OPPORTUNITY #40

WHAT IF FOOD IS PRODUCED AS NEEDED ANYWHERE IN THE WORLD?

ON-DEMAND FOOD

Food is produced on an as-needed basis anywhere in the world, freed from the constraints of land, light, energy and water

WHY IT MATTERS TODAY

Food is a basic need in human life, but food systems today are under stress.

More than 720 million people, or around 10% of the world population, faced hunger in 2020 according to UN figures.[400] Food price spikes, shortages, hunger and famine are caused by climate change-related catastrophes, environmental degradation, supply chain disruption and governance failings.

One driver of hunger is volatile food prices. In real, inflation-adjusted terms, prices in October 2021 surpassed those of 2011 and could soon match the highest levels as recorded in the mid-1970s.[401]

Even before COVID-19, UN agencies estimated that over 55 million people among the Middle East and North Africa (MENA) population of then 457 million were undernourished. Half of MENA's food is imported and the share rises to 90% in some Gulf Cooperation Council countries.[402] Half of the population of MENA already live under conditions of water stress and with the population expected to grow to nearly 700 million in 2050, per capita water availability will be halved.[403]

Meanwhile, the composition of the food market is changing, with key sectors consuming less meat. While growth in food imports to East Asia, one of the dominant import destinations globally, continues, its composition is also changing. Absolute growth in meat imports to the region in 2021 could amount to an increase of only $4 billion in 2021, compared with a surge of $15 billion in 2020.[404]

SECTORS

AGRICULTURE & FOOD · ADVANCED MATERIALS & BIOTECHNOLOGY · CONSUMER GOODS · HEALTH & HEALTHCARE · INFORMATION & COMMUNICATION TECHNOLOGY

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THE OPPORTUNITY TOMORROW

Laboratory-grown food and other advances offer solutions to one of the 21st century's most urgent global challenges.

Using mobile biofoundries that can travel to where food is needed and produce it on demand, lab-grown food has the potential to reduce the risk of famine and enhance childhood nutrition in developing countries. It can also reduce impacts on the environment, including using less water than needed to produce conventional food, as well as supporting economic growth by reducing reliance on food imports.

BENEFITS

Lab-grown food does not require agricultural land or feed inputs, but can still provide high-quality protein. Such a system could reduce greenhouse gas emissions from cattle farming and remove antibiotics from the food supply. It also requires significantly less water than traditional farming practices because it operates like a biological factory, recycling nutrients instead of relying on external sources such as rainfall or irrigation.

RISKS

The process creates a risk of disruption, especially in rural areas, through the loss of livelihoods from conventional food value chains. Additional challenges are increased dependence on technology and ensuring balanced nutritional production. There may be increased hesitancy about consuming food produced through bio-foundries due to psychological and cultural ties, even if there are food shortages.