basic roots
consulting

Sectoral Analysis of The Animal-free Dairy Protein Space

basic roots consulting

What is the problem with traditional dairy farming?

Cows release **231 billion pounds** of methane into the atmosphere each year

This Methane is **84X** more powerful at heating the planet than CO2

Natural milk contains lactose and needs expensive processing to remove lactose

Requires large land areas and has been a major driver for deforestation

What is the Solution?

Precision Fermentation is deemed to be the future of sustainable dairy, this process involves the use of microorganisms such as bacteria or yeast, to produce complex organic molecules, such as proteins and fats

basic roots consulting

Why is precision fermentation the answer?

99% Less land consumption

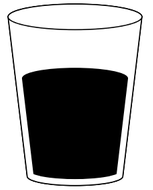
98% Less water consumption

84% Less CO2e consumption

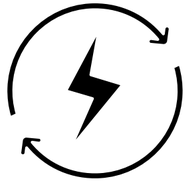
65% Less energy consumption

What if consumers switch entirely from milk protein to animal-free protein?

246 million tonnes
of CO2 emissions saved



18,600 billion gallons
of water saved



75 billion MJ
of energy saved

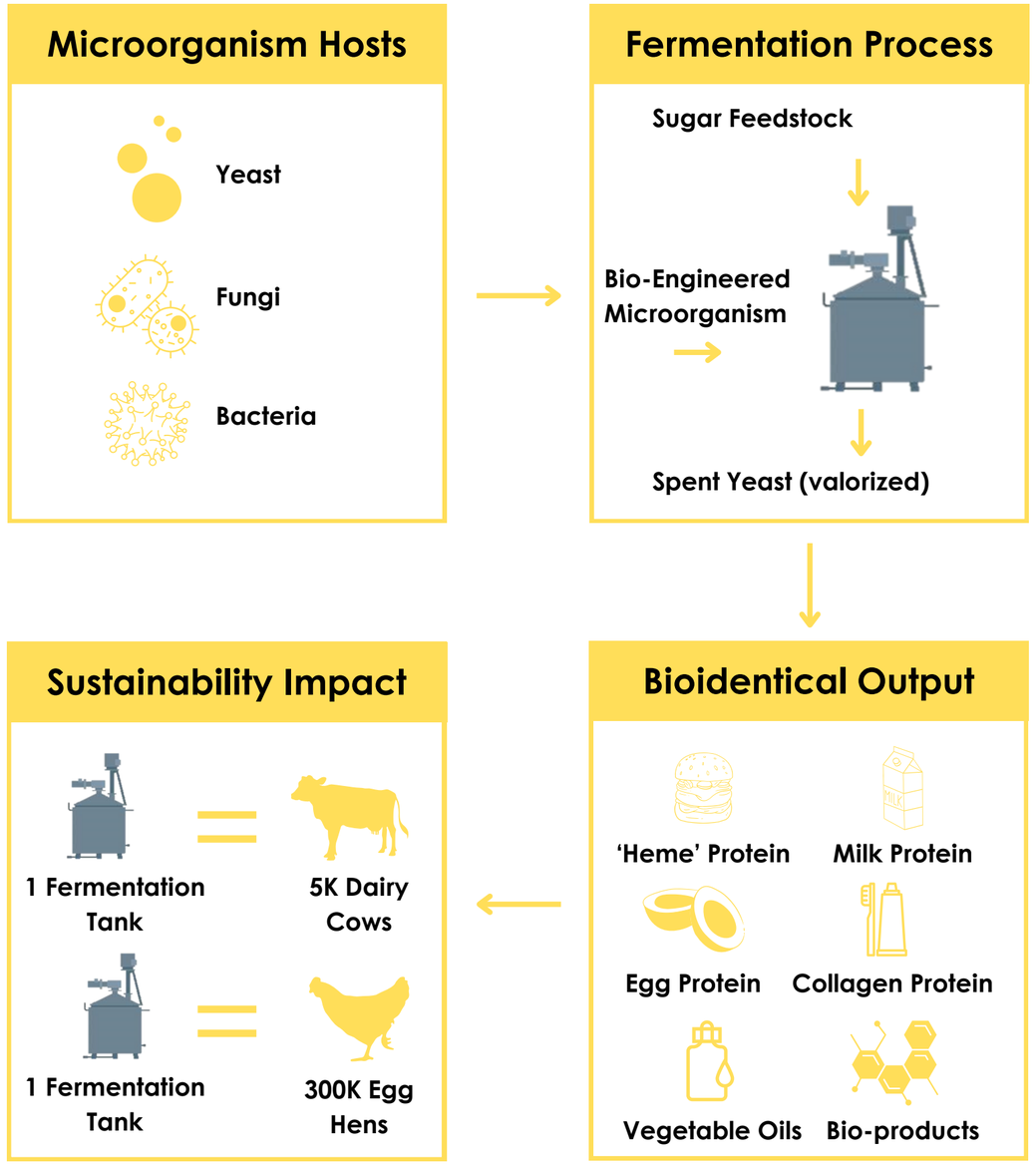
basic roots consulting

How has precision fermentation evolved?

In the last century, precision fermentation has been used to produce pharmaceuticals, industrial enzymes, vitamins, and more recently, food

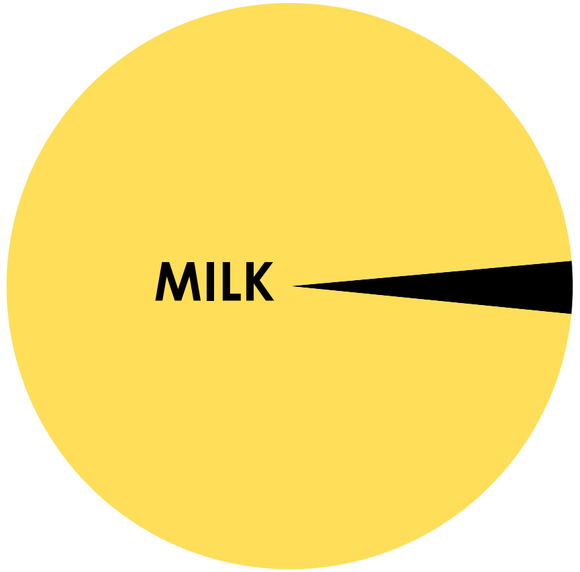
The proteins produced through this technology can precisely match the functional and nutritional properties of animal-based counterparts

This is a major breakthrough for the food industry, as it offers a way to produce food alternatives without any of the ethical or environmental concerns



basic roots
consulting

Can dairy be the next big disruption?



→ Only 3% protein (Casein & Whey)

Disrupting 3% of the milk bottle

=

Disrupting ~$1 trillion+ dairy/ingredient industry

basic roots consulting

How big is the market?

$24.93 Bn

Global Dairy Alternatives Market 2022*

$14.11 Bn

Global Dairy Protein Ingredients Market 2022*

TAM: $39.04 Bn

Factors Driving the Market

- Wide Range of Applications
- Lactose Free
- Rapid Product Adoption

basic roots consulting

Solution in the market

Protein Type (Animal-derived)	Whey	Casein	Lactoferrin
Amount in natural milk	6.3 gm/litre	29.5 gm/litre	0.5 mg/litre
Major Application	Protein Powder	Cheese	Infant Nutrition
Segment Leader	Perfect Day	Zero Cow Factory, Turtletree	No Solution Achieved
Solution in Market (Animal-free)	Only Beta-Lactoglobulin	✗	✗

Major Players

PERFECT DAY

Stage: Series E

Funds Raised: $840M

Progress: Commercialised for one whey protein type

Zero Cow Factory

Stage: Seed

Funds Raised: $4.2M

Progress: R&D / Pre-revenue

remilk.™

Stage: Series B

Funds Raised: $130M

Progress: Received FDA approval recently for one whey protein type

Imagindairy
real milk. no cows.

Stage: Seed

Funds Raised: $28M

Progress: Received FDA approval recently for one whey protein type

NEW CULTURE

Stage: Series A

Funds Raised: $28.5M

Progress: Received FDA approval recently for one Casein type

TurtleTree

Stage: Series A

Funds Raised: $40M

Progress: R&D / Pre-revenue

basic roots consulting

Main Conclusions

Growing Health & Food Security Concerns

- There is a clear generational pattern with younger generations increasingly looking for plant-based offerings mainly driven by health reasons, including better digestion.
- The shift towards animal-free dairy proteins is contributing to enhanced food security by providing a stable, sustainable, and scalable source of high-quality protein

Increasing Demand + High Product Adoption

- Major F&B companies are increasingly collaborating with biotech startups to incorporate animal-free dairy proteins into their product lines.
- As a result, the presence of these products in mainstream retail channels has grown, reflecting a broader acceptance and integration into everyday consumer diets.

Maasive Investment & Strategic Partnerships

- The animal-free dairy protein industry has attracted large investment in 2024. This influx of capital has fueled R&D, scaling of production facilities, and market expansion efforts.
- Strategic partnerships between firms and big food industry players have accelerated the commercialization of these products.

Major Investors in This Space

TEMASEK HOLDINGS

Horizons Ventures 维港投资

Hanaco VENTURE CAPITAL

CPT CAPITAL

Target Global

basic roots
consulting

Appendix

basic roots consulting

Decoding DeepTech

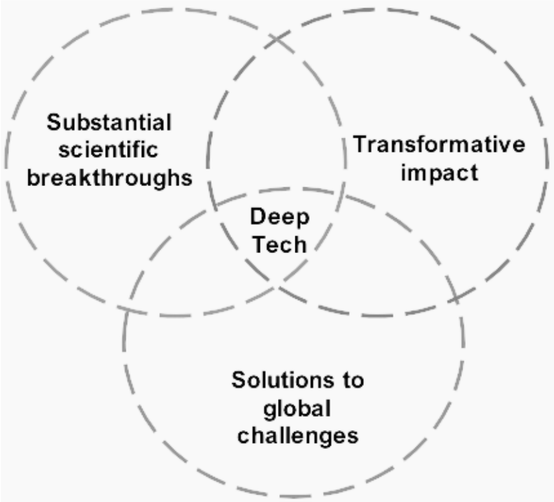
What is DeepTech

DeepTech typically focuses on complex & revolutionary technologies and aims to solve humanity's problems by addressing societal & environmental concerns

What are the different types of DeepTech innovations?

- **Tech substitute-** Incremental upgrades or replacements
- **System upgradation-** Upgrade of existing systems & processes
- **System transformation-** Altering or changing a system or process
- **System of system transformation-** Complete overhaul of an existing system or process

Deeptech addresses global challenges by driving transformative impact through scientific breakthroughs



Focus Areas of DeepTech

- Healthcare
- Climate Change
- Food Security
- SpaceTech
- Logistics&Mobility
- Energy

& many more

basic roots consulting

Deeptech Provides Higher Returns With Strong Tech Moats

Why Deeptech ?

1. Exceptional risk-adjusted returns
2. Tailwinds bolstered by governments understanding the urgency to focus on tech of the future and subsequent availability of non-dilutive capital
3. Each sub-sector is different and needs sectoral expertise and visibility to global research trends

Deeptech Providing Higher Returns

Capital Efficiency

- B2B businesses generally require half the capital needed by a B2C company to scale and become unicorns
- This enables building of leaner, profitable businesses that last

Better Unit Economics

- B2B businesses generally have more sticky revenues, lower churn and lower CAC compared to B2C
- The combination of the above in turn enables better unit economics

No "Winner Takes All"

- Most B2B segments enable multiple players to coexist as opposed to B2C which produces low number of winners.
- This is inherently driven by the need of companies to have multiple vendors for most supplies.

Greater Exit Potential

- The exit multiples like EV/Revenue, EV/Invested capital are much better in B2B
- Over 60% of the VC backed IPOs in the period of CY17-21 in USA were B2B

Funding gap/capital allocation towards the sector is starkly low

Falls even further for companies innovating in India/Developing Economies and growing cross border

basic roots consulting

Why India is the right crucible for deeptech disruption ?

Patents Filed

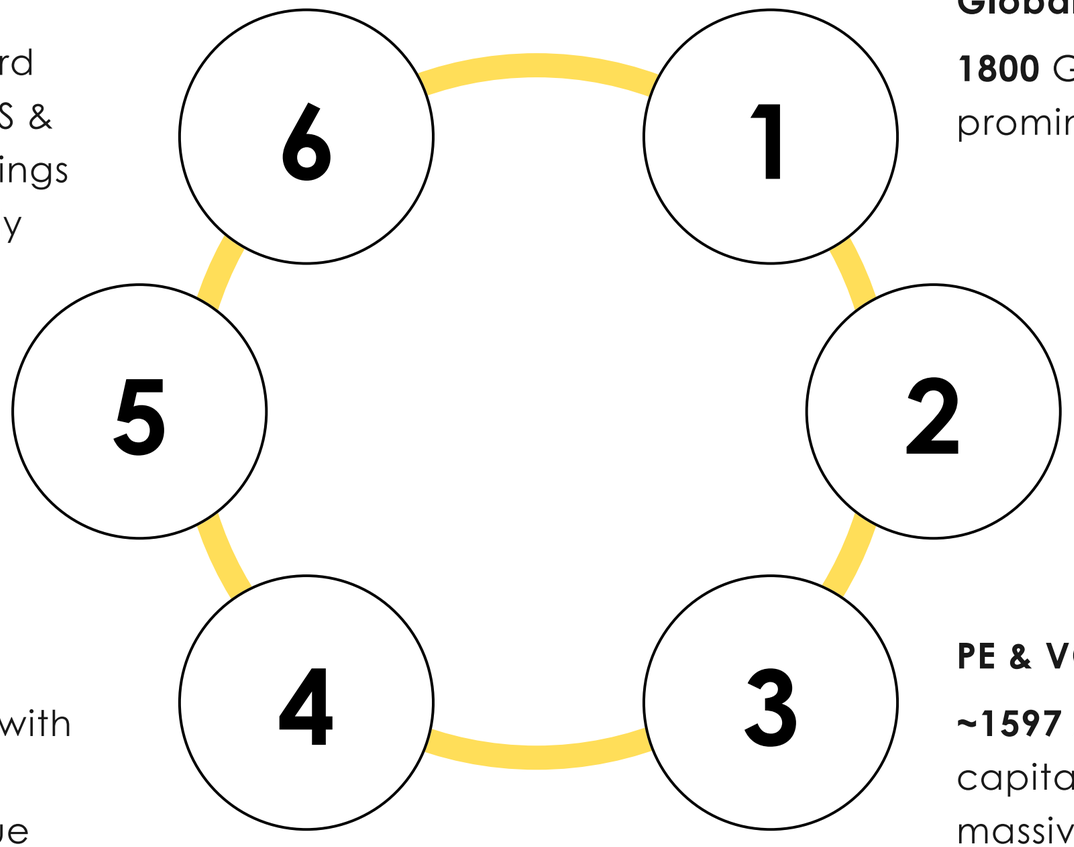
India has emerged as the third largest IPR ecosystem after US & China and the # of patent filings have been increasing steadily

Leading Digital Public Infra

India stack with Aadhar, UPI, AA has been way ahead of any other country including developed countries

2 Large Available Markets

Friendly diplomatic relations with USA have enabled access, knowledge sharing, & revenue growth



Global Development Centres

1800 Global Capability centres from prominent players like

STEM Graduates

Largest STEM graduate pool in the world of which **40%** are women

PE & VC Funds

~1597 AIF's and foreign venture capital investors in India unlocks massive funding potential for Indian startups

basic roots consulting

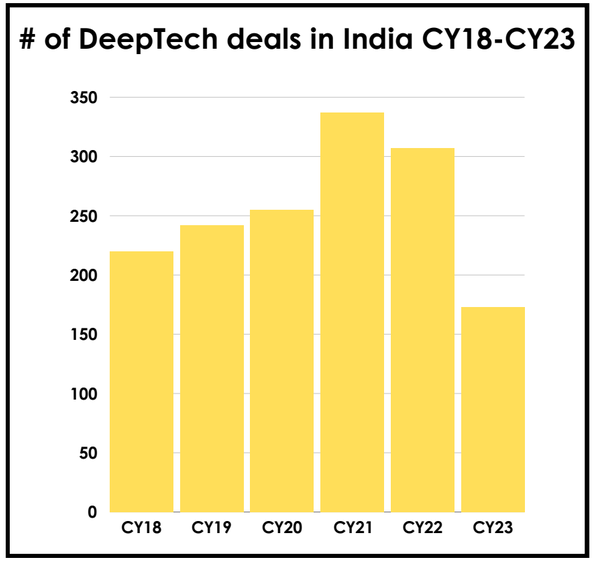
Navigating the Indian Investment Landscape in Deeptech

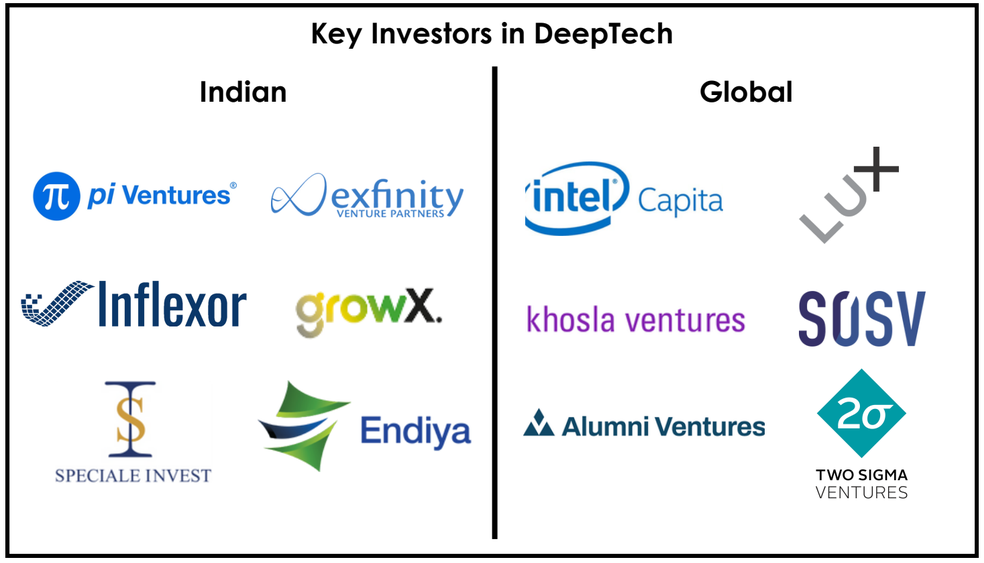
How is the market growing in India?

- In India, **top-tier academic institutions are partnering with industry leaders** to develop DeepTech in fields of AI/ML, robotics, quantum computing, blockchain and extended reality

- **GoI has taken various initiatives** like the National Blockchain Framework (NBF), Cyber Surakshit Bharat, Personal Data Protection Bill and others **to promote the adoption & development of DeepTech in India**

- **International collaborations** like U.S. India Artificial Intelligence (USIAI) Initiative, UK-India Tech Alliance, India-Russia Joint Technology Assessment Programme and others are **undertaken to promote the development of DeepTech**





Factors Driving Growth

- Rise of new technologies
- Better accessibility
- Diverse approaches
- Growth in available capital
- Government initiatives