

The background of the slide is a photograph of several water buffaloes gathered around a long, narrow concrete trough. They are drinking water from the trough. The scene is set outdoors, with trees and foliage visible in the background. The entire image has a warm, orange-brown color cast.

Dynamics of Livestock Sectors and Challenges of Water Resource

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Emerging Livestock Husbandry: An Important Economic Resource

- ❖ Auxiliary to Cropping System
 - ❖ Key to Alleviation of Poverty
 - ❖ Livelihood Generation
 - ❖ Strengthen Food Security
 - ❖ Sustainability of Agriculture
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Livestock Revolution in World

- ❖ Change in Livestock Number
- ❖ Change in Pattern of Consumption of Livestock Derived Products
- ❖ Shifting in livestock Husbandry Pattern
- ❖ Intensification and Industrialization



Average Annual Growth Rate of Livestock (2000-2010)

(Value in %)

Country/ Region	Cattle	Buffaloes	Pigs	Sheep	Goats	Chicken
Developing Countries	0.6	1.7	1.0	1.5	1.7	3.5
South-east Asia	2.6	0.5	3.0	4.0	2.2	3.9
South & South-west Asia	1.5	2.1	-3.1	1.4	2.3	7.3
North & Central Asia	-0.8	-1.4	-0.2	5.3	6.4	2.0
East Asia	-2.2	0.4	0.9	0.7	0.6	2.3
Pacific Islands	0.5	0.9	1.1	-0.1	0.7	1.3
Developed Countries	0.1	-	-0.3	-4.3	7.1	0.0
Asia-Pacific	0.5	1.7	1.0	0.0	1.8	3.3
Rest of World	1.1	1.6	0.5	1.0	2.3	2.3
WORLD	0.9	1.7	0.8	0.5	2.0	2.8

Source: RAP, FAO, 2012

Projected Trends in Consumption of Milk and Meat (1997-2020)

Country/ Region	Meat (Annual Growth - %)	Milk (Annual Growth - %)
China	3.1	3.8
India	3.5	3.5
Other East Asia	3.2	2.5
Other South Asia	3.5	3.1
South East Asia	3.4	3.0
Latin America	2.5	1.9
West Asia & North Africa	2.7	2.3
Sub-Saharan Africa	3.2	3.3
Developing Countries	3.0	2.9
Developed Countries	0.8	0.6
World	2.1	1.7

Source: Delgado, 2003

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Latin America	2.2	2.0
West Asia & North Africa	2.5	2.6
Sub-Saharan Africa	3.4	4.0
Developing Countries	2.7	3.2
Developed Countries	0.7	0.4
World	1.8	1.6

Source: Delgado, 2003

Dynamic Forces of Livestock Revolution



- ❖ Urbanisation
- ❖ Health Awareness and Food Habits Change
- ❖ Market Price
- ❖ Disposable Income Improvement
- ❖ Liberalization of Agri-business

Livestock Husbandry in India

- ❑ Livestock Change in General
- ❑ Cattle
- ❑ Buffalo
- ❑ Small Ruminants
- ❑ Poultry



Livestock Growth in India (1992-2007)

(Number in million heads)

Species	1992	2007	Change	Growth Rate (%)
Buffalo	84.21	105.30	21.09	25.04
Cattle	204.58	199.10	- 5.48	-2.60
Goat	115.28	140.50	25.22	21.87
Sheep	50.78	71.60	20.82	41.00
Pigs	12.78	11.10	-1.68	-13.14
Total Livestock	470.86	527.60	56.14	11.92
Poultry	307.86	648.00	340.14	110.48

Source: Directorate of Economics and Statistics, D/O Agriculture and Co-operation, Ministry of Agriculture, Gov. of India

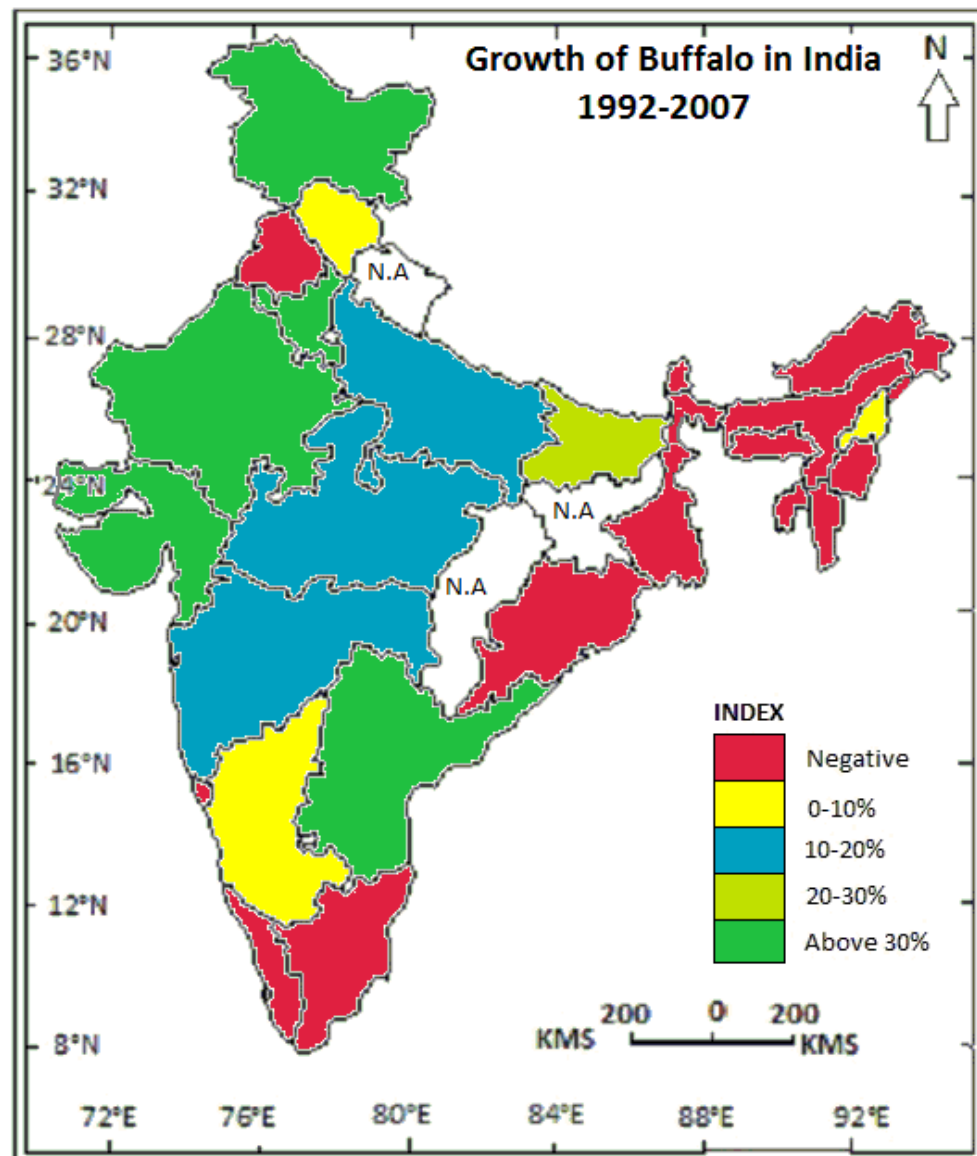


Fig 1. Growth of Buffalo in India (1992-2007)

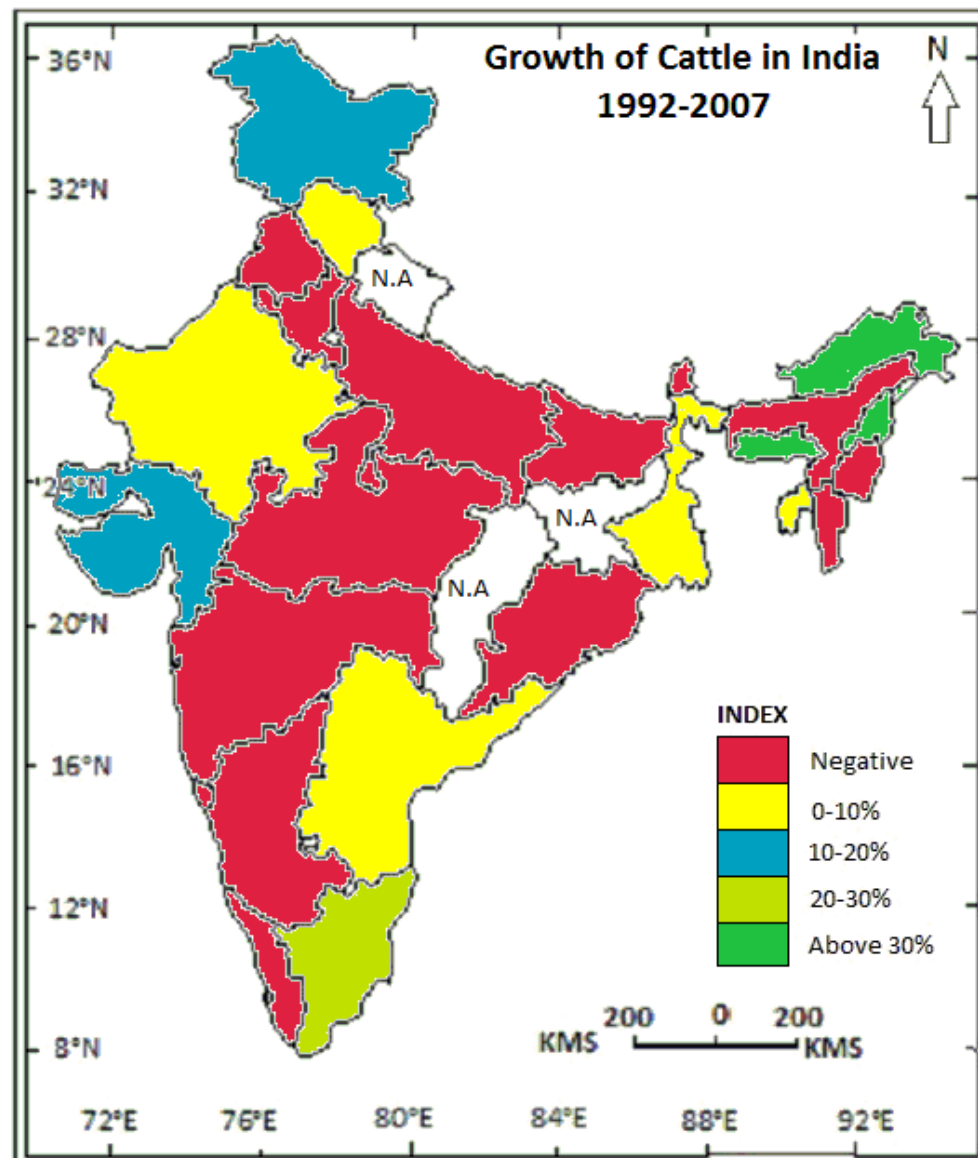


Fig 2. Growth of Cattle in India (1992-2007)

Global Water Availability

- ❑ Per Capita Water Availability
- ❑ Current Water Usages
- ❑ Future Water Uses



Global Water

Total Water	1400 million Km³	
Fresh Water	35 million Km³	
Frozen Ice Cap	24.05 million Km ³	(68.70 %)
Underground Water	10.50 million Km ³	(30 %)
Surface Water	35 million Km ³	(0.30 %)

Surface Water	100 %	110,000 Km³
Lake	87 %	95,700 Km ³
Swamp	11 %	12,100 Km ³
River	2 %	2,200 Km ³

Global Water Available per Capita per Year (Mt³)

Region	1992	2011
East and East Asia	2485	2196
South East Asia	13886	10584
South &South West Asia	3200	2330
North &Central Asia	22355	21750
Africa	9241	5448
Europe	5433	5396
Latin America &carribbean region	39985	30608
North America	20733	17089
World	9970	7771

Regional Distribution of Fresh Water & Population

Region	% of Fresh Water	Population
Asia	36 %	60 %
Africa	11 %	13 %
Australia & Oceania	5 %	1 %
North & Central America	15 %	8 %
South America	26 %	6 %

Sectoral Uses of Fresh Water

Region	Agriculture	Industries	Domestic
Developed Countries	30%	59%	11%
Developing Countries	82%	10%	8%
India	83%	12%	5%
World	70%	22%	8%

Per Capita use of Water in Some Selected Countries

U.S.A.	215 m ³ /year
France	106
Egypt	77
India	52
China	32
Mali	04

Per Capita Water Availability in India

Year	Population (Million)	Water Availability (Cubic mt per year)
1951	361	5177
1955	395	4732
1991	846	2209
2001	1027	1820
2025	1394	1341
2050	1640	1190

Source: Govt. of India, 2009

Water Required for Production of Livestock Products

One Litre Milk	3000 Litres of Water
One Kg Beef (Grain fed)	100,000 Litres of Water
One Kg Potato	500 litres

Comparative Water Use Efficiency for Veg. & Non-veg. Products

Milk	40 gram protein/ m ³ water
Poultry	33 "
Pork	21 "
Beef	10 "

Potato	150 gram protein/ m ³ water
Maize	77 "
Bean	76 "
Wheat	74 "
Rice	49 "
Groundnut	14 "

Conclusion

- Rapidly growing demand of meat and milk in urban areas of developing countries will place substantial new demand on agriculture water resource especially for feedgrains production.
 - The contribution of livestock to rural livelihood have been undermined because of past focus on productivity, limited consideration of non-monetized products and services and neglect of small stock.
 - Sale of livestock and livestock products is a vital strategy to enhance income and cope with major or unexpected family expenditure.
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- Livestock revolution put a stress on available water especially for agriculture and reducing the quality of water through polluting it. Depletion of water table is also a serious outcome of the revolution.
 - Both conservation of water and poverty alleviation are important issues but co-terminus. An efficient water-livestock management is urgently needed. Livestock-crop integrated farming system should be encouraged for sustainable development of water, agriculture and livestock husbandry in concerned area.
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A herd of hippos is shown in a river, partially submerged in the water. The hippos are dark grey and appear to be resting or grazing on aquatic vegetation. The water is light-colored and slightly rippled. The text "Thank You" is overlaid in the center of the image in a bold, orange, sans-serif font with a black outline.

Thank You