



Food- Global and Indian Challenges

Challenges in Health and Human Sustainability

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- *What's happening Global and Indian challenges*
- *What is it leading to?*
- *What is the consuming class seeking?*
- *One example of what is new in Innovation in India and what can operating companies do better ?*
- *What are the regulators doing – war against “Hidden Hungry” and one related example of what we have done at Mother Dairy*



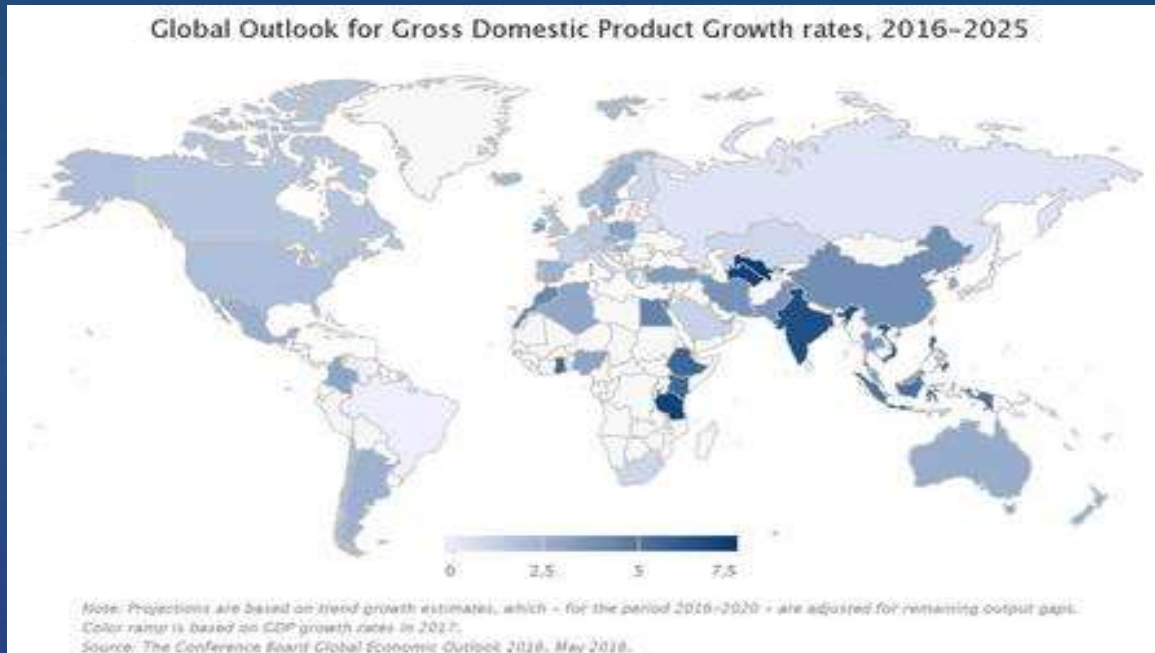
*What's happening?
Global & Indian challenges
in food*

10 Points





1) World has got Richer over the years, so is India



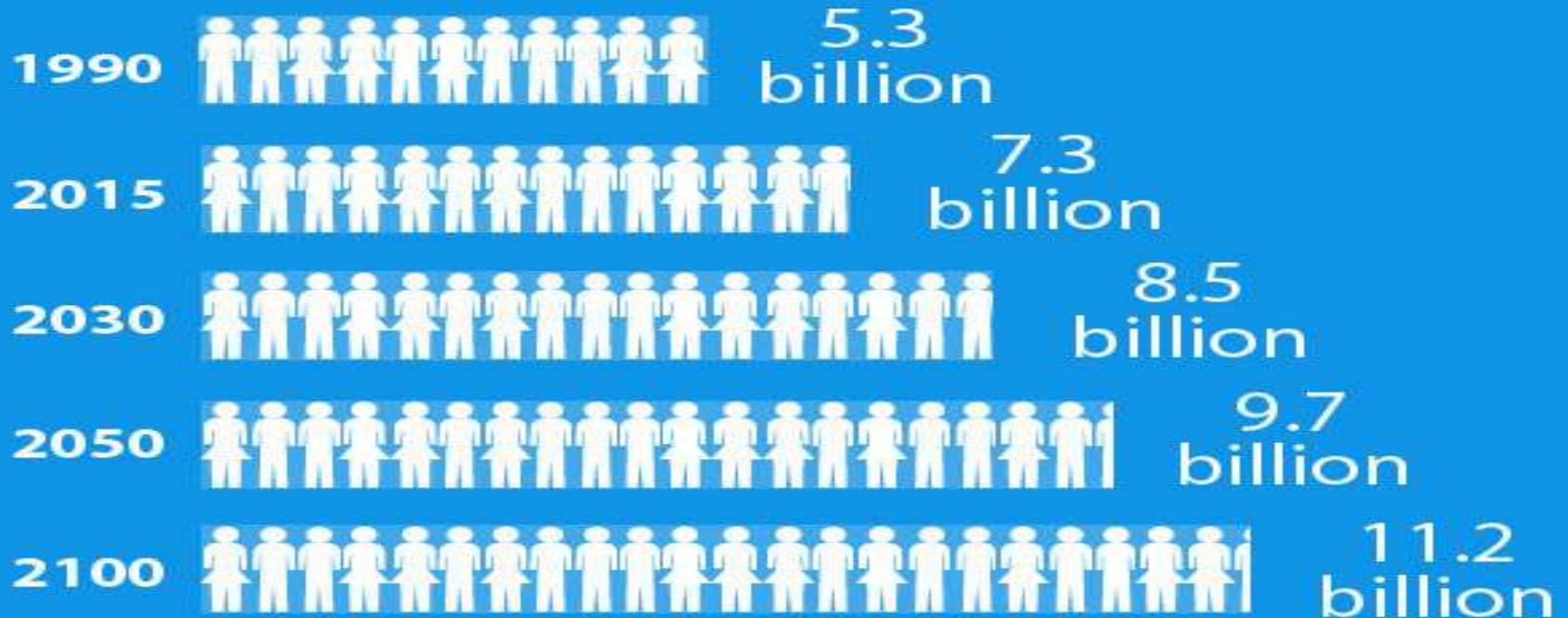
- **India – Rapid growth Economy (7.5 % +) = No. 1 ahead of China**
- **Contributes - 6.6% to the Global GDP growth & at No. 3 after US and China**



2) Global Population growing at a rapid pace, so is India

World Population

Projected world population until 2100

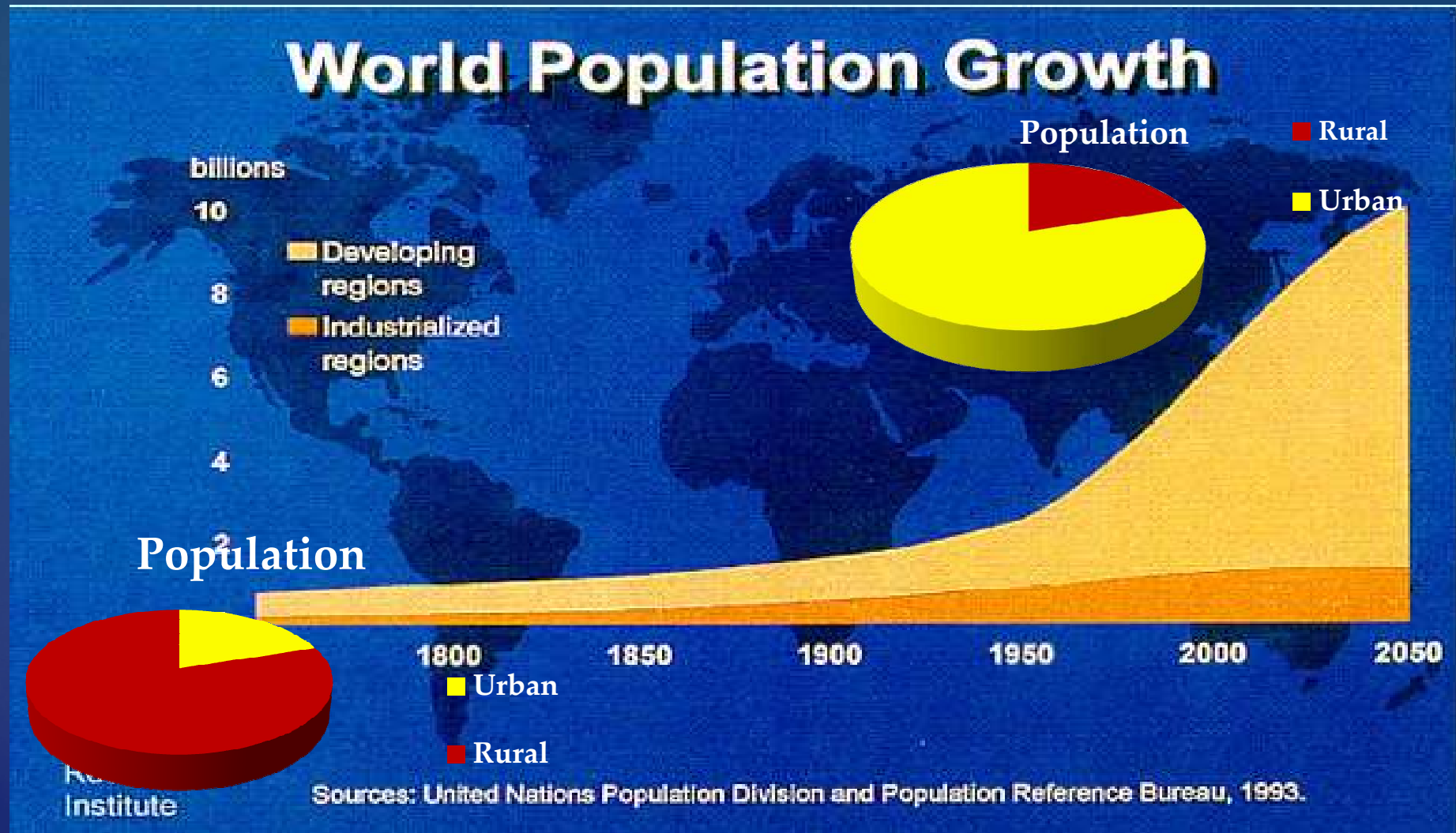


Source: United Nations Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2015 Revision*
Produced by: United Nations Department of Public Information



Global population today at 7.0 Billion likely to be 9.5 Billion by 2050

3) Population migration to Urban, especially in Developing World, So will India



- **By - 2050: 20 cities > 10 M population. Only 2 in Developed world.**
- **India will have bulk of the huge Populous cities by 2050**



4) Climate change is “Real”, Globally and so in India



This will impact FOOD output



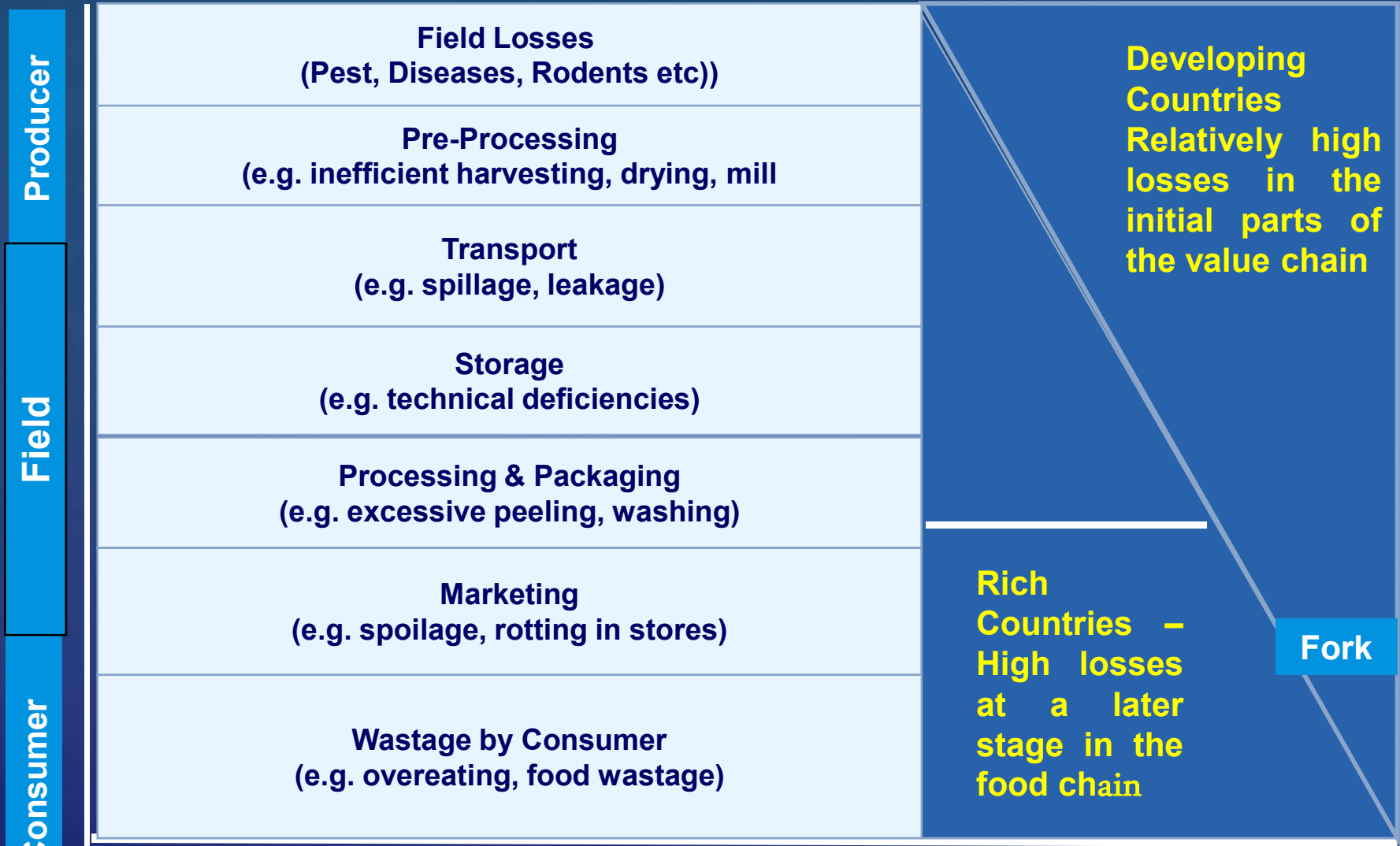
5) Food production has increased over time, so in India

- Rate of food production has increased faster than the rate of population growth
- World produces 17% more food per person
- **Global hunger however is worsening**
- Sub-Saharan Africa and south Asia have the highest rates of hunger. (*India included*)

Global food scarcity is not the reason



6) Food Wastage is a big concern – Globally, So is India – 30-35% of the produce goes wasted



Wastage @ > Rs. 2,00,000 Crore per year (2013)



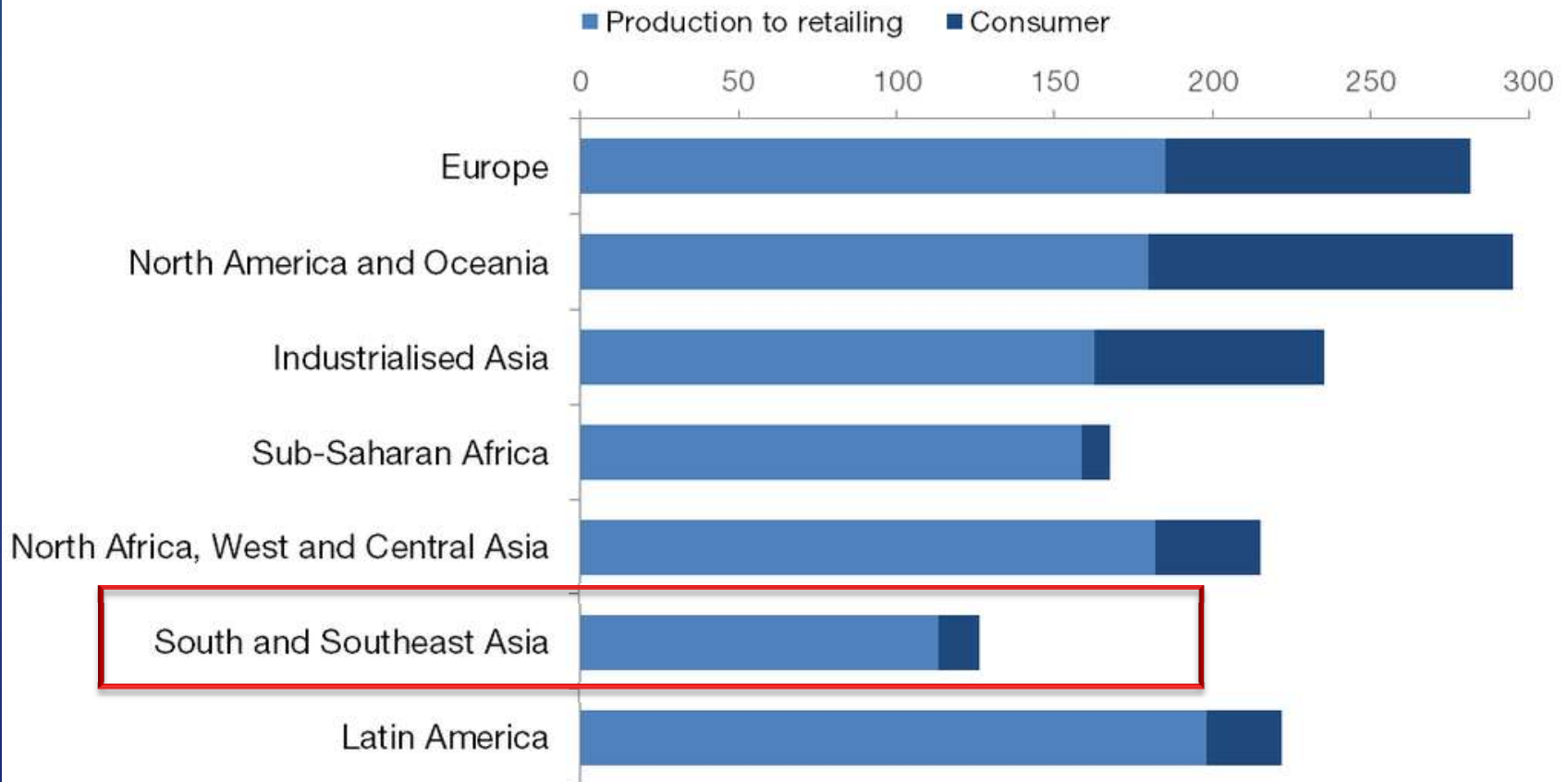
120-170 Kg per Cap annually = Food loss Globally (WEF – 2015)

Which regions waste the most food?

Per capita food losses and waste, kg/year



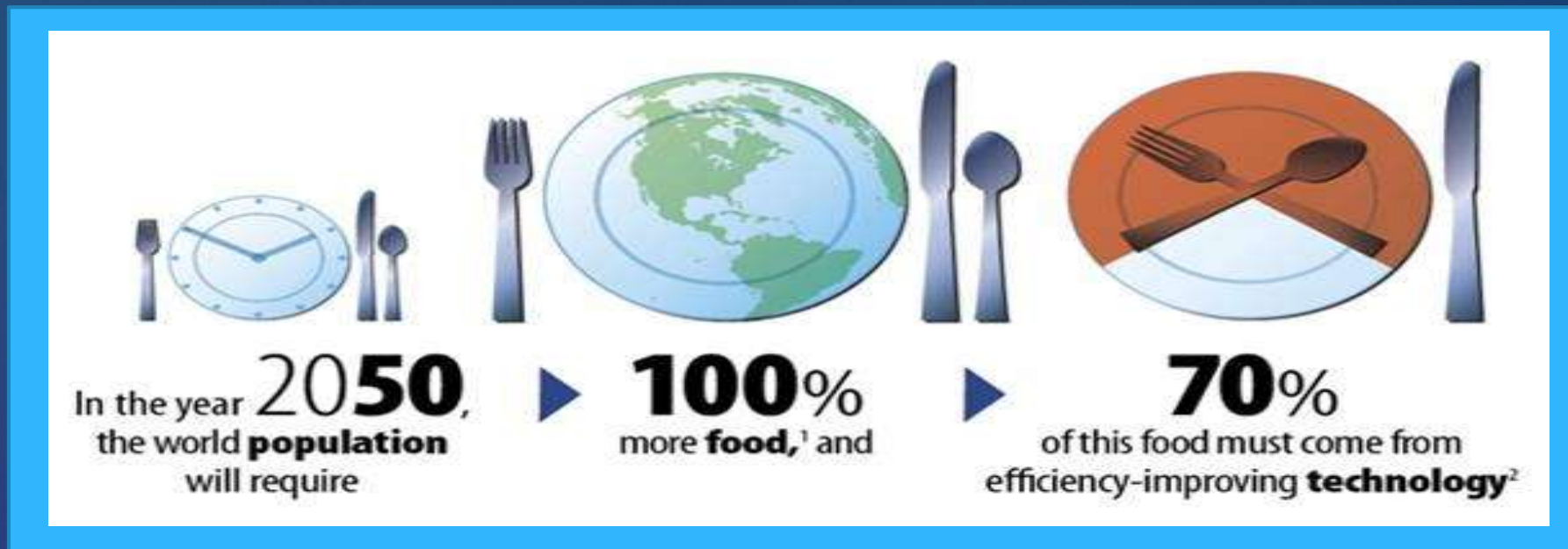
COMMITTED TO
IMPROVING THE STATE
OF THE WORLD



Source: The Food and Agriculture Organization of the United Nations (FAO)



7) Food Availability has to be > Food Production & more critical Globally, so is true for India



More Food needed

- *Innovation in Agriculture*
- *New handling / storage methodologies*
- *Newer Technologies*
- *Efficient Preservation*



8) India - World's largest producer

- **Milk, Spices & Condiments, select fresh meats; select fibrous crops such as jute, several staples**
- **Fresh Fruits & Vegetables, Wheat and rice, the world's major food staples**
- **Agriculture-based textile raw materials, roots and tuber crops, pulses**
- **World's fifth largest producer of over 80% of agricultural produce items, including many cash crops such as coffee and cotton, in 2010**

India is a now the largest producer of Rice and exports Rice



9) India – Food production Great Past > Future is tough

India has only 2% of world's arable land, and, 4 % of Global Water and 17% Globe's population

- 160 million hectares / 82 million hectares under irrigation (52%). Largest in the world

• 17% Globe's population

- *Agriculture v1.0 (Green Revolution)*
- *Agriculture v2.0 (White revolution)*
- *Agriculture v.2.5(Clearance of BT-Cotton
- makes India net exporter of cotton)*
- *Awaiting Agriculture v3.0 to happen*

[Herald Blade - Jan 7, 1966](#) [Browse this newspaper »](#)
[Browse all newspapers »](#)

Food For India

ALTHOUGH the United States has come in for abuse in India for trying to put a damper on the Indian-Pakistan conflict over Kashmir, the Indian government confidently as ever looks for the U.S. Government to help feed its starving people. Last year, the U.S. shipped India 6.7 million tons of surplus wheat. In 1966, New Delhi expects, we will send 10 to 15 million tons of grain

Indeed, in the face of a threatened Indian famine, the United States already has been sending in grain on an emergency basis - 20,000 tons daily pouring into India's ports. The Indian foreign exchange situation is so bad that the country's food minister says it cannot even pay the freight on these emergency shipments.

**FAO world agriculture statistics*

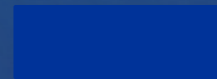


10) India in general is coping with change

- **Agrarian Economy**
- **Economic Boom in the last 2 decades**
- **Parallel running Black Economy engulfs 20% of our growth**
- **Lack of widespread investments across sectors – Education, Nutrition, Health**
- **General increase in stress has also fuelled problems:**
 - **Over worked work force – Stress , Health,**
 - **SEC-D&E : Bear the brunt of Inflation**
- **Non-inclusive growth story – continues to fuel “Hidden Hunger”**



Leading to.....





1) Obesity & Life style diseases



2) Hunger & Mal-nutrition





3) Lack of Clean Drinking water leading to infectious diseases





*While consuming class
is.....*





Consumer wants .. 2015-16



Exotic Variety & Tasty



Regional Tastes



Healthy Food

- Health in Basic food
 - Whole Foods
 - Nutrition
- Natural / Minimal processed
- Exotic Foods
- Regional variety
- “Vegan”
- Pro-biotics

And, Consumer real awareness & knowledge about Health and Nutrition is “Sub-Optimal”



*So Food Business
Operators – India & Globe
are innovating*

One Example





1. Cold Pressed Juices





1) Cold Pressed Raw Juice



53 Crore Market Size Rapidly growing

Positioning:

- Raw , Fresh, Un processed
- No Preservatives
- Healthy
- Specific Health Issues addressed
- Basic Nutrition - unaltered

Facts:

- Raw , Fresh, Un processed – microbial load high = no preservatives
- Potential to be infectious
- Goodness of fresh fruit MAY not be True

Not Everything about Cold Pressed Juice is Perfect





Hyper- Baric Processing can benefit raw pressed juices

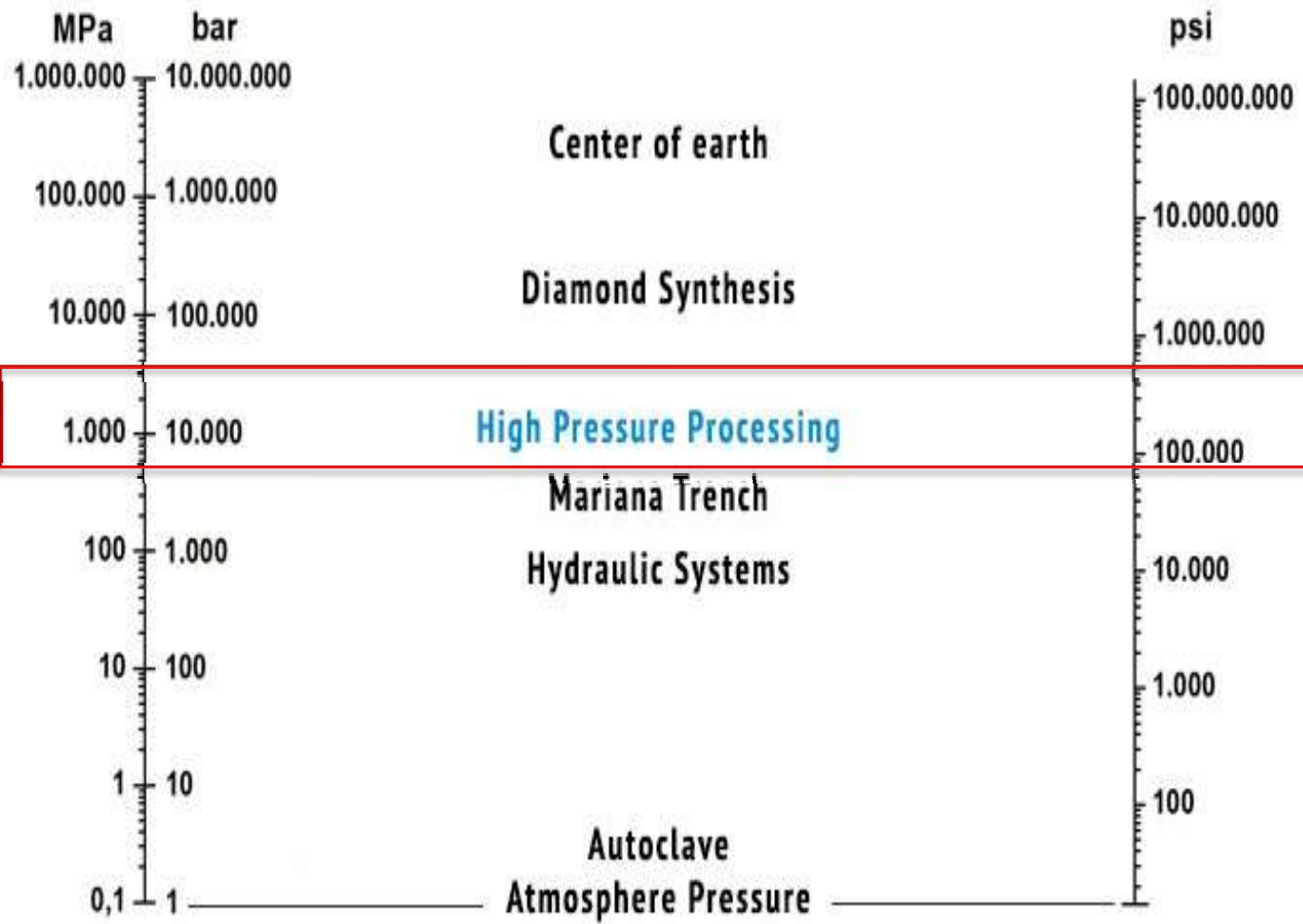
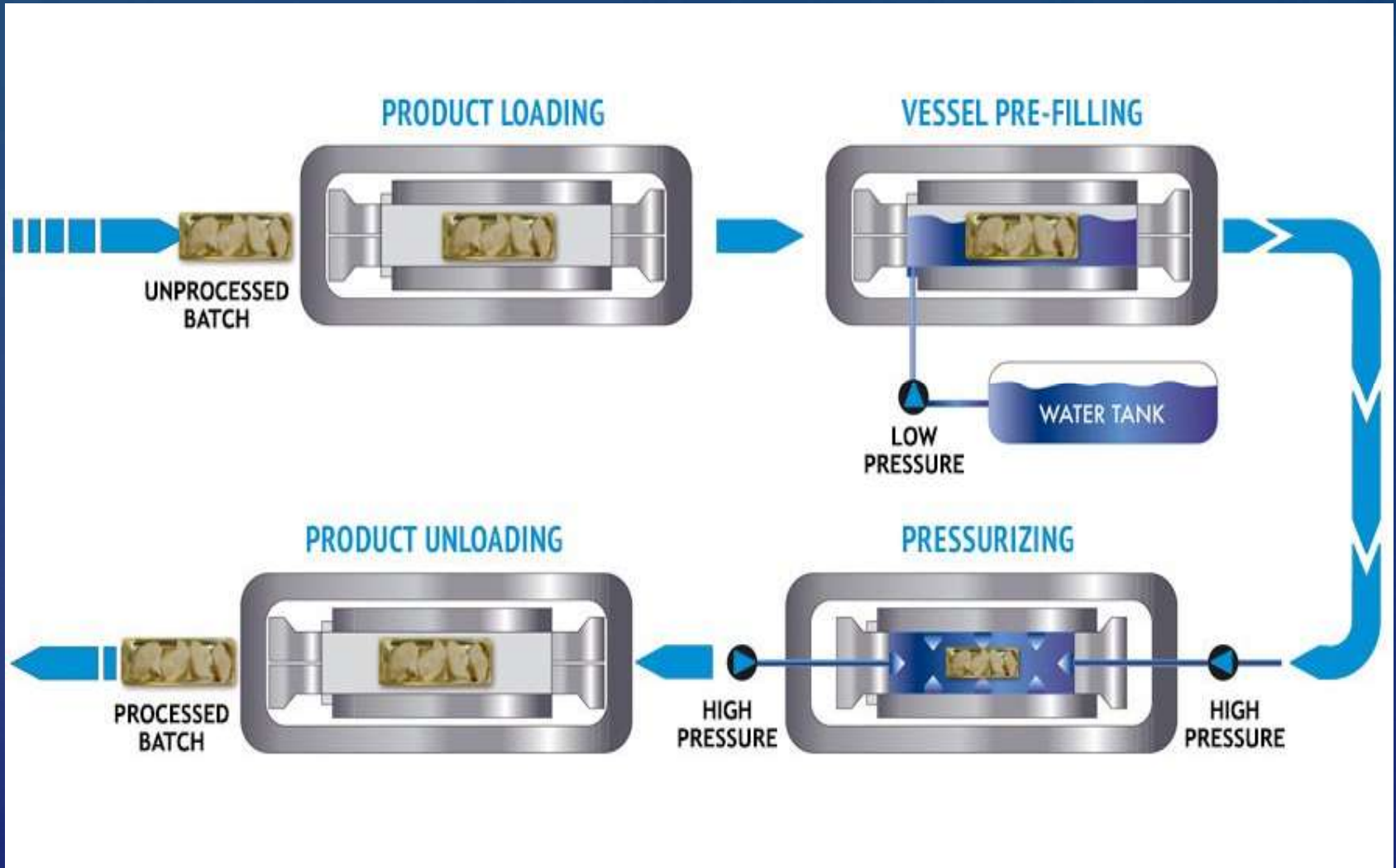




Diagram of Operation of a HPP Unit:





2) Essential Nutrients, Nutrition and fortification

Milk - Example





2) Fortification for Optimal health

Fortification solves many issues:

- Public Health Problem & Health consequences
Serious & irreversible**
- Productivity loss – Significant**
- Burden on nation's economics towards disease**
- Hampered nation's economic development**

**Good news – Regulators push for “Fortification of
basic Foods**



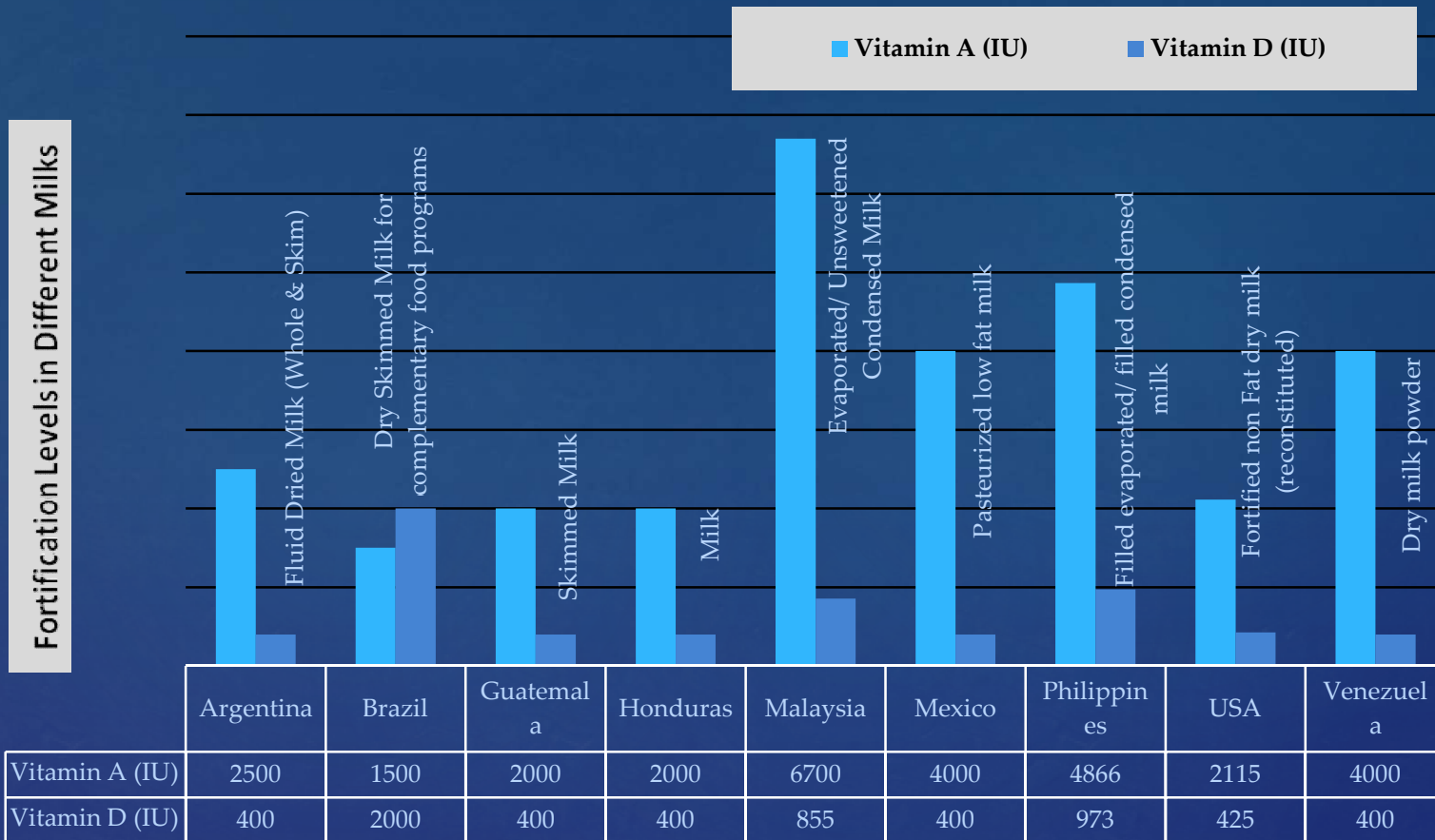
51* Essentials for Sustaining Human Life

Air, Water, & Energy	Protein (Amino Acids)	Lipids - essential fatty acids	Macro minerals	Trace Elements	Vitamins
Oxygen	Histidine, Isoleucine	Linoleic Acid	Na	Fe	A
Water	Lysine, Methionine	Linolenic Acid	K	Zn	D
Carbohydrates	Alanine, Threonine		Ca	Mn	E
	Tryptophan, Valine		Mg	I	K
<ul style="list-style-type: none"> • Calcium: Bone health & teeth. • Magnesium: Additional criterion for bone health • Iron: Occurrence of Nutritional Anaemia • Zinc: Low birth weight, preterm deliveries, spontaneous abortions & congenital malformations. • Iodine: IDD (Iodine Deficiency Disease) eradicated by introduction of mandatory salt fortification. • Vitamin A: Nutritional disease problem of blindness. • Vitamin D: Lack of this vitamin -> Ca Mal-absorption 			S	Fe	C
			P	Se	B1
			Cl	Mo	B group
				Co in B12	Folic Acid
				B	
				Cr	
				V	
				Si	
				As	
				Li	
	Sn - Tin				

*Numerous other beneficial substances in foods are also known to contribute to good health – e.g. Phytonutrients etc.



Fortification – Many countries embraced fortification in the 90's



E.g. Multi-country Milk fortification scenario Vit-A & Vit-D in milk



Example of fortifying Milk with Vit-A & D

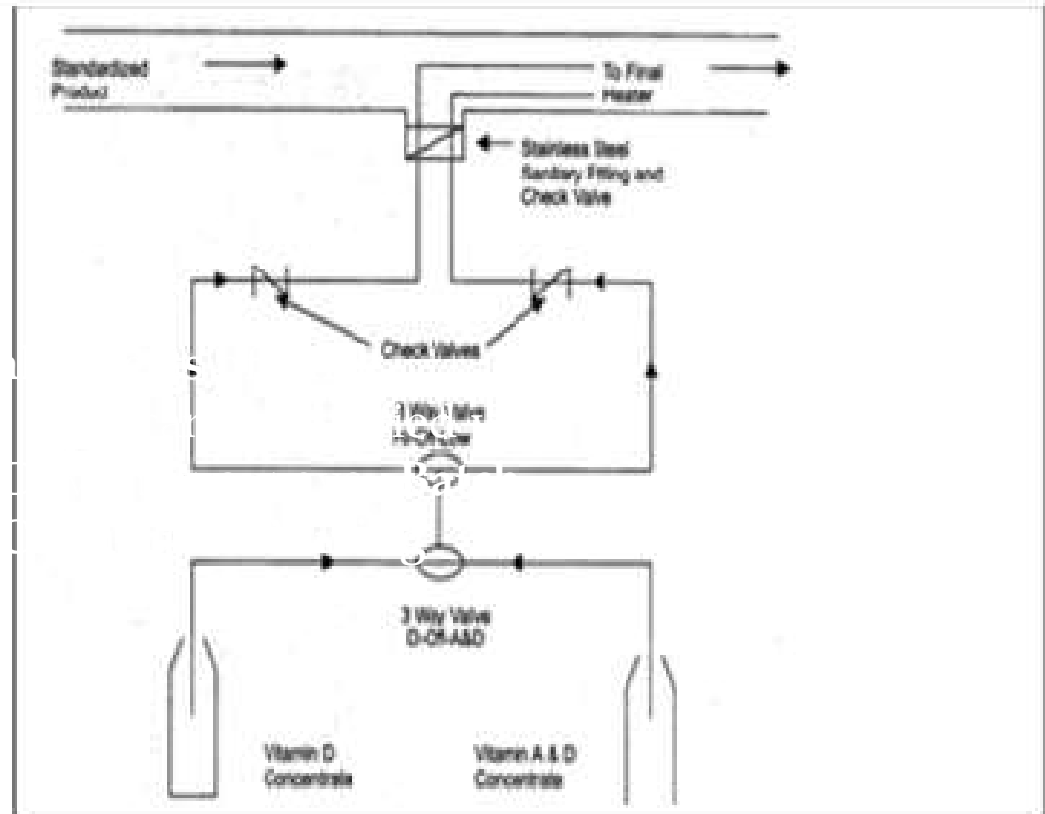
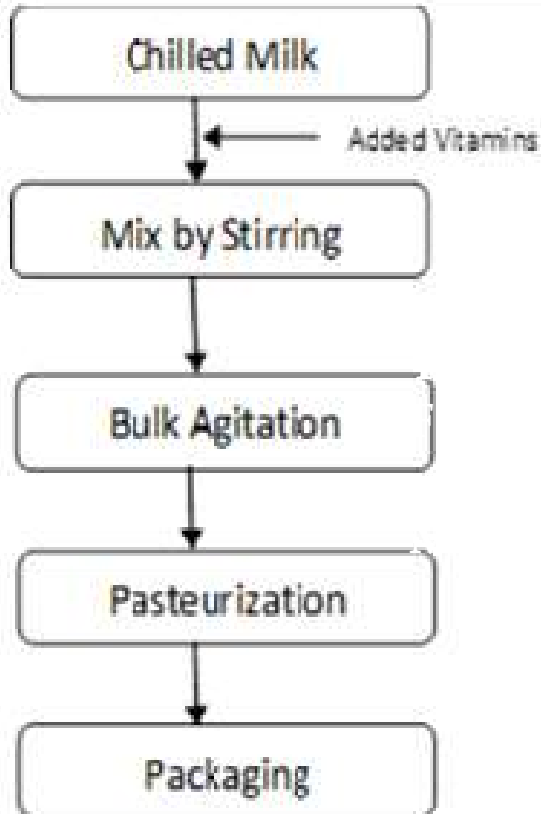
- Any one can and easy to “Fortify basic foods”
- Vit-A at 770 IU & Vit-D at 550 recommended
- Cost – Very “Miniscule” 1.6 paise
- Water soluble & fat soluble formats

Mother Dairy – Fortification Vit-A since 1984

- First to start BVM milk fortification 7 days after the draft notification with Vit-A & D



Technological aspects of Milk Fortification— Batch Mixing and Continuous Mixing





Thank you

