



Sustainability and Innovation in the Fragrance Industry Post COVID 19

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EARLY DAYS

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THE ASIAN DECADE

An aerial photograph of a city skyline during sunset. The sky is a warm, hazy orange, and the city buildings are silhouetted against the light. A prominent multi-lane highway with an overpass is visible on the right side of the image. The text "EARLY DAYS" is overlaid in white, bold, sans-serif font on the left side of the image.

EARLY DAYS

BAT MARKET IN INDONESIA



CHINA'S QUICK RECOVERY

be harder to reverse.



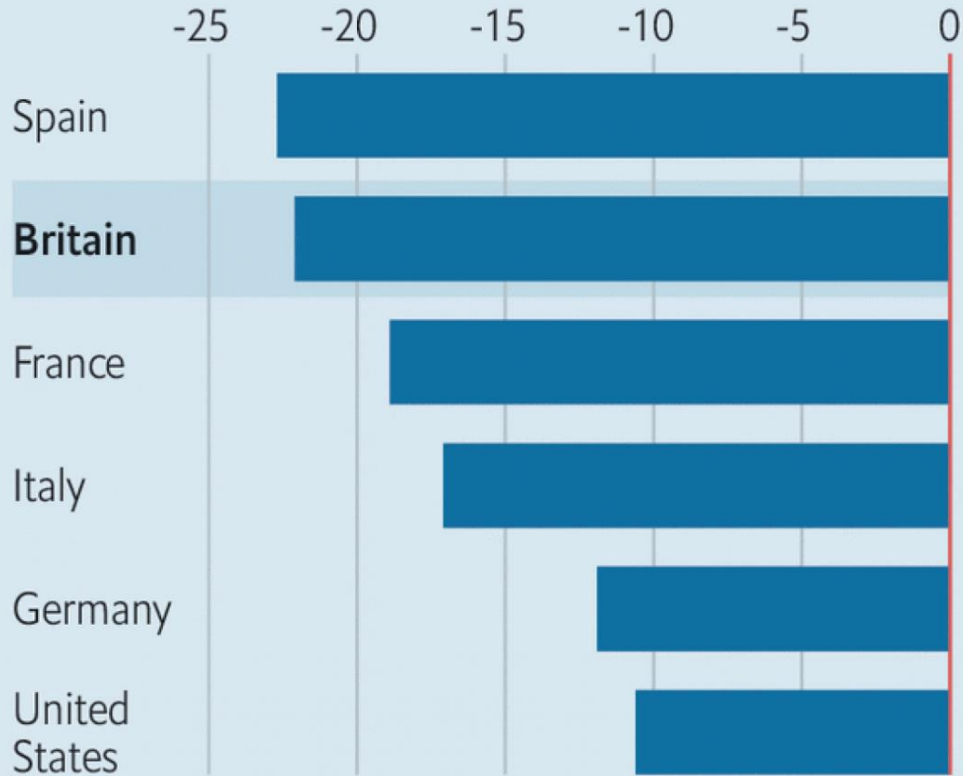
The Economist

Discretionary spending by Chinese consumers—the sort that goes on things economists do not see as essentials—is 40% off its level a year ago. Haidilao, a hotpot chain, is seeing a bit more than three parties per table per day—an improvement, but still lower than the 4.8 registered last year, according to a report by Goldman Sachs.



Heading south

GDP, Q2 2020 compared with Q4 2019, %

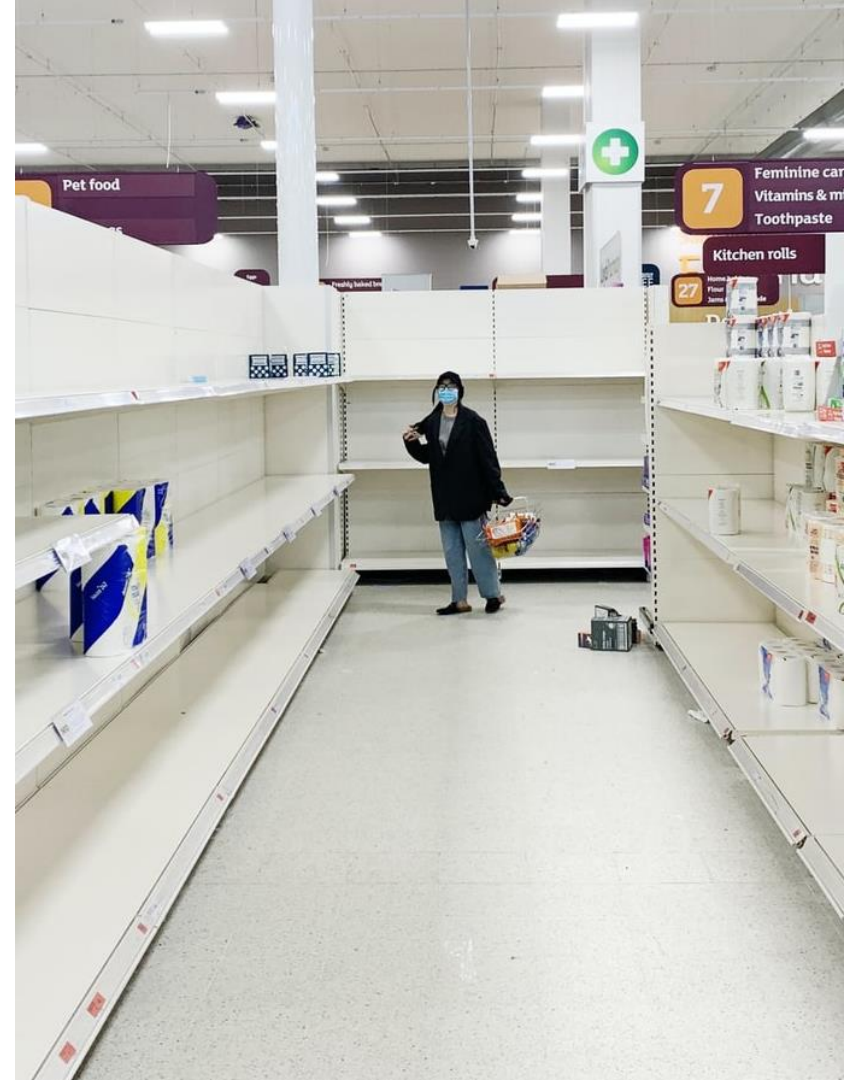


Source: ONS

Relative
Difficulty of
Western
Economies

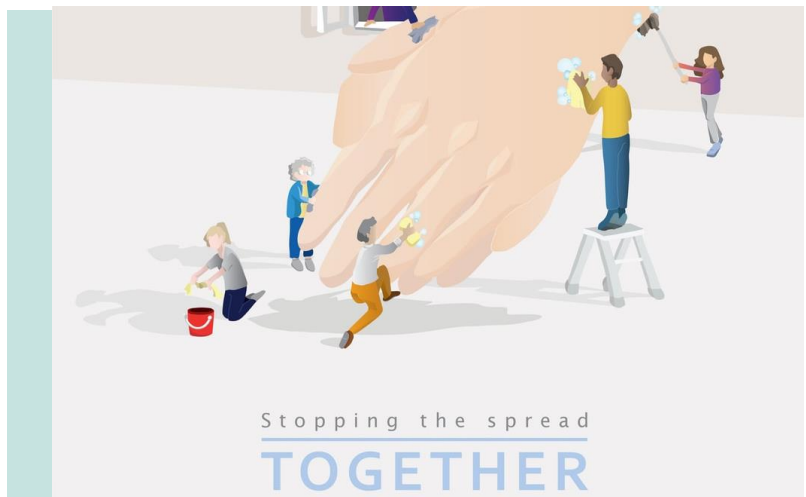
CHANGES IN CONSUMER BEHAVIOUR

- Cut back on luxury
- 300m people back to poverty
- Stockpiling necessities



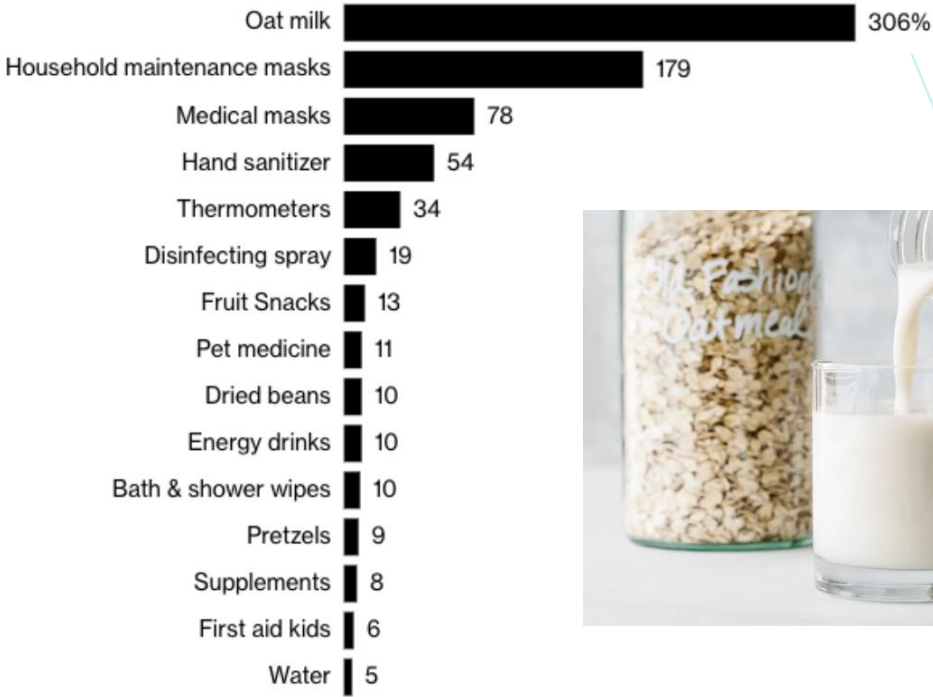
HEALTH -PHYSICAL & MENTAL

- Masks, sanitizers and distancing
- Solidarity
- Closed borders
- « your local Amazon »



Pantries of Panic

U.S. consumers are clearing the shelves amid escalating fears around coronavirus



PANTRIES OF PANIC
Huge increase in oat milk

Source: Nielsen Retail Measurement Services, from dollar sales at retail outlets surveyed over week ended Feb. 22

CONSUMPTION IS STRAINING THE PLANET

TODAY: Three sources for everything we use



MINING & EXTRACTION

Limited Quantities
Increasing cost



PLANTS

Limited Land, Water
Impact of Pesticides



ANIMALS

Resource Intensive
Impact to the environment

Current Resources Are Unable To Support Growing Demand

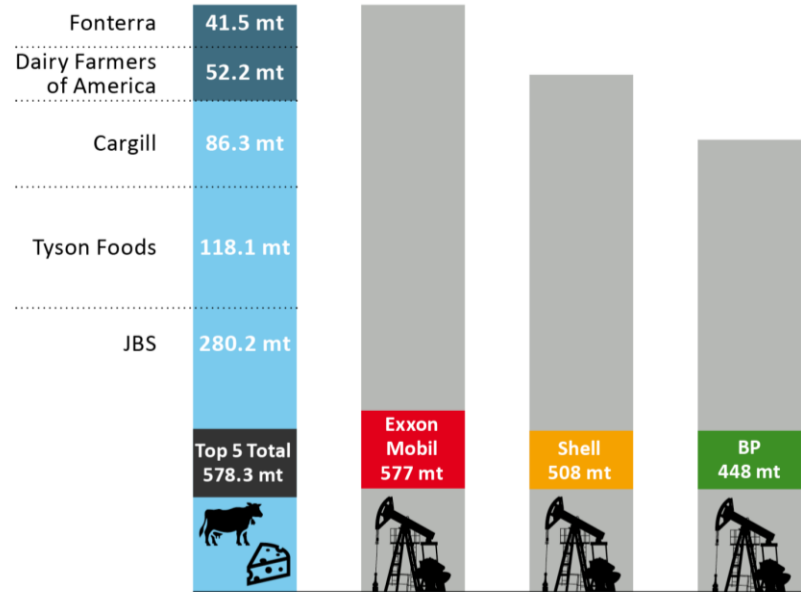




GREEN HOUSE GASES VS FOOD



The top 5 meat & dairy companies combined emit more greenhouse gases than ExxonMobil, Shell or BP



Source: Grain & IATP

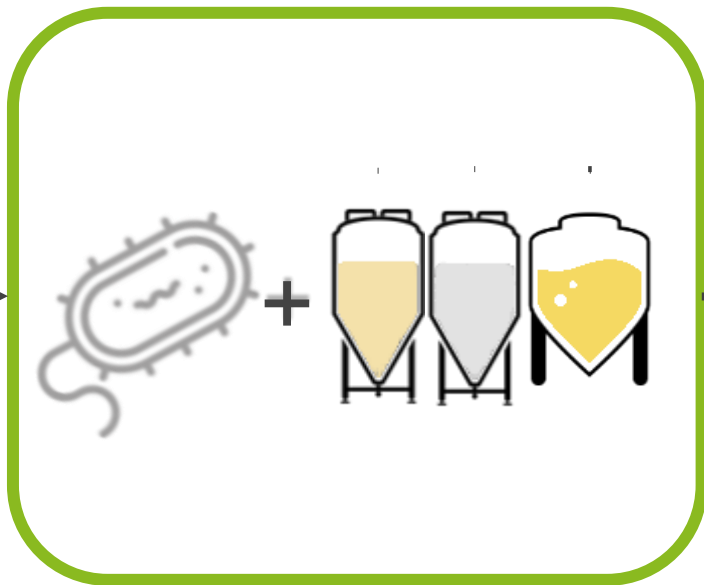
© blue horizon

POTENTIAL FOR BIOTECH GROWTH



WHAT WE DO


~\$0.30/kg
Input: Sugar



**Engineered Microbe + Standard
Fermentation**



~\$100-\$1,000/kg

Output: High Value Products



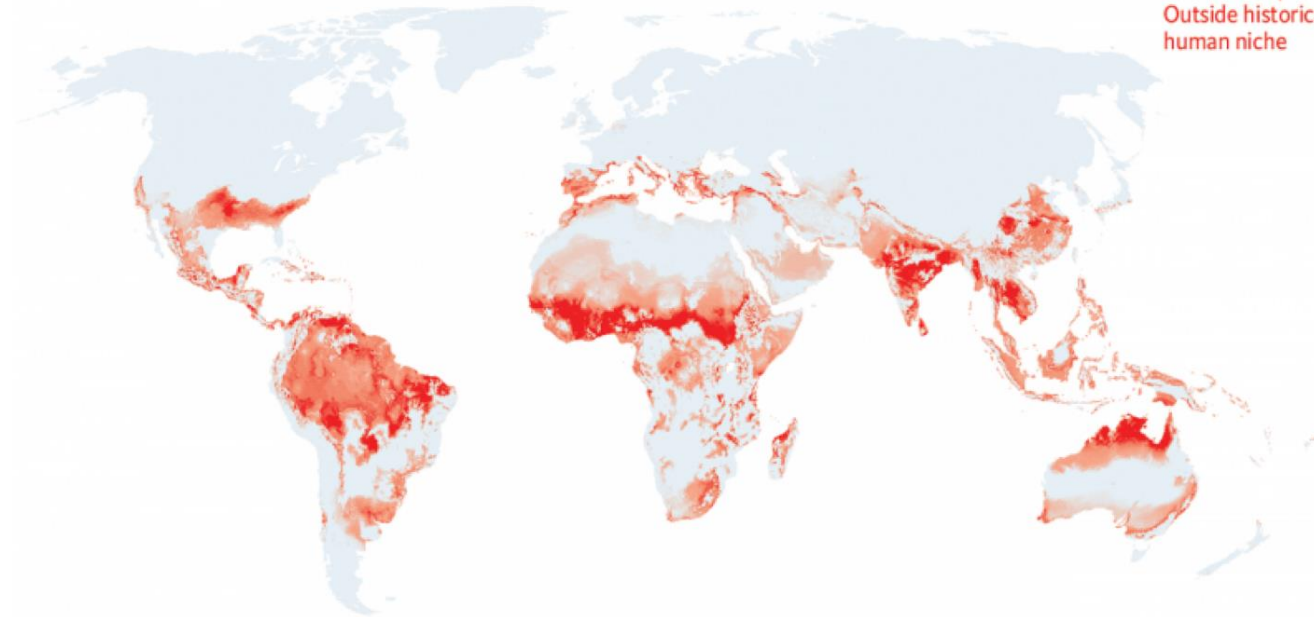
POTENTIAL FOR BIOTECH GROWTH



GLOBAL WARMING IMPACT

Projected change in suitability* for human habitation in 2070
With warming of between 2°C and 2.5°C above pre-industrial levels

More suitable/
no change Less suitable
Outside historical
human niche

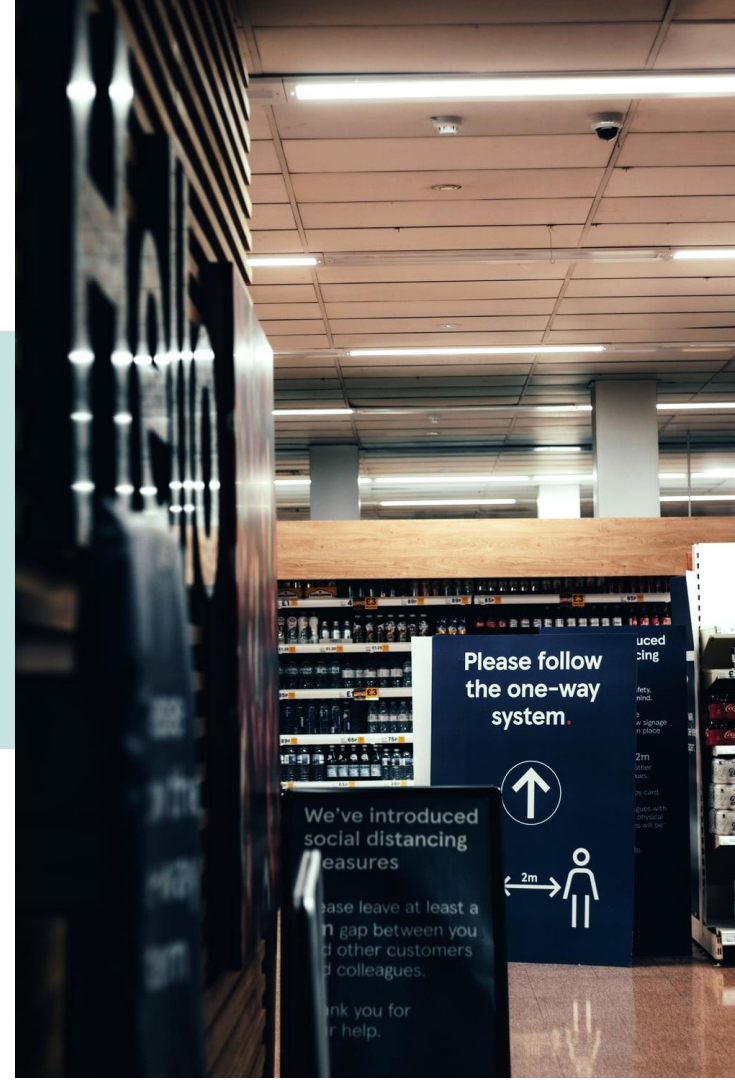


Sources: IPCC AR5; "Future of the human climate niche", by Chi Xu et al., 2020

*Based on temperature and precipitation levels

IMPACT F&F

- Less customer contact
- Less travel
- Brands go local



IMPACT F&F

- Remote evaluation and sampling
- Creation tools



Carto

Reinventing the way perfumers create

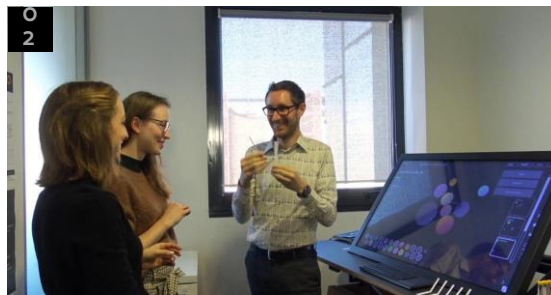
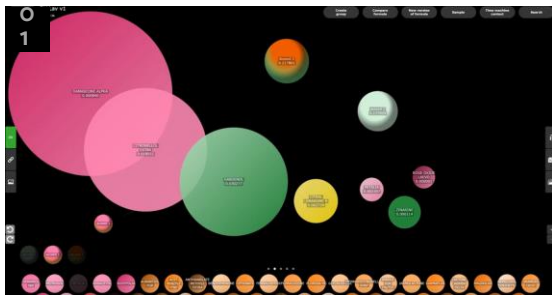
- Experiment with **new formulas** in a playful way
- The experience includes an **instant sampling robot**
- Digital support to enhance perfumer **creativity**



Innovating the future of perfumery

Digital Innovation in Fragrances

Pioneering new olfactive experiences for the future



Carto

An artificial intelligence tool designed to maximise perfumer creativity. Very intuitive and interactive, it enhances the formulation experience

Customer Co-creation

A new Innovation program linked to Carto allowing the perfumer to guide customers through a unique perfume making experience



E-gredients

Aiding perfumery education at our Perfumery School through a flexible training system that's able to follow the learning pace of the student

SmellViz

Exploring digital senses with SmellViz, an iOS/Android app which recognizes packages and lets consumers visualize fragrances and flavours in Augmented Reality

IMPACT RAW MATERIALS

NATURAL



BIODEGRADABLE

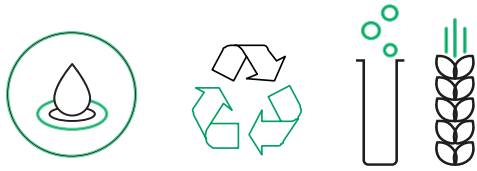


CARBON NEUTRAL



Eco-design of Fragrance

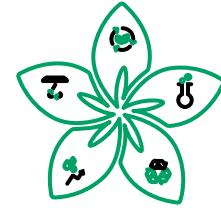
1- Responsible Ingredients



New Perfume Ingredients

INNOVATION

2- Responsible formulation



New Creation Parameters

MEASURES

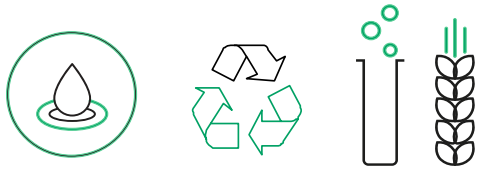


Responsible Fragrances
NATURE CONSCIOUS



Eco-design of Fragrance

1- Responsible Ingredients



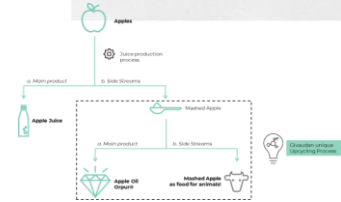
New Perfume Ingredients

INNOVATION

RESPONSIBLE NATURELS



UPCYCLING



BIOTECHNOLOGIES



BIODEGRADABLES MOLECULES



UNILEVER

Today

**Black
carbon**

**Green
carbon**

Tomorrow

**Purple
carbon**

**Grey
carbon**

**Blue
carbon**

**Green
carbon**

**Brown
carbon**

EU – Chemicals and Sustainability

Banning more materials

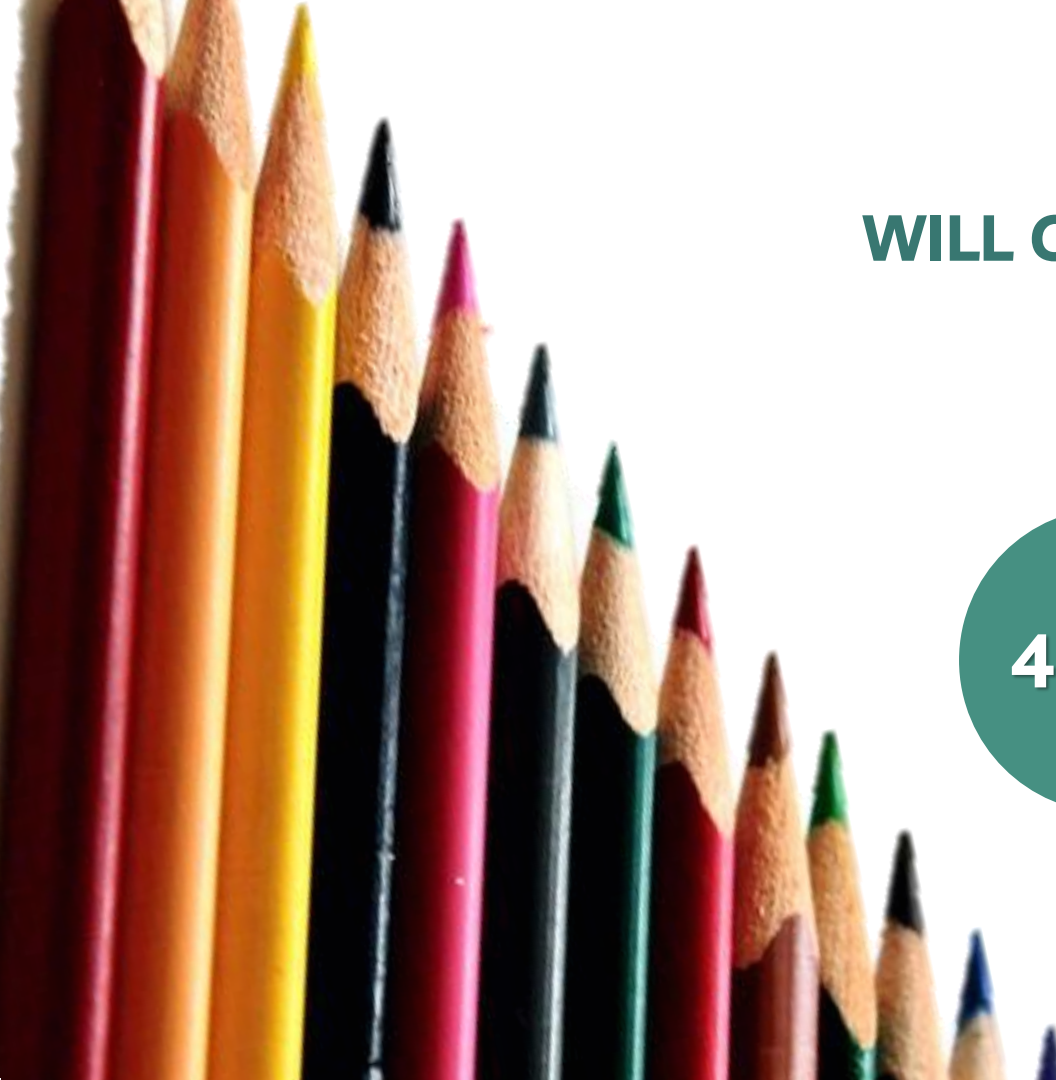


- Large Volumes based on Black Carbon
- Questionable safety profile
- Questionable environmental profile
- Effect of chemical mixtures.



SAFE AND SUSTAINABLE BY DESIGN

**Will there be new Tesla's
in the chemical industry ?**



WILL OUR “ MATERIALS IN USE” LIST DROP?

4000

1000

500

ASIA

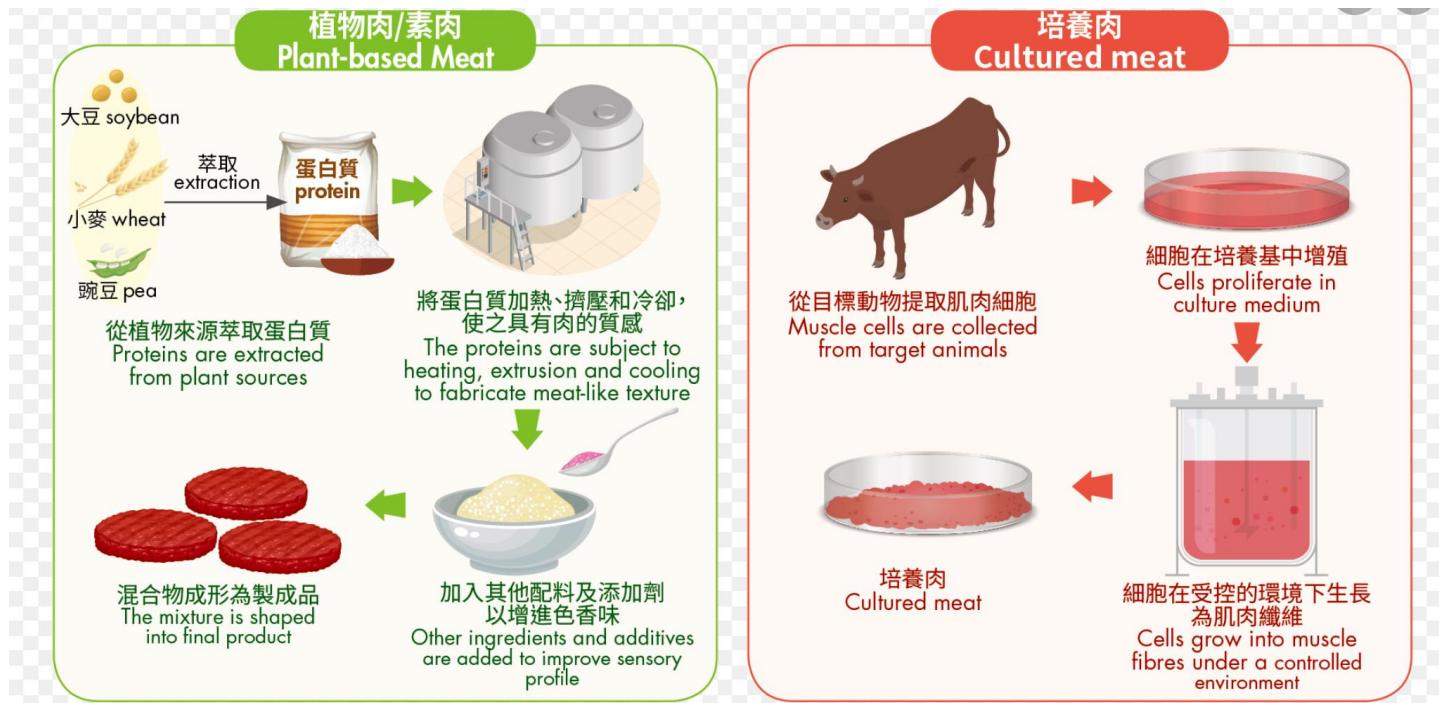
	2020	2021
ASEAN	-4	+4.5
CHINA	+2.4	+7-8
INDIA	-8	+8
REGION	-1	+7

**Expected China's share
of global GDP**

2019: 16.4%

2025: 21%

PROTEIN AND MEAT ALTERNATIVES



SINGAPORE FOOD STORY

R&D PROGRAMME



Supporting the "30 by 30" food security goal with scientific excellence

I. Sustainable Urban Food Production



II. Future Foods: Advanced Biotech-based Protein Production



III. Food Safety Science & Innovation



1. Food Security

- Grow the agri-tech and food sector to **strengthen our food security.**

2. Economic Value-Capture

- **Contribute to Singapore's economy.**
- Reap economic benefits for Singapore by developing appropriate segments of the agri-tech and food value chain.

3. Food Safety

- Achieve a **globally respected, future-ready food safety system** that ensures a continual supply of safe food for Singapore and supports the growth of the agri-tech and food sector.
- To enhance our regulatory science capabilities and developing mutually recognised food standards in the global markets.



Future Ready Food Safety Hub (FRESH)

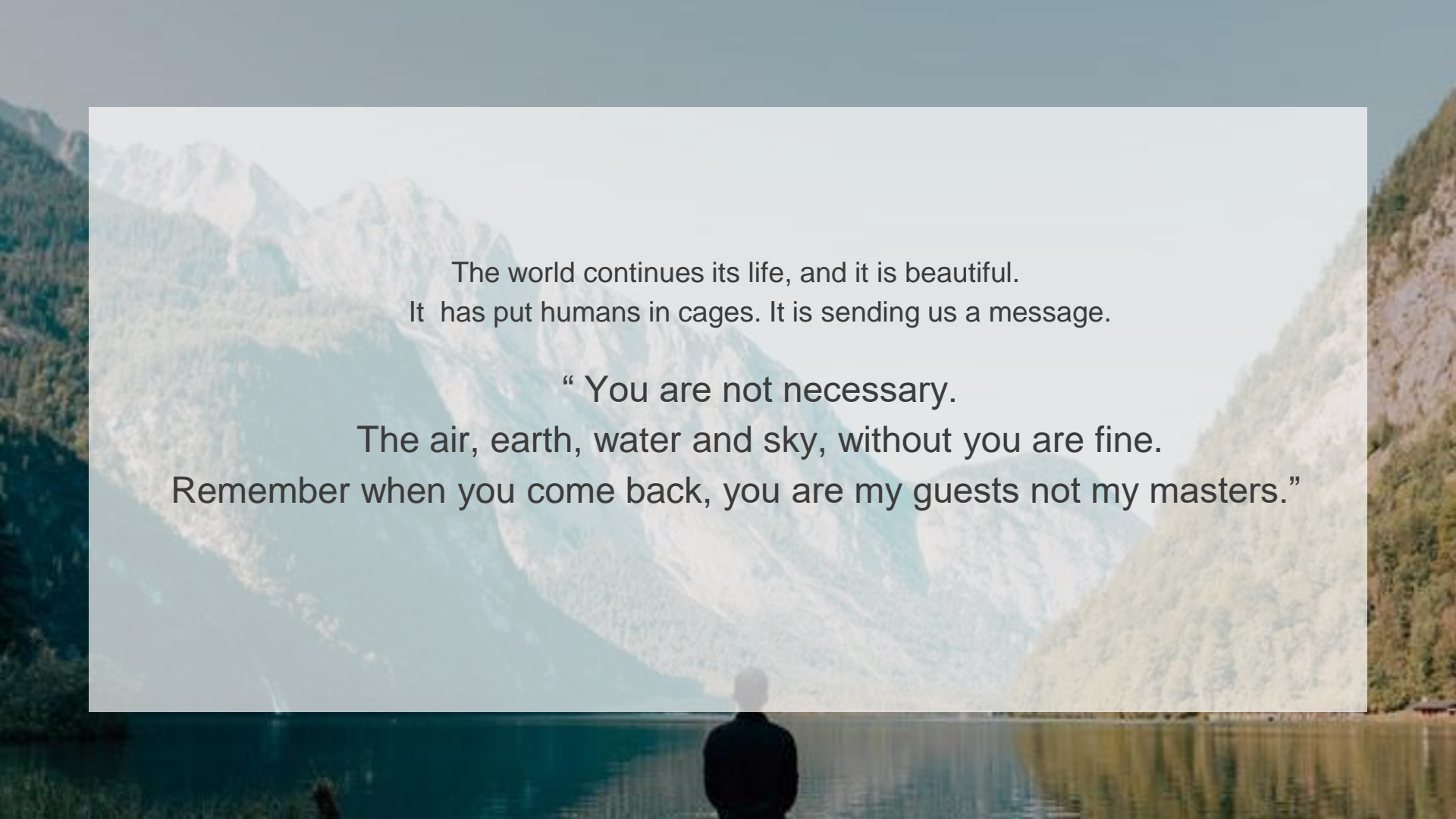
“Under the Singapore Food Story R&D Programme, SFA, A*STAR, and NTU will set up a new platform called the **Future REady Food Safety Hub**, or **FRESH** in short, to foster deep collaboration between the food industry, researchers and regulators. Not only would it allow “first-in-market” food products to be safely launched in Singapore, it could also enhance our local food regulatory capabilities, and help promote Singapore-developed food standards internationally.”

Mr Masagos Zulkifli

Minister for the Environment and Water Resources

Leaders in Science Forum (10 Sep 2019)



A person is seen from behind, standing on a boat on a calm lake. They are looking towards a vast mountain range with green slopes and rocky peaks under a clear sky. The scene is peaceful and scenic.

The world continues its life, and it is beautiful.
It has put humans in cages. It is sending us a message.

“ You are not necessary.
The air, earth, water and sky, without you are fine.
Remember when you come back, you are my guests not my masters.”

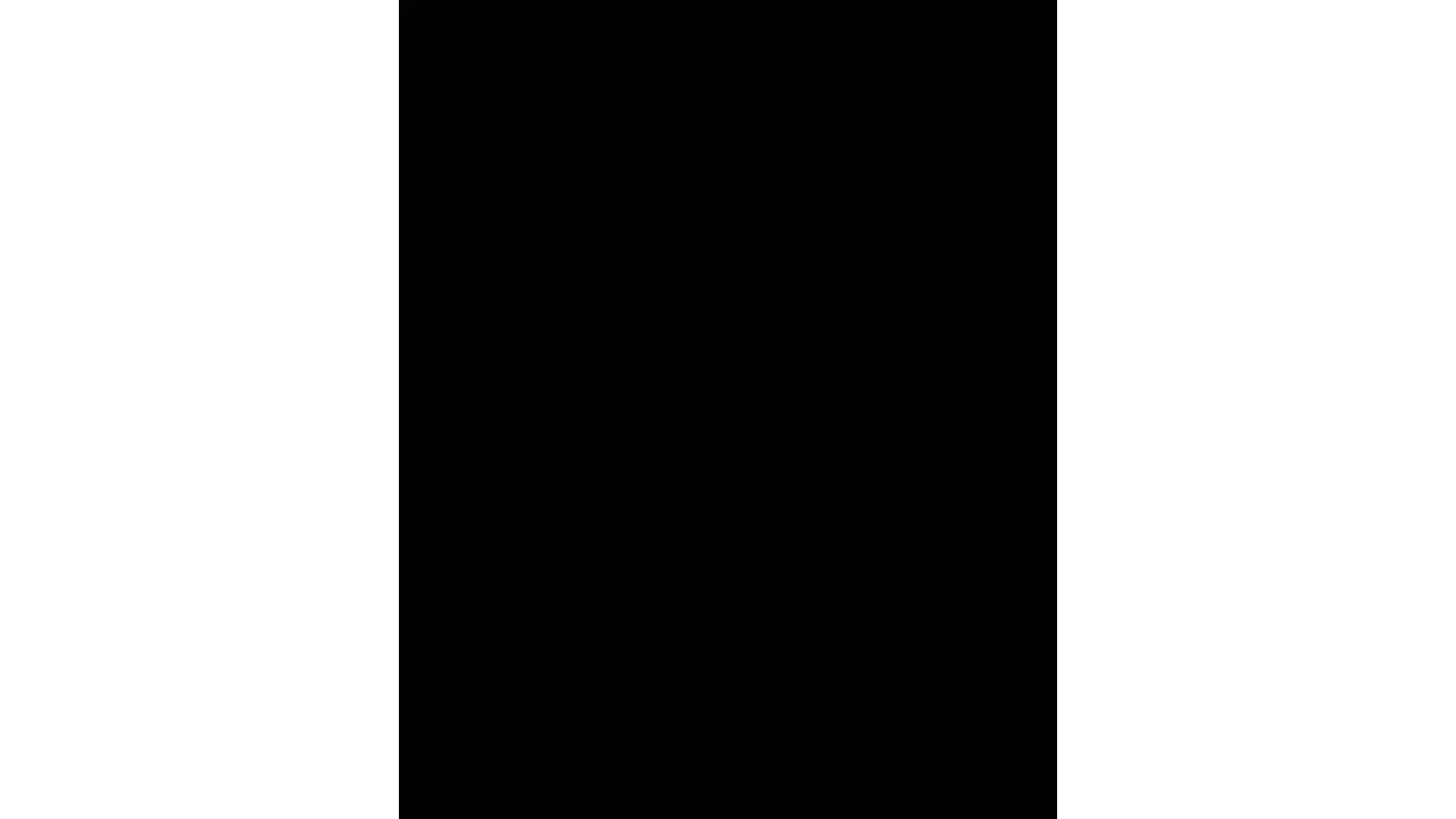


“ The economy must yield to human values”

“ What is more valuable Amazon the company or Amazon the region”

“ When true climate change comes there is nowhere to self isolate”.

– Mark Carney



THANKS

