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Empowering the Food Professional

Plant Based Diets : Solutions for Nutrition Security & Climate change



*Presented By:- Sachin Achintalwar
President – AFSTI BLR Chapter*



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**Eat Right
India**

सही भोजन. बेहतर जीवन.

Eat Right India:

... unveiling a new language of food & nutrition

EAT RIGHT': *Simply Three*



Safe

- Personal and surrounding hygiene
- Hygiene and sanitation in the value chain
- Combat adulteration
- Eliminate toxins and contaminants like pesticide residues, heavy metals, antibiotic residues, Aflatoxin
- Total polar compounds in used cooking oil



Healthy

- Balanced diet – diet diversification
- Local, Seasonal, Variety
- Complete elimination of toxic (industrial) trans-fats from diets
- Reducing consumption of salt, sugar and saturated fats
- Eating fortified staples to take care of deficiency of essential micronutrients



Sustainable

- No food waste
- reduce plastic
- conserve water in the food sector



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Supply-demand situation

Role of Market/ Role of Regulator

Trade-off

Healthy consumers or
Wealthy businesses



Eat Right India

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Marketing

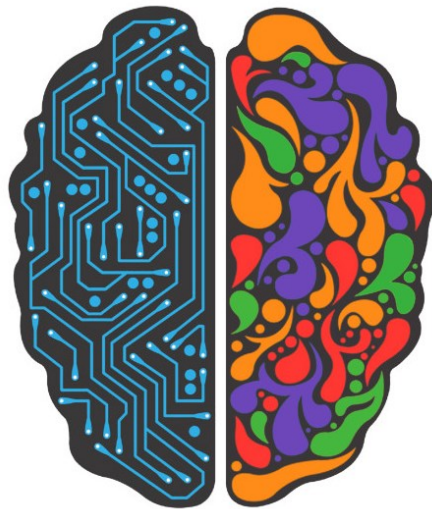
Initiatives, symbols, acronyms

New language of Nutrition



49/57 food & beverages promoted by **65 celebrities** were **sugar-sweetened beverages**
Remaining were **energy dense and nutrient poor** (New York University)

Government: Logical, linear
health messaging



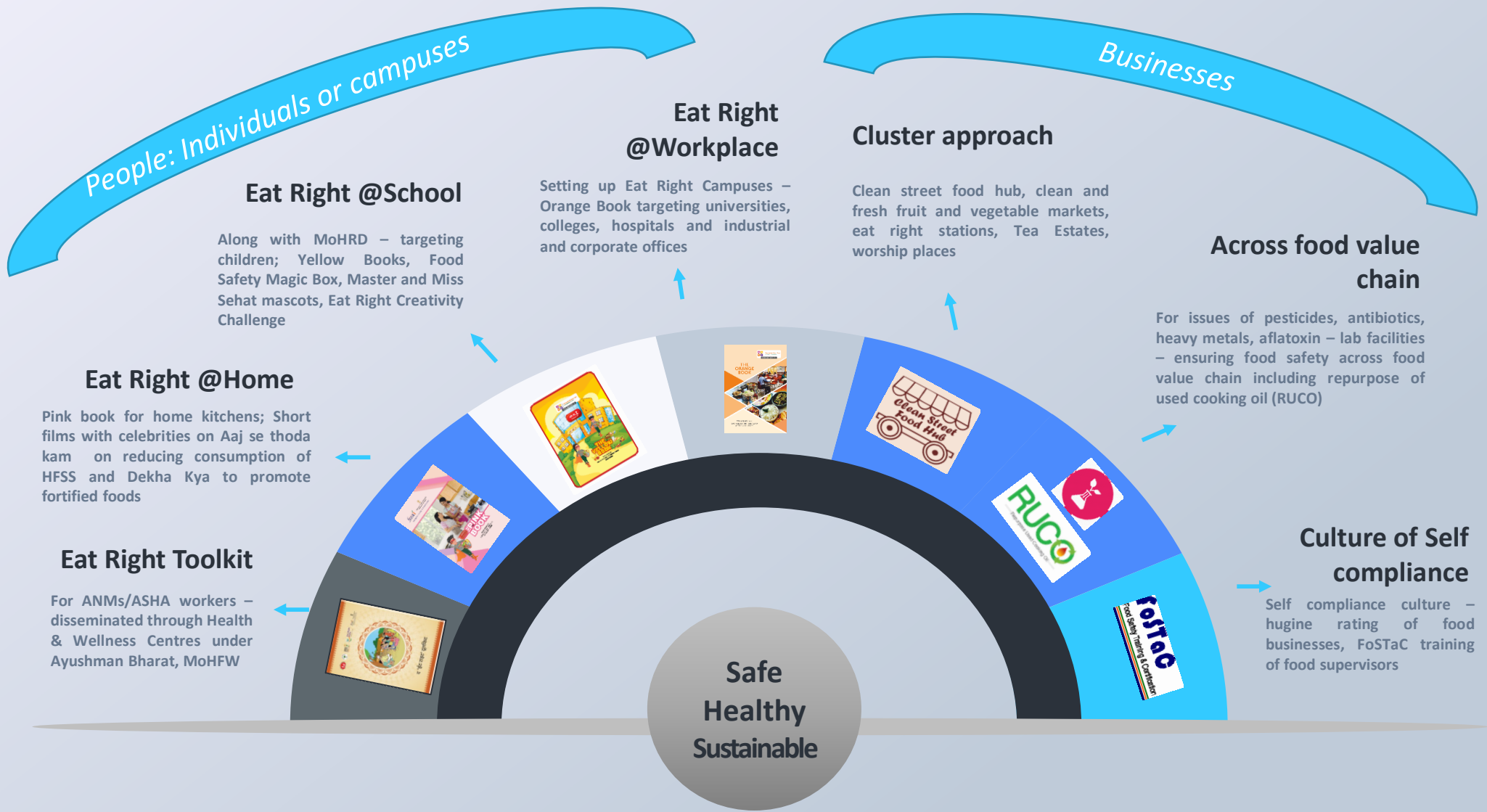
Private Sector: Powerful,
emotional and aspirational
messaging

Packaged foods and drinks available in India are the **least healthy amongst the 12 countries**, with high levels of saturated fat, sugar and salt (University of Oxford)



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People: Individuals or campuses

Businesses

Eat Right @School

Along with MoHRD – targeting children; Yellow Books, Food Safety Magic Box, Master and Miss Sehat mascots, Eat Right Creativity Challenge

Eat Right @Workplace

Setting up Eat Right Campuses – Orange Book targeting universities, colleges, hospitals and industrial and corporate offices

Cluster approach

Clean street food hub, clean and fresh fruit and vegetable markets, eat right stations, Tea Estates, worship places

Across food value chain

For issues of pesticides, antibiotics, heavy metals, aflatoxin – lab facilities – ensuring food safety across food value chain including repurpose of used cooking oil (RUCO)

Eat Right @Home

Pink book for home kitchens; Short films with celebrities on Aaj se thoda kam on reducing consumption of HFSS and Dekha Kya to promote fortified foods

Eat Right Toolkit

For ANMs/ASHA workers – disseminated through Health & Wellness Centres under Ayushman Bharat, MoHFW

Culture of Self compliance

Self compliance culture – hygiene rating of food businesses, FoSTaC training of food supervisors

Safe
Healthy
Sustainable



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Unveiling the power of symbols, acronyms and logos



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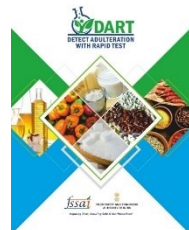
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जैविक भारत



FORTIFIED
SAMPOORNA POSHAN
SWASTH JEEVAN











What is Plant based Diet



What is Plant based Diet

- Diet comprised of **MOSTLY** plant foods.
- Does not mean vegetarian or vegan
- Plant foods include:
 - Fruits
 - Vegetables
 - Nuts & Seeds
 - Whole Grains
 - Beans & Legumes
 - Coffee, Tea, Dark Chocolate!

 <p>Tofu & Tempeh</p>	 <p>Plant-based Meat</p>	 <p>Plant-based Milk</p>	<ul style="list-style-type: none"> • Cheese • Yogurt • Ice Cream, novelty & frozen desserts • Butter • Dips, dressings & sour cream • Iced Coffee • Creamers
 <p>Eggs Substitutes & Mayo</p>	 <p>Meals</p>	 <p>Other Dairy Alternatives</p>	



What is Plant based Food

What is Plant-based Food?

For the purpose of this report, GFI is using the term “plant-based food” to refer to plant-based products that are direct replacements for animal-based products, such as plant-based meat, seafood, eggs, and dairy. This includes products that use the biomimicry approach to replicate the taste and texture of meat, as well as plant-forward products (such as jackfruit, seitan, tofu, and tempeh) that serve as functional meat replacements. Meals that contain direct animal ingredient replacements are also included in our scope. Inherently plant-based foods that do not have an animal-based counterpart, such as chickpeas and kale, are not included. Please note that, although they are not biologically classified as plants, fungi- and algae-based products are included in our definition of plant-based foods.

Why a Plant based Diet

- Studies have shown it can decrease risk of many chronic diseases:
 - **Cancer**
 - Diabetes
 - Heart Disease
 - High Blood Pressure
 - Cholesterol
 - Stroke
 - Obesity



Why a Plant based Diet

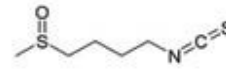
- **Prevents Obesity** - Lower in calories
- Fruits & vegetables about 1/3 calories of protein & starches
- Improves Health - Nutrient dense
- Vitamins
- Minerals
- **Fiber**
- **Phytochemicals**



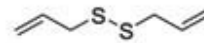
Phytochemicals

- Phytochemicals give plants their distinctive color, smell, taste.
- Provide MANY health benefits
- Especially for fighting cancer!
- 1000's discovered so far!

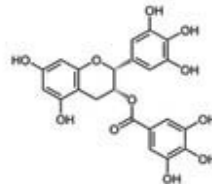
Broccoli Sulphoraphane)



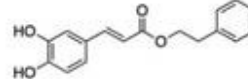
Garlic Diallyl sulphide



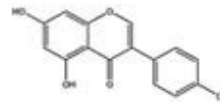
Green Tea Epigallocatechin-3gallate



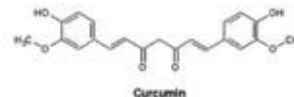
Honey Caffeic acid phenethyl ester



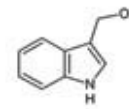
Soybeans Genistein



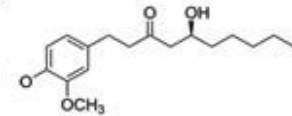
Tumeric Curcumin



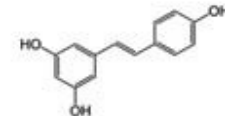
Cabbage SIndole-3carbinol



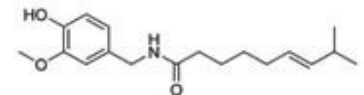
Ginger Gingerol



Grapes Resveratrol



Chilli peppers Capsaicin



Tomatoes Lycopene





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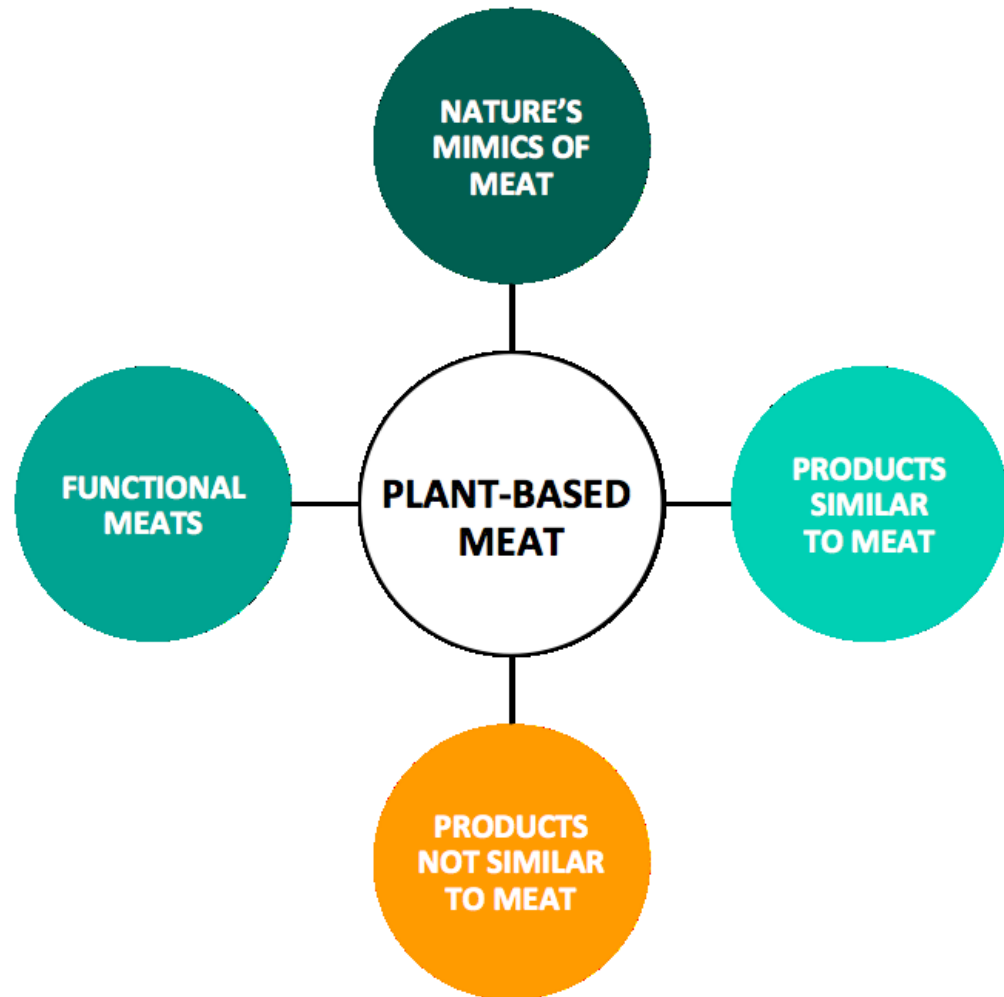
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Plant Based Meat



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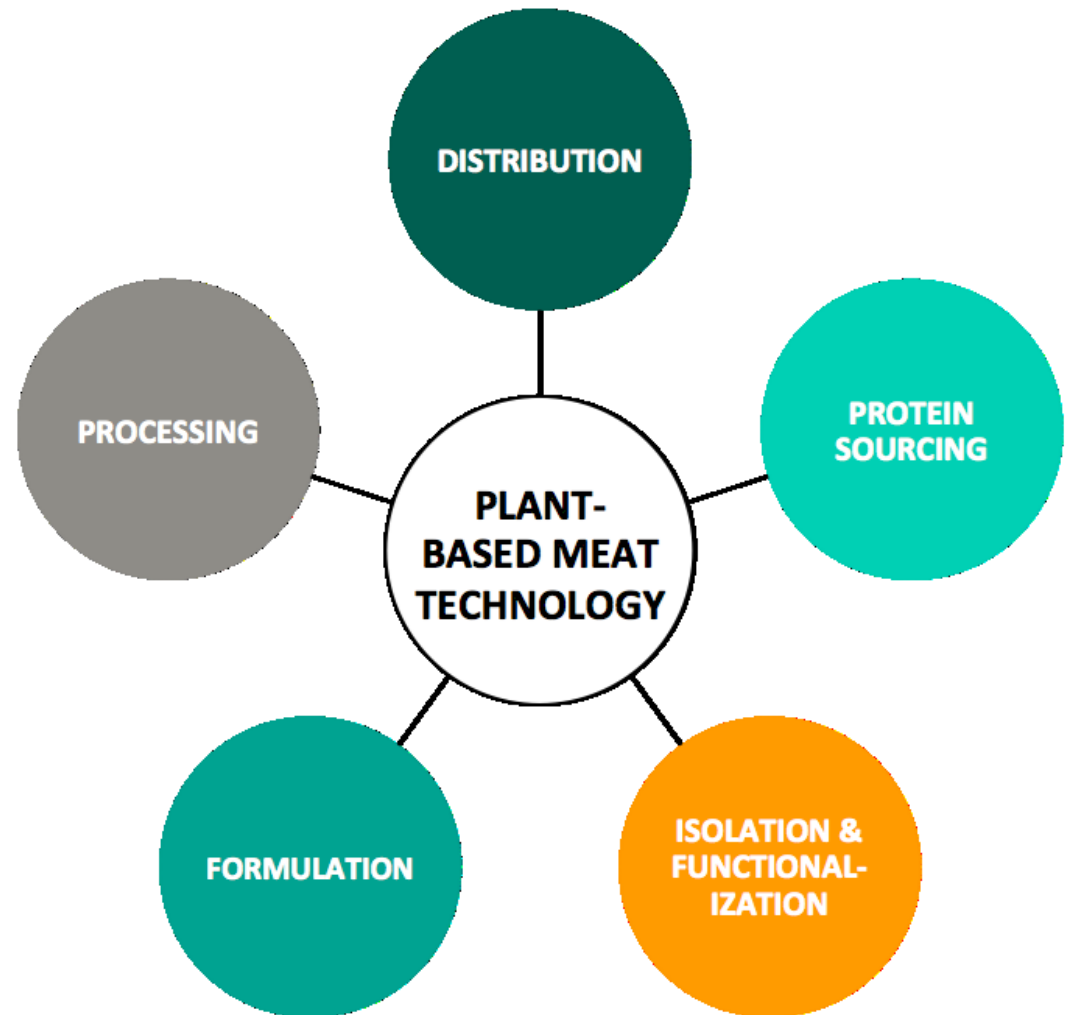
PLANT-BASED MEAT Product Mind Map



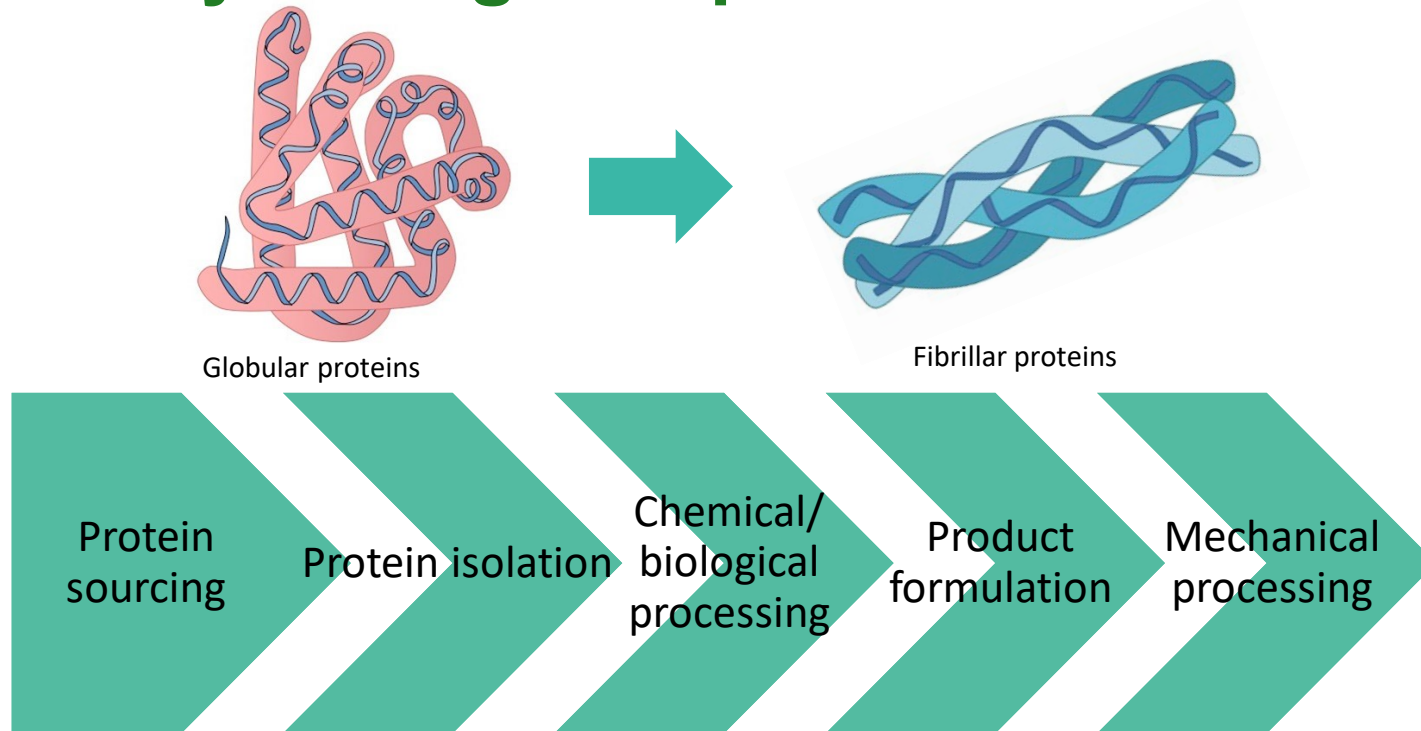


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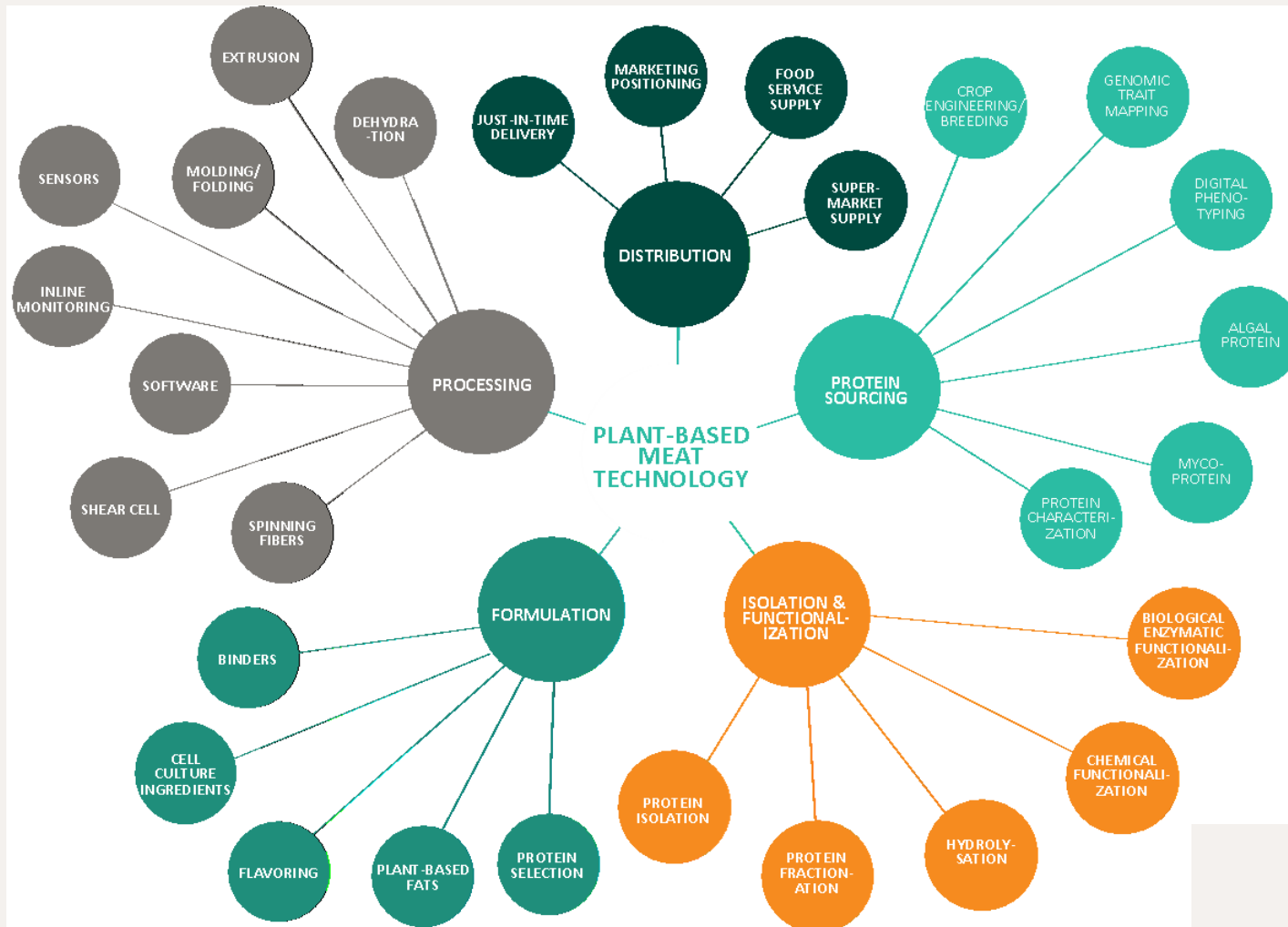
PLANT-BASED MEAT Technology Mind Map



New technologies unlock opportunities to achieve functionality throughout production



PLANT-BASED MEAT TECHNOLOGY MIND MAP



The global plant-based meat market is projected to reach at least \$100b if not \$370b by 2035

U.S. plant-based meat market projections

Source	Projected market size	By year	Projected share of U.S. meat market
Grizzle	\$34b	2030	10%
Bernstein	\$41b	2030	12%



Global plant-based meat market projections

Source	Projected market size	By year	Projected share of global meat market
Markets and Markets	\$28b	2025	2%
J.P. Morgan	\$100b	2035	7%
Barclays	\$140b	2029	10%
A.T. Kearney	\$370b	2035	23%





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“Our view of the plant-based protein business has pivoted from a diversification strategy to a core and exciting growth platform that can literally transform this company over the next decade “

Chief Executive Officer Michael McCain



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Burger with Plant Based Meat



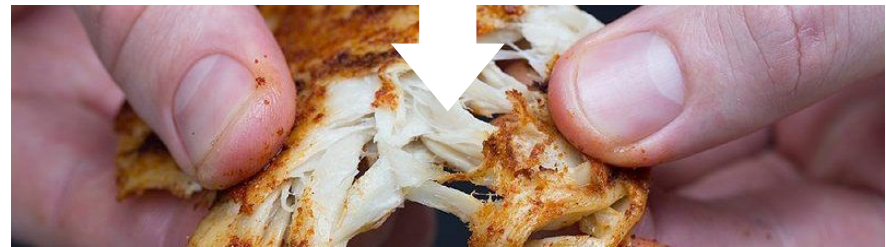
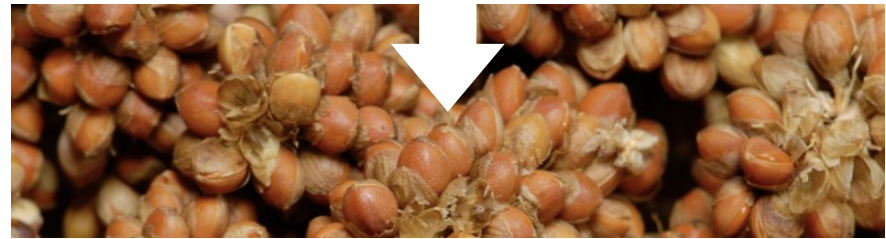


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Despite exciting progress, plant-based proteins have still barely scratched the surface of what's possible

- Exploring and optimizing novel protein sources
- Improved methods for isolation, fractionation, enrichment, and functionalization
- Novel approaches for achieving structure and texture





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The media is buzzing with consumer interest in plant-based foods at an all-time high



Recent Trends

- Lab-grown and plant-based meat can help us move towards a more sustainable food system Read more at <https://www.todayonline.com/commentary/lab-grown-and-plant-based-meat-can-help-us-moving-towards-more-sustainable-food-system>

IIT-Guwahati Researchers Develop Lab-Grown Meat To Rival Impossible Foods, Beyond Meat

<https://inc42.com/buzz/iit-guwahati-researchers-develop-customisable-lab-grown-meat-for-india/>

KFC partners with Beyond Meat to test plant-based nuggets, wings

<https://economictimes.indiatimes.com/news/international/business/kfc-partners-with-beyond-meat-to-test-plant-based-nuggets-wings/articleshow/70844543.cms>

Recent Trends

- How our diets impact climate change – and what we can do about it

<https://www.nbcnews.com/better/lifestyle/how-our-diets-impact-climate-change-what-we-can-do-ncna1041301>

- Plant-based diet is key to fighting climate change, here's how
<https://www.financialexpress.com/lifestyle/science/plant-based-diet-is-key-to-fighting-climate-change-heres-how/1673989/>



Recent Trends

- Plant-Based Diet: Healthier for Us and Our Planet

<https://www.nrdc.org/experts/maria-mccain/nrdc-aligns-food-purchases-uns-climate-change-report>

- Is that soy in your Whopper? Plant-based meat sales rising

<https://retail.economictimes.indiatimes.com/news/food-entertainment/food-services/is-that-soy-in-your-whopper-plant-based-meat-sales-rising/68715009>

- This Udaipur-based startup wants you to switch to plant-based meat

<https://economictimes.indiatimes.com/small-biz/startups/features/this-udaipur-based-startup-wants-you-to-switch-to-plant-based-meat/articleshow/66569811.cms>



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Indian Acceptance of Plant-based meat

63% Indians said that they would like to try plant-based meat

- **IPSOS, 2019**

62.8% of Indians said that they were very or extremely likely to try as opposed to 32.9% Americans

- ***Frontiers in Sustainable Food Systems, 2019***

(affluent, middle class)



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India to be an epicentre of development in the sector

- **Exploration of indigenous crops to diversify raw materials and specialty ingredients, including millets, moringa, etc**
- **Optimization of flavour profiles and product types to satisfy local demand, and nutritional parameters to target nutrition gaps**
- **Cold chain technologies and Government support enabling export and import possibilities**



India has multiple 'National dishes' leaving space for diverse innovation



UN IPCC Report on Climate Change

- The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.
- **The IPCC was created to provide policymakers with regular scientific assessments on climate change, its implications and potential future risks, as well as to put forward adaptation and mitigation options.**
- As per the report, dietary changes, comprising of plant-based foods and sustainable, animal-sourced food hold the key to cut about 0.7 to 8.0 gigatonnes annually of carbon dioxide equivalent.
- Substantial amount of Green House Gas emissions (GHG) – Agricultural activities, Food Supply chain (Transportation, Storage, Packaging & consumption of energy) .
- Meat and dairy emit a larger amount of greenhouse gases than growing crops, due to enteric fermentation processes that are large emitters of 22 methane.
- “The IPCC does not recommend people’s diets. What we have pointed out on the basis of scientific evidence is that there are certain diets that have a lower carbon footprint,” Jim Skea, Co-Chair of IPCC stated.

UN IPCC Report on Climate Change

- One interesting term is the ‘flexitarian’ diet, which comprises mostly of fruits and vegetables, plant-based proteins, modest amounts of animal-based 31 proteins, and limited amounts of starchy food, refined sugar, saturated fat and red meat.
- Another case study referred to the Netherlands, where a nationwide sample comprising of over a thousand consumers had been used to study their dietary choices to smaller portions of meat and eating more vegetable protein and meatless meals, with or sometimes without meat substitutes. (Reference: de Boer et al. 2014).
- While the above-mentioned case studies demonstrate that advanced economies are keen to switch to plant-based diets, these are some key points from the UN body report:
 1. Meat – especially ruminant meat (beef and lamb) – was 41 consistently identified as the single food with the greatest impact on the environment, on a global basis, most often in terms of GHG emissions and/or land use.
 2. In 2011, food loss and waste resulted in about 8–10% of greenhouse gas 2 emissions of the entire food system.

UN IPCC Report on Climate Change

3. Similar to food waste, over-consumption leads to GHG emissions.
4. Encouraging the consumption of locally produced food can reduce emissions linked to energy consumption and food loss.

There is significant potential mitigation (*high confidence*) arising from the adoption of diets in line with dietary recommendations made on the basis of health. These are broadly similar across most countries. These are typically capped by at the number of calories and higher in plant based foods, such as vegetables, fruits, whole grains, legumes, nuts and seeds, and lower in animal sourced foods, fats and sugar. Such diets have the potential to be both more sustainable and healthy than alternative diets (but healthy diets are not necessarily sustainable and vice versa). The extent to which the mitigation potential of dietary choices can be realised requires both climate change and 38 health being considered together. Socio-economic (prices, rebound effects), political, and cultural contexts would require significant consideration to enable this mitigation potential to be realised.

In a nutshell, the latest UN body report pitches for changing diets towards a lower share of animal-sourced food would reduce overall greenhouse gas emissions.

UN IPCC Report on Climate Change

In summary, there is significant potential mitigation (*high confidence*) arising from the adoption of diets in line with dietary recommendations made on the basis of health. These are broadly similar across most countries. These are typically capped by at the number of calories and higher in plant based foods, such as vegetables, fruits, whole grains, legumes, nuts and seeds, and lower in animal sourced foods, fats and sugar. Such diets have the potential to be both more sustainable and healthy than alternative diets (but healthy diets are not necessarily sustainable and vice versa). The extent to which the mitigation potential of dietary choices can be realised requires both climate change and 38 health being considered together. Socio-economic (prices, rebound effects), political, and cultural contexts would require significant consideration to enable this mitigation potential to be realised.

Ref : Chapter 5 – Food security -

5.6.3.1 Can dietary shifts provide significant benefits?

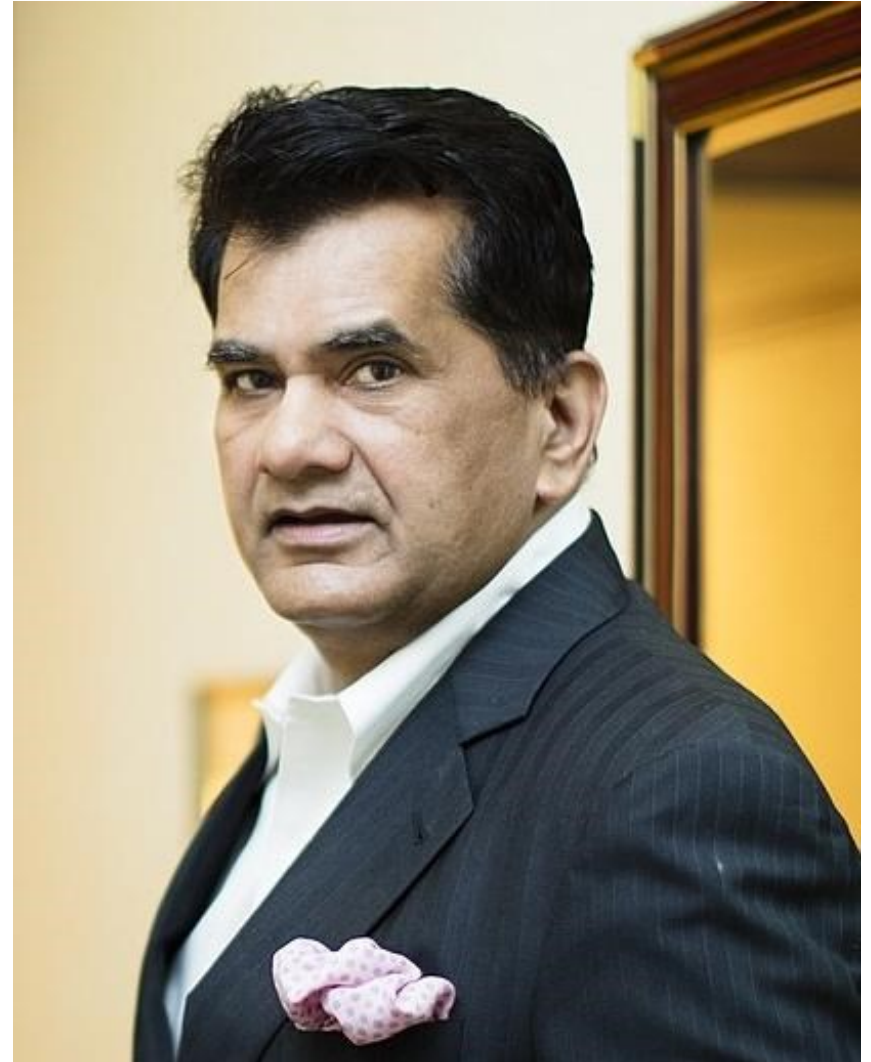


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**“Impossible Foods...
makes a plant based food
that smells, tastes, looks like
real meat. It threatens the
future of the \$90 billion meat
industry.”**

– AMITABH KANT, NITI AAYOG CEO





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“We’ve only explored about **8%** of the world’s plant proteins as potential meat alternatives...

Remaking meat is one sector of the food industry that is ripe for innovation and growth.”

– BILL GATES

Thank You



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