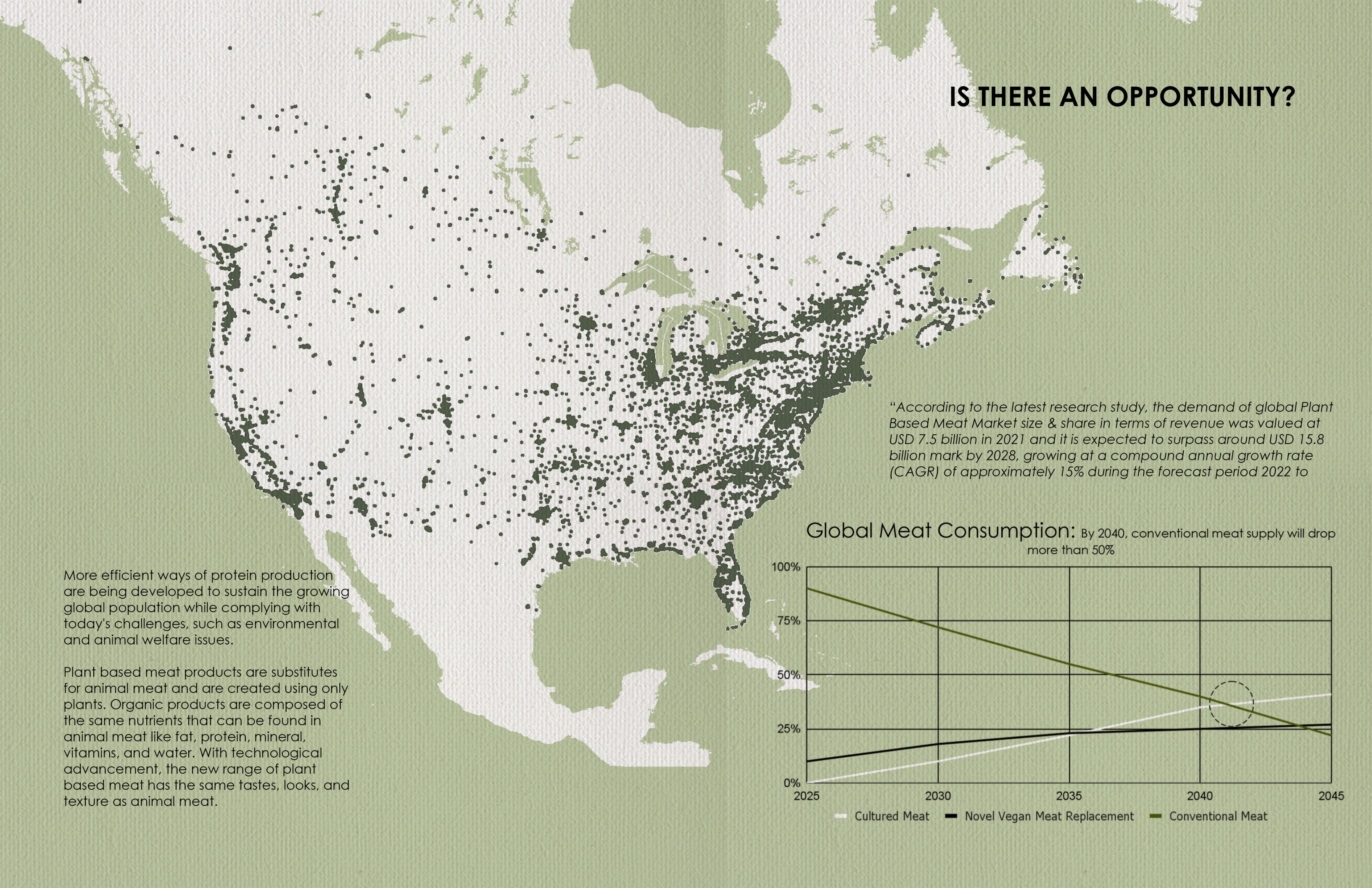


The meat production presently is approximately 300 million tonnes and annual meat production will need to rise by over 200 million tonnes to reach 470 million tonnes by 2050 to meet global food needs.



Livestock systems will contribute to addressing the issue of global food and nutrition security in the world. Animal farming must produce larger quantities of high quality and affordable meat, milk, and eggs, through production systems that are environmentally sound, socially responsible, and economically viable.

IS THERE AN OPPORTUNITY?

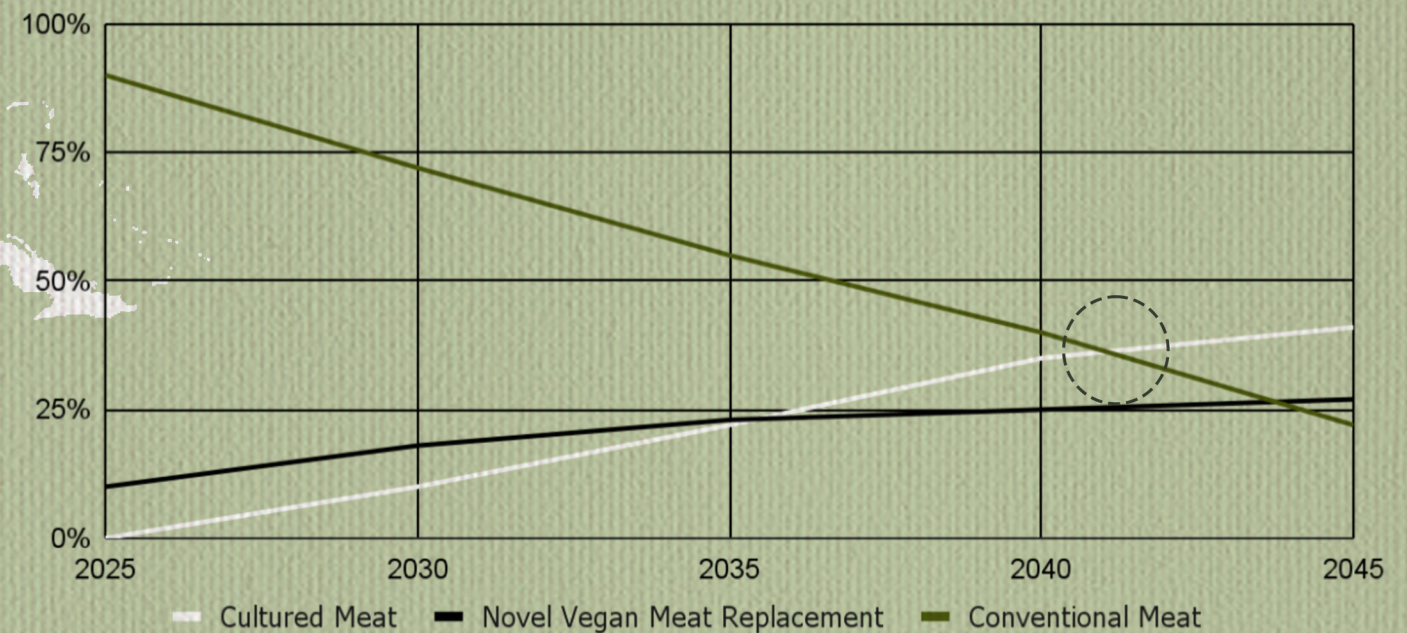


“According to the latest research study, the demand of global Plant Based Meat Market size & share in terms of revenue was valued at USD 7.5 billion in 2021 and it is expected to surpass around USD 15.8 billion mark by 2028, growing at a compound annual growth rate (CAGR) of approximately 15% during the forecast period 2022 to

More efficient ways of protein production are being developed to sustain the growing global population while complying with today's challenges, such as environmental and animal welfare issues.

Plant based meat products are substitutes for animal meat and are created using only plants. Organic products are composed of the same nutrients that can be found in animal meat like fat, protein, mineral, vitamins, and water. With technological advancement, the new range of plant based meat has the same tastes, looks, and texture as animal meat.

Global Meat Consumption: By 2040, conventional meat supply will drop more than 50%

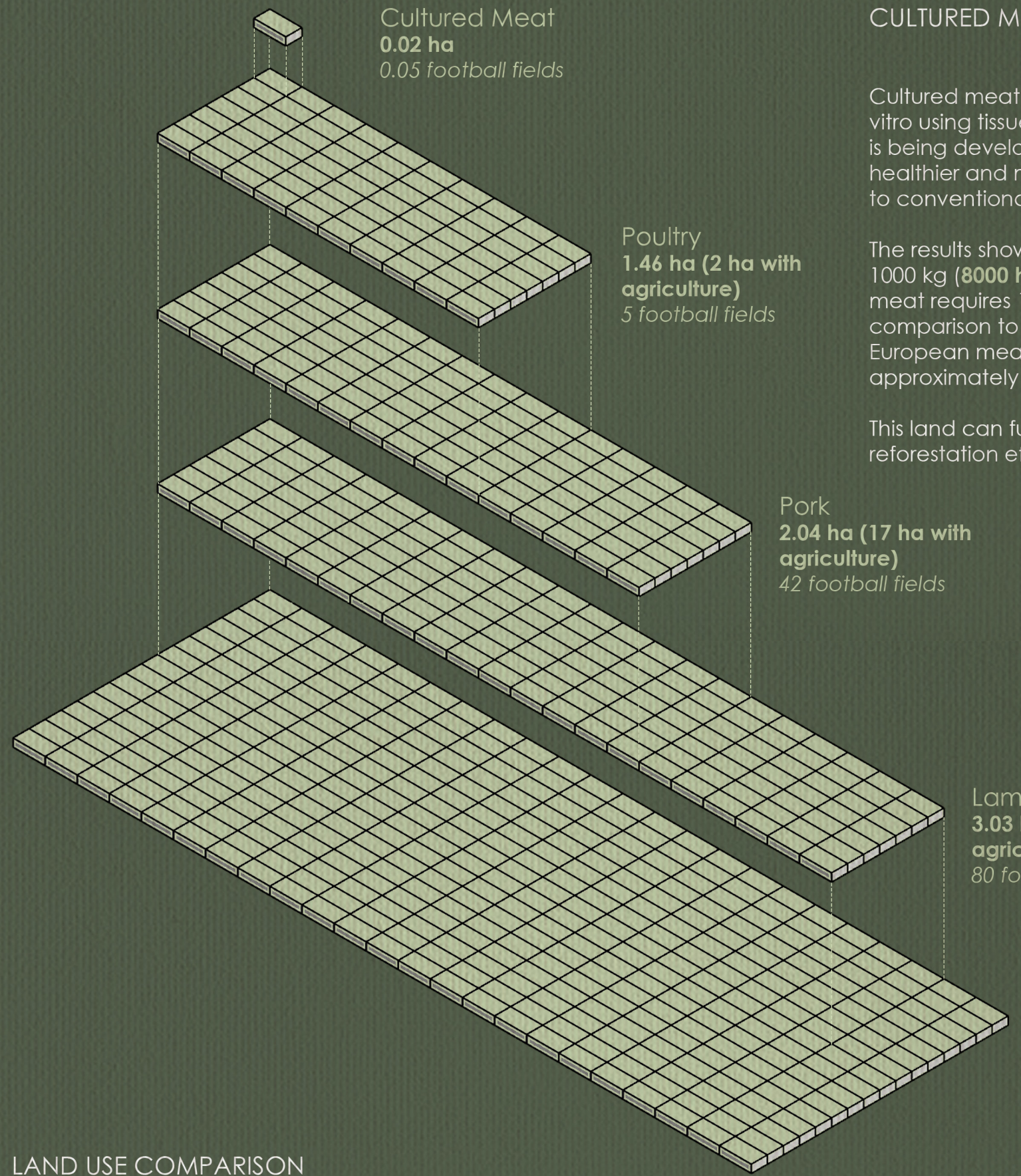




Cattle quarantined in fenced blocks take over acres of land in feed-lots, converting forested and arable land into vast muddy terrain



The Meatpacking Industry removes groundcover to replace it with infrastructure that environmentally degrades the land. Not only does it remove forest cover- it needs large amounts of land.



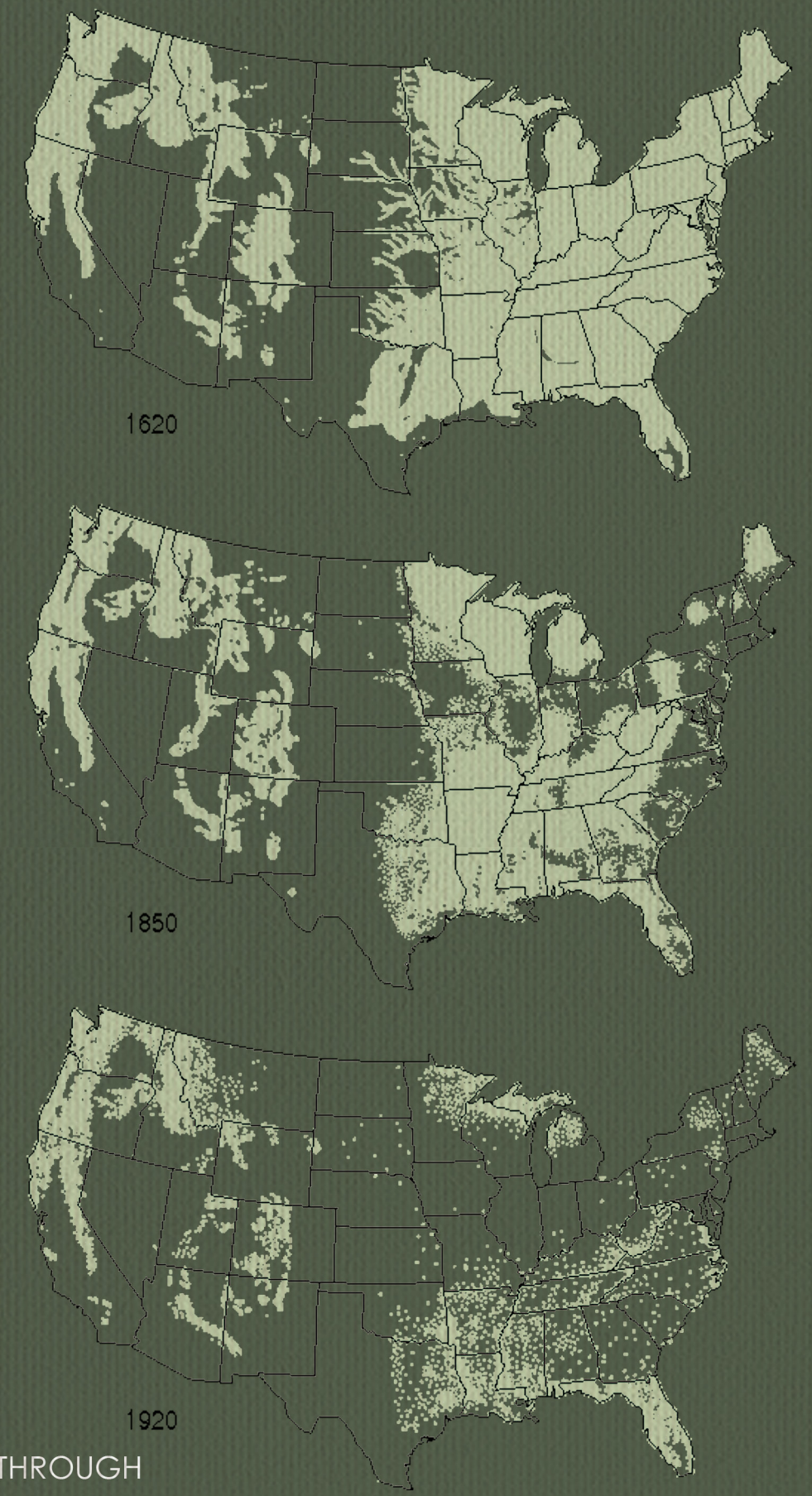
LAND USE COMPARISON

CULTURED MEAT

Cultured meat (i.e., meat produced in vitro using tissue engineering techniques) is being developed as a potentially healthier and more efficient alternative to conventional meat.

The results showed that production of 1000 kg (8000 hamburgers) cultured meat requires 190–230 m² land. In comparison to conventionally produced European meat, cultured meat involves approximately 99% lower land use.

This land can further be used to aid reforestation efforts in the country.



DEFORESTATION THROUGH THE YEARS

THE MEAT INDUSTRY IS CARBON INTENSIVE



1000 kg beef
produced emits
60,000 kg CO²



1000 kg pork
produced emits
7,000 kg CO²



1000 kg lamb
produced emits
20,000 kg CO²



1000 kg lamb
produced emits
6,000 kg CO²



1000 kg CM
produced emits
1,900 kg CO²

Production of 1000 kg cultured meat requires 26–33 GJ energy, 367–521 m³ water, and emits 1900–2240 kg CO₂-eq GHG emissions. In comparison to conventionally produced European meat, cultured meat involves approximately 7–45% lower energy use (only poultry has lower energy use), 78–96% lower

WHAT ARE CARBON CREDITS?

Factories and industries are given a specific carbon credit (an allowable amount of emissions)



The industry can reduce their emissions through various techniques.



The excess carbon credits thus left unused can be sold to other companies with greater need for the same.



The industry can thus gain more credits to trade - reduce emissions, and also make profits that can be further used to benefit the industrial process.

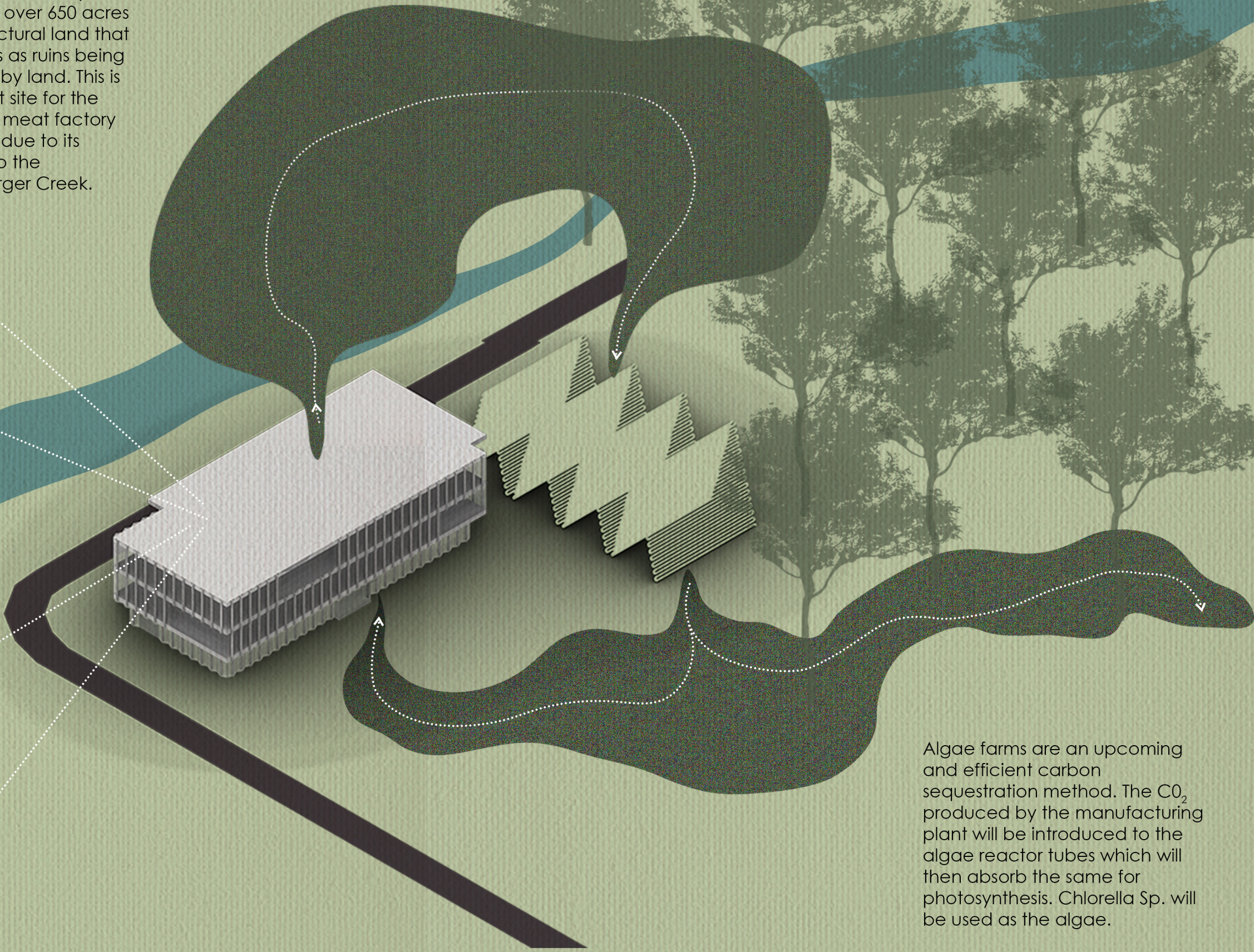
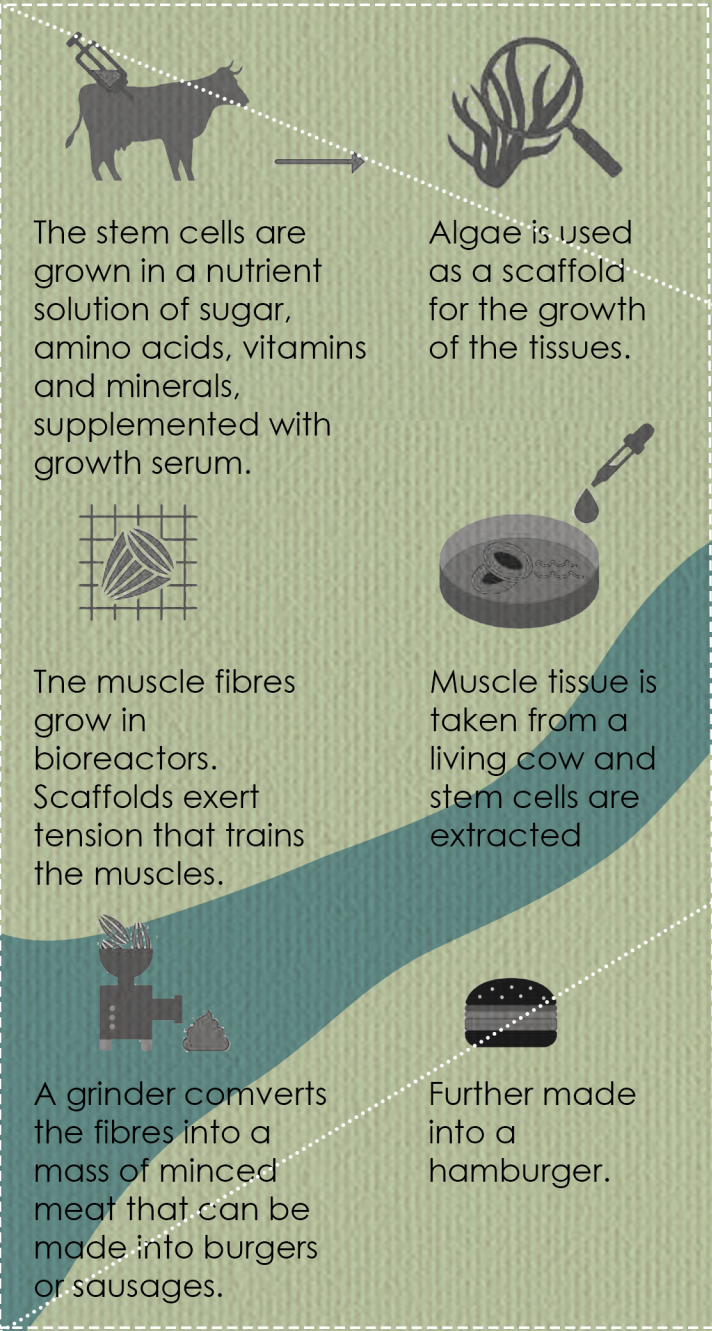


Forest act as natural carbon sinks, thus can be invested in to reduce carbon emitted into the air.





The Armour Meatpacking Factory, located in St. Louis, Illinois is an old and abandoned meatpacking plant. Part of the larger National City Stockyard landmass, the stockyard expanded over 650 acres of infrastructural land that still remains as ruins being reclaimed by land. This is the perfect site for the Cultivated meat factory proposed, due to its proximity to the Schoenberger Creek.



Algae farms are an upcoming and efficient carbon sequestration method. The CO₂ produced by the manufacturing plant will be introduced to the algae reactor tubes which will then absorb the same for photosynthesis. Chlorella Sp. will be used as the algae.

ALGAE CARBON SEQUESTRATION



81 tons	81 tons	81 tons
81 tons	81 tons	81 tons
81 tons	81 tons	81 tons
81 tons	81 tons	81 tons

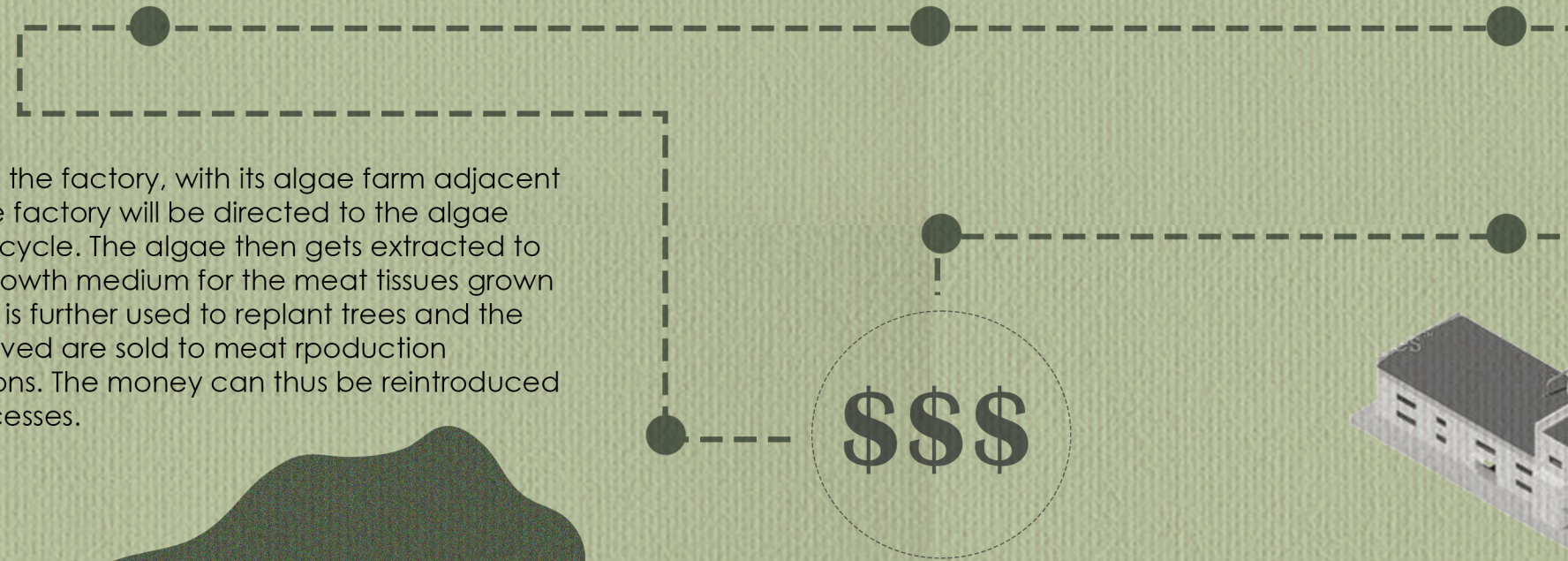
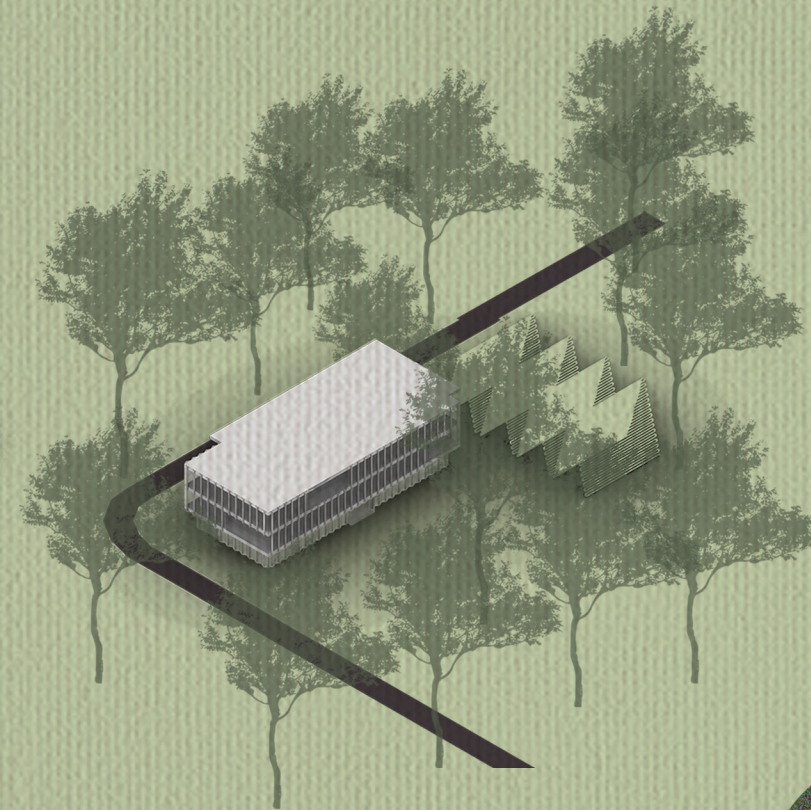
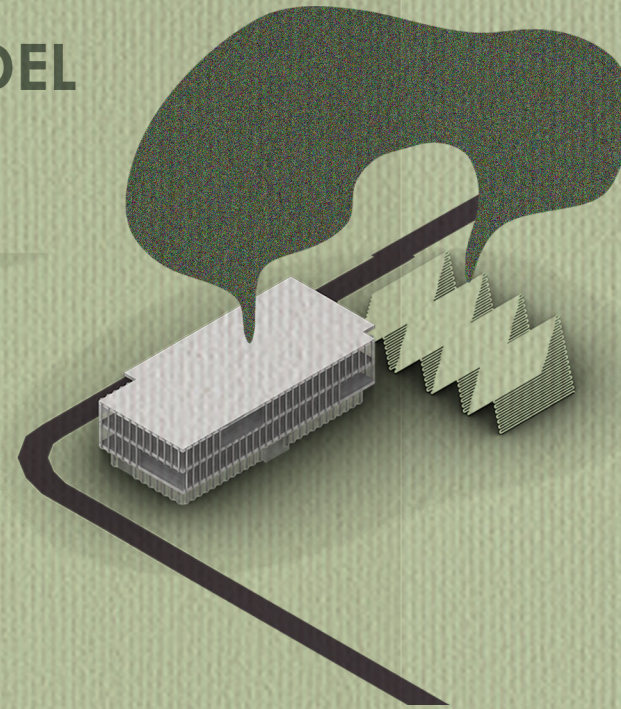
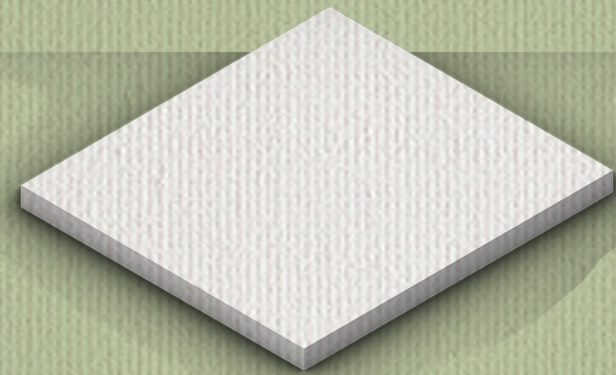
1 acre of algae can absorb 2.7 tons of CO₂ per day, which is equivalent to 972 tons per year. An average cultivated meat manufacturing plant produces 2 tons of CO₂ equivalent GHG emissions for each 1000kg meat produced. So an algae farm is a convenient carbon sequestration method for countering the byproduct GHG's from the factory.



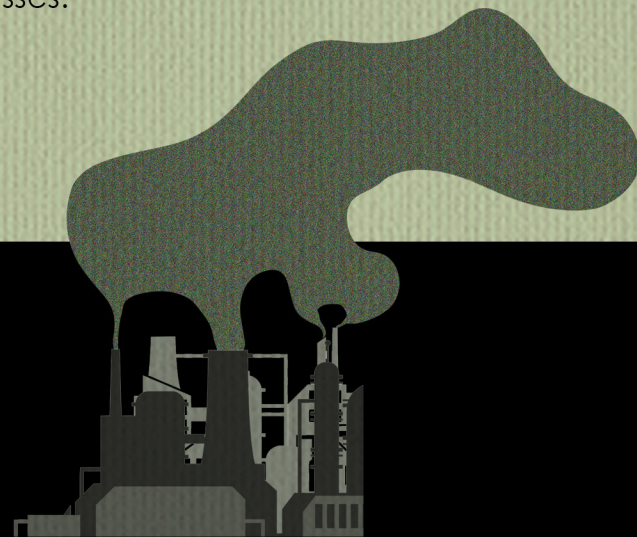
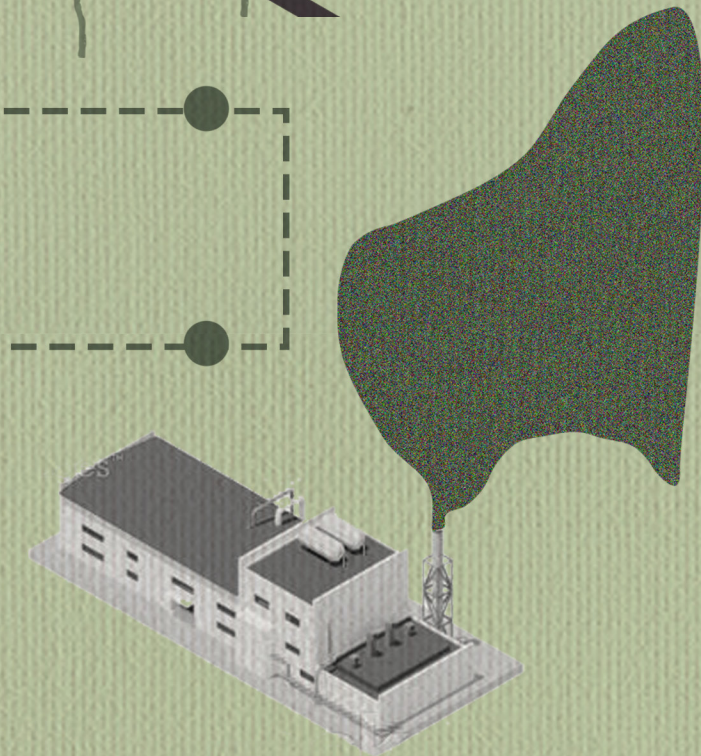
The Algae can then be reintroduced to the reforestation initiative as well as the meat production process.

In recent years, carbon dioxide (CO₂) has been steadily attracting attention as a valuable source of carbon. The rising concentration of CO₂ in the atmosphere is a major and growing concern. Algae are photoautotrophic organisms, which means that they use CO₂ as a source of carbon and then convert this into sugars by means of photosynthesis. The micro-algae that we cultivate contain a particularly large amount of interesting substances: proteins, sugars and fats being the main groups. In addition, the micro-algae also make high-value chemicals such as pigments and antioxidants.

THE CULTIVATED MEAT CARBON MODEL



The land will be used to place the factory, with its algae farm adjacent to it. The CO² emitted from the factory will be directed to the algae plant that will utilize it in its life cycle. The algae then gets extracted to be used as scaffolding and growth medium for the meat tissues grown in the lab. The remaining land is further used to replant trees and the unused carbon credits thus saved are sold to meat production companies with higher emissions. The money can thus be reintroduced into the model for further processes.



Tackle pollution and GHG Emissions



Save the animals from slaughter



Aid reforestation

