

India's fertilizer market

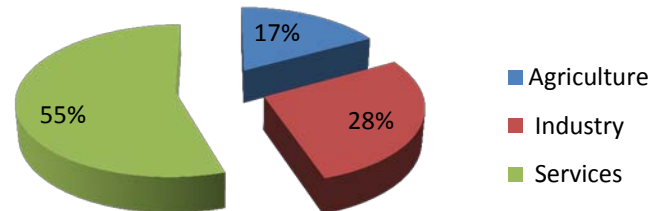
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Centre for Green Technology & Management, India

Agenda

- India's economy- an overview
- Agriculture & Food security
- Fertilizer consumption
- Domestic production & imports
- Subsidy and its impacts
- Fertilizer policy since 1978
- Evolution of Subsidies
- Fertilizer pricing policy
- Investment climate
- Impacts on the Industry
- Way forward

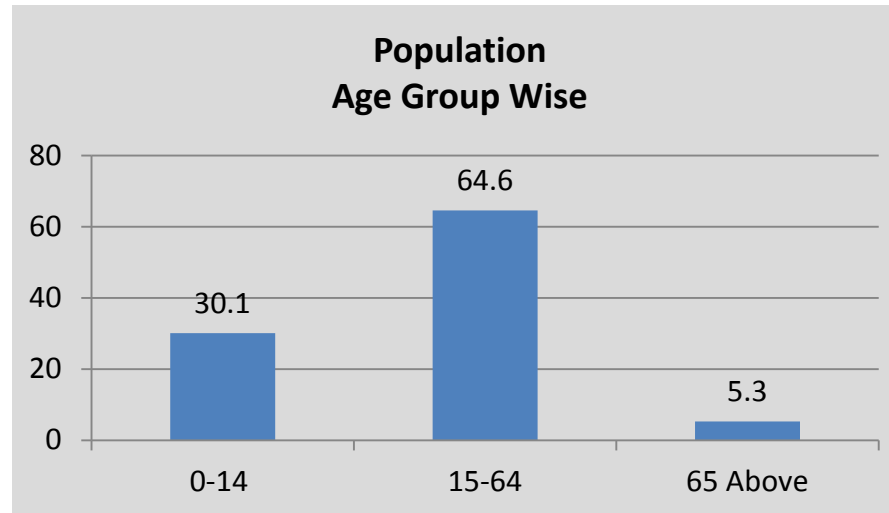
Indian economy

- **\$ 2 trillion size to reach \$ 6 trillion by 2020**
- **Growth rate 8-9% pa**
- **Sector wise contribution**
 - **Agriculture 17 %**
 - **Industry 28 %**
 - **Services 55 %**
- *** 65 % of workforce (467 million) depend on agriculture**



Population

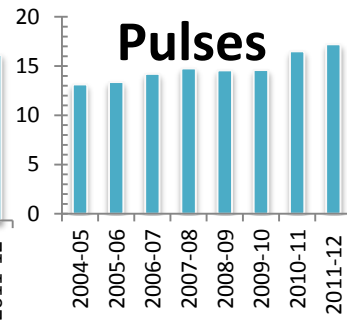
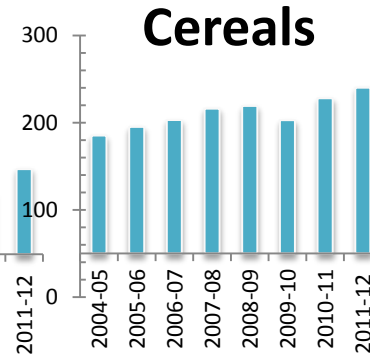
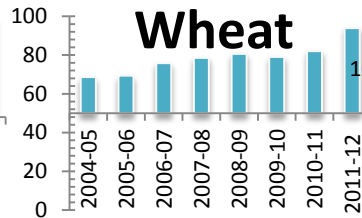
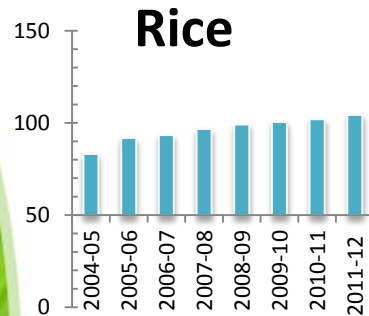
- **1210.1 million growing by 1.76 %@ pa**
- **0-14 age group 30.1 %**
- **15-64 age group 64.6 %**
- **+65 5.3 %**



Food grains production Million MT

Product	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Rice	83.13	91.79	93.36	96.69	99.15	100.5	102	104.32
Wheat	68.64	69.36	75.81	78.57	80.58	79	82	93.90
Cereals	185.23	195.22	203.09	216.21	219.21	203	228	240.23
Pulses	13.13	13.38	14.2	14.76	14.57	14.59	16.5	17.21
Total	198.36	208.6	217.29	230.97	233.78	217.59	241.5	257.44

Average annual growth over 5 years is 2.29%

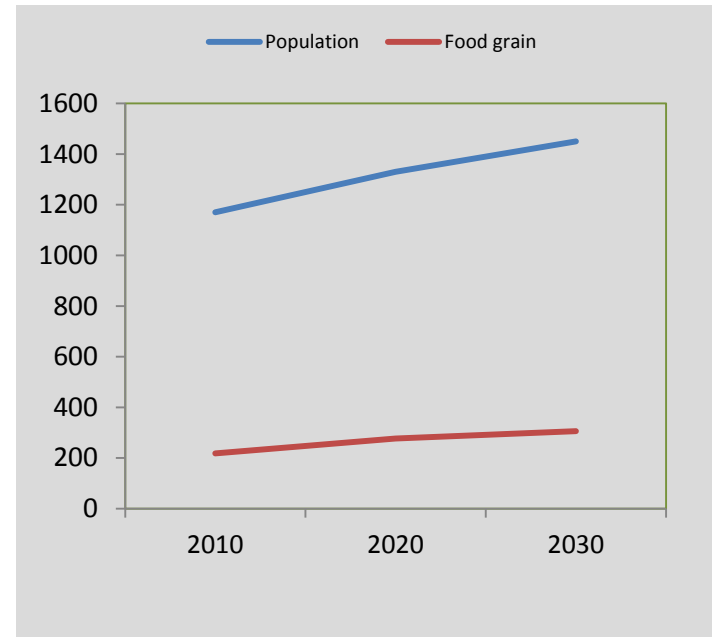


Fertilizer Consumption (Kg/Ha)

Country	N+P+K
India	156.1
Pakistan	204.9
Bangladesh	188.3
China	396.0
Korean Republic	284.0
Egypt	375.0
Sri Lanka	122.1
Indonesia	101.0
U.S.A	114.0
World Average	107.0

Food grains demand 2020-'30

Year	Population (Million)	Food grain (Million MT)
2010	1170	218
2020	1330	277
2030	1450	306



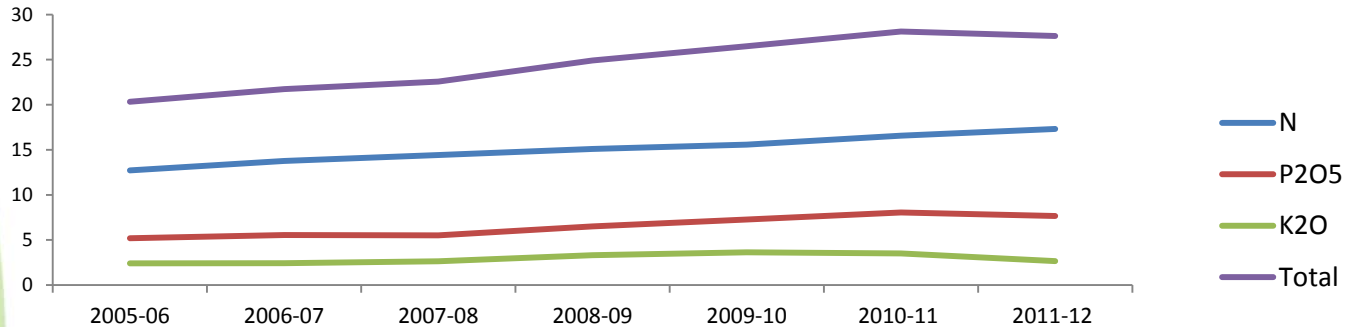
Consumption rising on account of growth in income level & working age population

Increasing food production-GoI efforts

- National Food Security Mission
 - Outlay 1 Billion \$ for XI plan
 - Increase production of Rice-10 MMT and Wheat by 8 MMT by 2011-12
- National Agricultural Development Programme
 - Outlay 5 Billion \$ for holistic development of Agricultural sector
- Mission mode approach for
 - Horticulture
 - Cotton
 - Oil seeds
 - Pulses
- Increase in MSP in Government procurement
- Irrigation for additional 10 MM Hectares
- Infrastructure improvements for
 - Soil testing
 - Fertilizer testing
 - Marketing
 - Food Processing

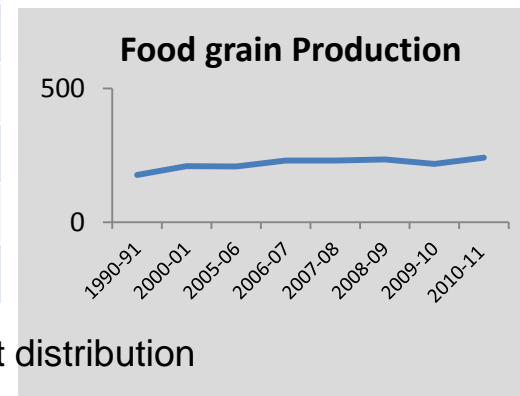
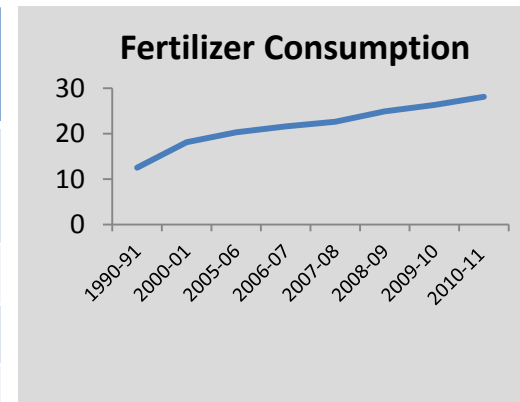
Fertilizer usage Million MT

Nutrient	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
N	12.72	13.77	14.42	15.09	15.58	16.56	17.31
P2O5	5.2	5.54	5.51	6.51	7.27	8.05	7.66
K2O	2.41	2.43	2.64	3.31	3.63	3.51	2.66
Total	20.33	21.74	22.57	24.91	26.48	28.12	27.63
Kg/hectare	106	112	115	127	135	144	145



Fertilizer use efficiency

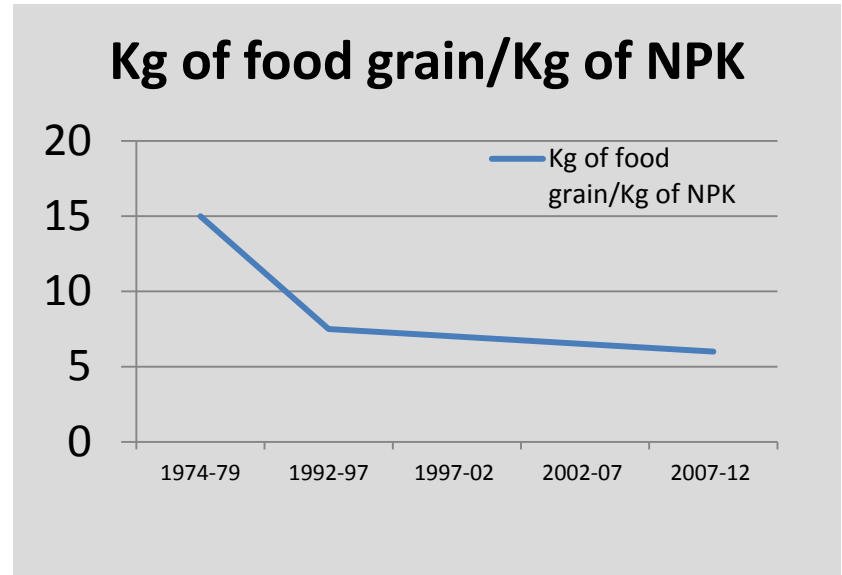
Year	Fertilizer Consumption		Food grain Production	
	MMT	growth rate %	MMT	growth rate %
1990-91	12.5	8.5	176.4	3.1
2000-01	18.1	4.1	209.8	1.9
2005-06	20.3	10.6	208.6	5.2
2006-07	21.6	4.4	230.7	1.6
2007-08	22.6	4.4	230.7	6.2
2008-09	24.9	10.4	234.5	1.6
2009-10	26.3	5.6	218.2	6.7
2010-11	28.1	6.8	241.5	9.6



Declining productivity of soil Imbalance in nutrient distribution

Crop response to fertilizer

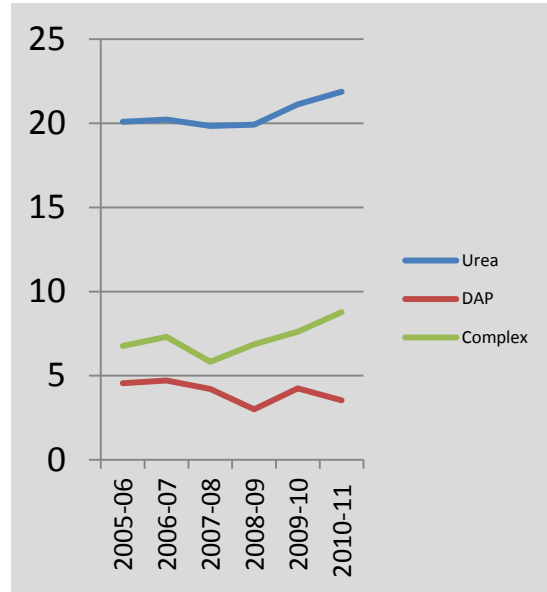
Year	Kg of food grain/Kg of NPK
1974-'79	15
1992-'97	7.5
1997-'02	7
2002-'07	6.5
2007-'12	6



Fast declining productivity !

Fertilizer Industry : Production Million MT

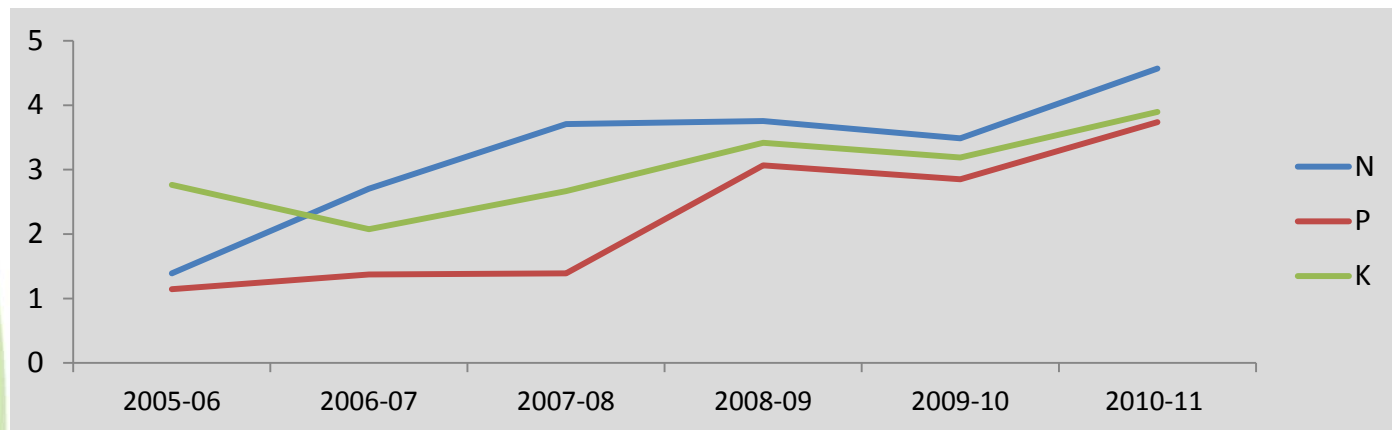
Product	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Urea	20.09	20.22	19.84	19.92	21.12	21.87
DAP	4.55	4.71	4.21	3	4.25	3.54
Complex	6.77	7.31	5.83	6.86	7.61	8.77



Imports million MT

Year	N	P	K	Total
2005-06	1.39	1.145	2.764	5.299
2006-07	2.704	1.373	2.076	6.153
2007-08	3.708	1.391	2.668	7.767
2008-09	3.756	3.067	3.417	10.239
2009-10	3.488	2.85	3.19	9.528
2010-11	4.57	3.739	3.896	12.205

Major product imports 2011-'12 (million MT)	
Urea	7.80
DAP	6.90
NP/NPK	4.41
MoP	4.00



Urea Imports country wise Million MT

Country	2006-07	2007-08	2008-09	2009-10	2010-11
Oman	1.837	1.891	1.906	2.338	2.366
KSA	0.127	0.354	0.457	0.301	0.021
Qatar	0.342	0.467	0.420	0.299	0.000
UAE	0.122	0.235	0.151	0.000	0.047
CIS	1.439	0.736	1.407	0.991	0.292
China	0.154	2.635	0.496	0.534	2.505
Others	0.698	0.610	0.830	0.747	1.379
Total	4.719	6.928	5.667	5.210	6.610

DAP Imports country wise

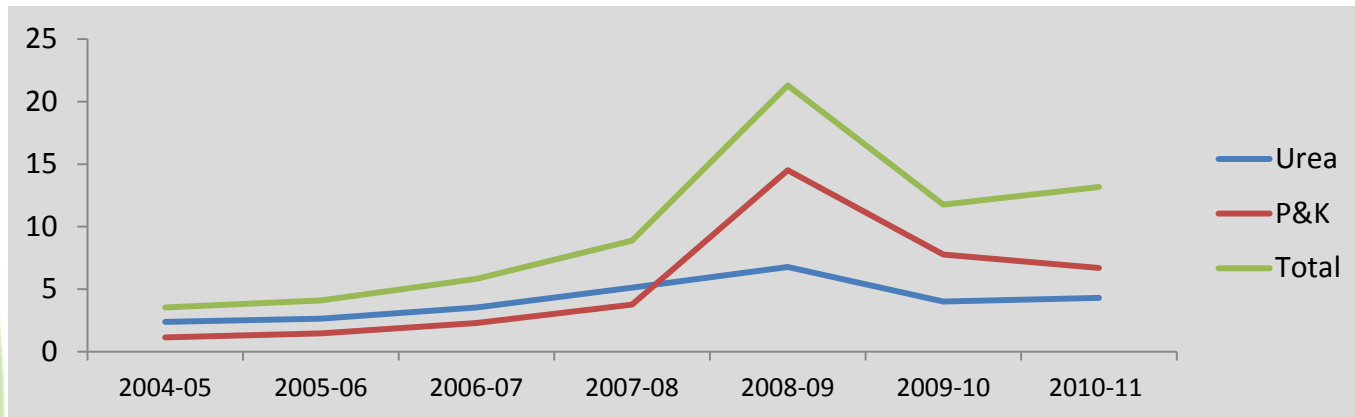
Million MT

Country	2006-07	2007-08	2008-09	2009-10	2010-11
USA	1.960	1.822	1.902	3.020	2430
CIS	0.471	0.088	1.238	1.246	950
Jordan	0.374	0.466	0.675	1.390	606
China	0.000	0.271	0.400	0.102	2525
Others	0.700	0.077	1.977	0.131	900
Total	2.875	2.724	6.192	5.889	7411

Fertilizer Subsidy Billion \$

Product	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Urea	2.386	2.636	3.539	5.124	6.777	4.001	4.30
P&K	1.143	1.466	2.288	3.763	14.522	7.767	6.70
Total	3.529	4.102	5.827	8.887	21.299	11.768	13.17

Mounting subsidy bill over the years!

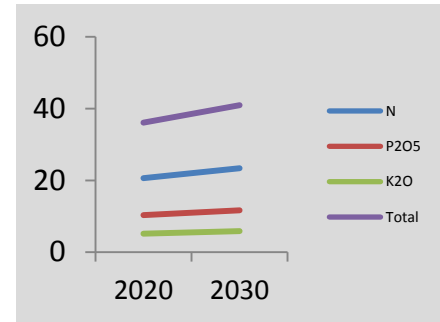
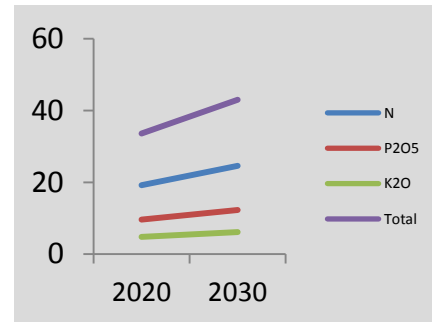
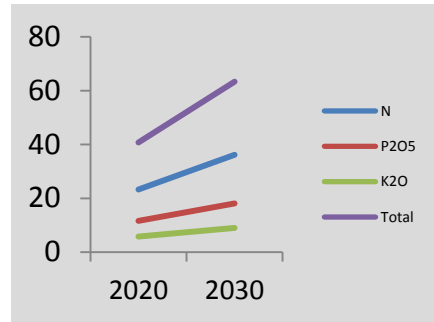


Fertilizer Demand Million MT

Nutrient	CAGR 4.5%		CAGR 2.5%		Meeting FG demand	
	2020	2030	2020	2030	2020	2030
N	23.31	36.21	19.21	24.59	20.64	23.39
P2O5	11.65	18.11	9.61	12.29	10.32	11.69
K2O	5.83	9.05	4.8	6.15	5.16	5.89
Total	40.79	63.37	33.62	43.03	36.12	40.97

* CAGR 4.5 % is based on trend in the last 5 years

** Assume a soil nutrient (N:P:K) ratio of 4:2:1



Addl urea capacity needed MMT

Year	2010-11	2011-12	2012-13	2013-14
N demand	15.85	16.31	16.76	17.22
N supply by Urea*	12.68	13.01	13.41	13.78
Urea requirement	27.56	28.28	29.25	29.96
Present prodn	21.25	21.25	21.25	21.25
Short supply	6.31	7.03	8	8.71
No plants** reqd	4	5	5.5	6

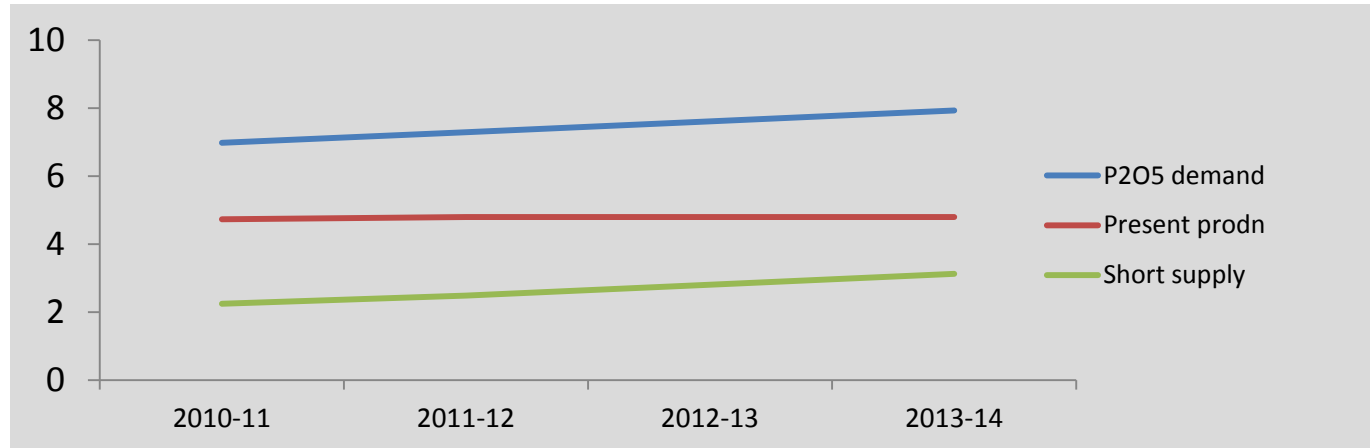
* estimated 80% by urea

** Std plant 1.5 MMTA (2500 TPD ammonia & 2X2250 TPD urea)

Addl P2O5 capacities needed million MT

Year	2010-11	2011-12	2012-13	2013-14
P2O5 demand	6.98	7.29	7.61	7.93
Present prodn	4.73*	4.80	4.80	4.80
Short supply	2.25	2.49	2.81	3.13

* 0.36 million MT expected from JV of TIFERT SA



K2O scene

- Consumption 2010-'11 (MMT)
 - MoP 3.932
 - SoP 0.0193
- No domestic resources
- Depend fully on imports

Fertilizer Subsidy System in India

- 1960s Food Shortages
- 1970s Grow more Food campaign
- 1978- Retention Pricing Scheme
- 1992- Decontrol of P&K fertilizers
- 2005- Balanced use of fertilizers
- 2007- New Pricing Scheme (NPS) for Urea
- 2008- Customized/fortified products
- 2010- Nutrient based Pricing (NBS) for P & K
- ? - NBS for Urea

Retention Pricing Scheme (RPS) 1978

- Ensure availability at affordable price
- Equitable distribution across the country
- Develop domestic capacities
- Economy –closed
- No incentives for investment in Industry
- RPS assumed 12% return on networth besides other incentives
- Spurt in investment in fertilizer industry
- Gas finds- Bombay High & S. Bassien
- Green Revolution
- RPS – a boost to national agriculture

Fertilizer Industry since RPS (1980-2000)

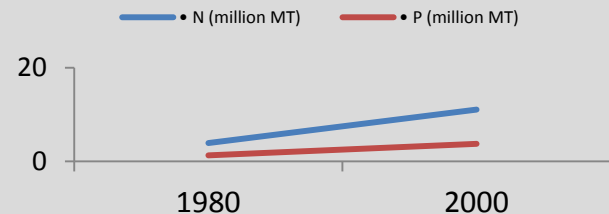
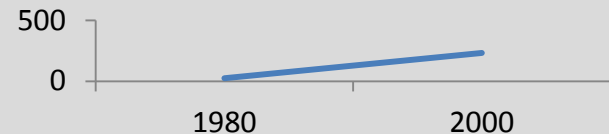
Production increased

	1980	2000
Investment (Bn \$)	25	233
Capacity		
• N (million MT)	3.902	11.068
• P (million MT)	1.284	3.748

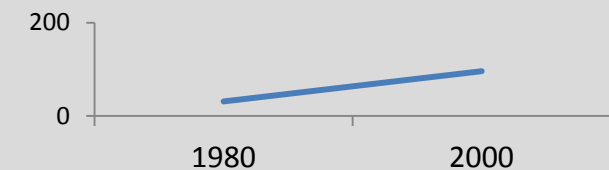
Fertilizer use Improved

Kg/Ha	1980	96 (now 145)
	31	

Investment (Bn \$)



Fertilizer use Improved



Subsidy growth

Fertilizer Subsidy 1980-2011		Bn \$
		1980
Indigenous		0.0642
Imported		0.0566
Total		1.208
		2011
Urea Domestic		3.016
Urea Import		1.279
Urea Total		4.295
P&K fertilizers		2.082
Others		6.700
Total		13.077

Reasons for increased subsidy

- Fertilizer subsidy which accounts for 37% of total subsidies by the GoI increased by 560 % during the last decade (2003-'04 to 2010-'11)
- Increased consumption
- Increase in production/ import
- Rise in price of raw materials, intermediates
- Increase in cost of processing
- Increase in duties, local taxes
- Stagnant market price
- Foreign Exchange rate variations

Impact of RPS

- Increasing fiscal deficits in national budget
- Soil nutrient ratio upsets due to over use of low cost (highly subsidized) fertilizers
- Decline in farm productivity
- Environmental consequences of leaching of nutrients
- Farmer is loosing on both fronts
- Investment in industry declined
 - Subsidy release difficult
 - Other avenues for investment available

Urea Policy

- New Pricing Scheme (NPS) III from March 2010
- Government fixes maximum retail price MRP
- Import only through Government channel
- Subsidy = (Production/Import cost - Retail price)
- Plants grouped into 6 based on vintage, technology & feedstock
- Incentive for capacity utilization > 100% through retrofit/revamp

Limitations of NPS

- Wide ranging disparity among gas based and non gas based producers
- Do not recognize increased conversion costs
- No commensurate recognition for investment towards retrofit / revamp
- Irrational grouping of plants
- Inadequate provision for VAT etc
- Under-recoveries
- **Result: Industry stagnated. No investments since 1995**

Pre-requisites for effective NPS

- Ensure availability of natural gas
- Convert non-gas based plants to gas
- Unify pricing of natural gas through regulation
- Modify NPS to sustain production of the above plants till conversion

A difficult situation indeed!

Current situation 2011-'12

- Production
 - N +0.9%
 - P -0.2
- Consumption
 - N +4.5%
 - P -4.8
 - K -24.2
- Imports
 - Urea 7.79MMT
 - DAP 6.91
 - NP/NPK 3.67
 - MOP 3.98

Current situation 2011-'12

- NPK use ratio
 - 2010 4.7 : 2.3 : 1
 - 2011-'12 6.5 : 2.9 : 1
- Per hectare nutrient use
 - 2010-'11 146.3 kg/H
 - 2011-'12 145
- Retail Price
 - Urea \$ 99/MT
 - DAP \$ 498
 - MOP \$379

Fertilizer pricing: new outlook

- Shall overcome impediments to growth of industry
- Optimize existing operations
- Stimulate investments
- Control subsidy budget
- Achieve balanced fertilizer use
- Reduce environmental burden

Shift to Nutrient based pricing (NBS)

Drivers to NBS

- Need for achieving balanced use of fertilizers
- Need to reduce subsidy pay out for fiscal management
- Introduction and promotion of innovative and efficient fertilizer products including modified fertilizers containing micro nutrients.
- Attracting fresh investments in domestic fertilizer production
- Allow market dynamics in the pricing of fertilizer products

Working of NBS for P & K

- Per unit price of P₂O₅ and K₂O will be same in all complex fertilizers
- Fixed subsidy per MT will be decided by Govt
- Farm gate price is left open
- Manufacturers can revise selling price depending on market situation

NBS rates 2012-13

Nutrient	Rs /Kg
N	24
P	21.804
K	24
S	1.677
Nutrients for fortification	Rs/MT
B	300
Zn	500

Price rise after NBS

- Since NBS open market price of
DAP increased by 2.5 times
Potash increased by 3.75 times
SSP doubled

May 2010	Aug 2012 (\$/MT)
DAP 199	498
MoP 101	379

Issues with NBS

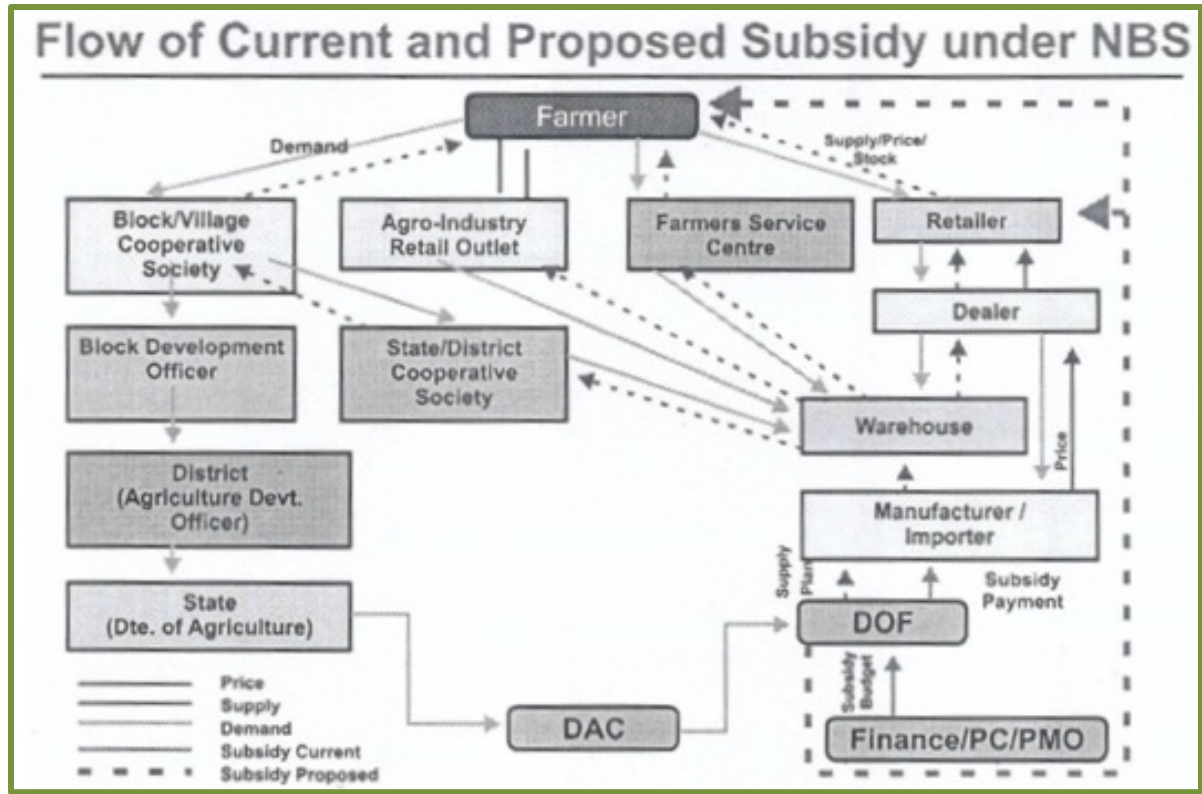
- Open market price show increasing trend
- Subsidy too low and reducing
- Farmer spending on the rise
- Deficiencies of other nutrients such as calcium, magnesium, chlorine, copper, iron, manganese and molybdenum remain unaddressed
- Nationwide soil testing facilities lacking
- Over use of low cost urea (still under APM) prevail and upset soil nutrient ratio

Direct transfer of subsidy to farmers

- Scheme developed by UIDAI
- Ph-I: Creation of online database of movement of fertilizer along the supply chain to retailers
- Ph-II: Subsidy transfer to retailers and later to farmers based on AAdhaar (Unique Identification Number)
- Quantum of subsidy depends on farm size, nature of crops & ceiling on quantity & subsidy amount
- Issues: retailer working capital, storage facilities, farmers credit, delay in subsidy disbursal.
- Foolproof system to evolve.



Direct administration of subsidy



Investment climate

- Full scale NBS for all fertilizer products
- Gas availability
- Price stabilization mechanism for decontrolled products
- Revamp of closed down units- coastal locations
- Promotion of micronutrients & fortified formulations
- Incentives for coal/petcoke/vacuum residue utilization
- Streamlining disbursement of subsidy

Opportunities

- Product suppliers
 - » Large imports in N, P and K likely in the medium term
- Technology providers
 - » Cost effective & environment friendly technologies for Greenfield/brown-field plants and JVs
- Retrofits/revamp of existing plants
 - » Upgrading existing plants-process, equipment, catalysts
- Revival of closed plants
 - » Full scale utilization of infrastructure available, natural gas connectivity and allocation
- Equipment suppliers
 - » Replacement, addition etc

Way forward

- Government may increase price support to fertilizers to maintain them within the reach of farmers
- See that fertilizer consumption improves under NBS
- Establish nationwide soil analysis facility
- Educate farmers on scientific and sustainable farming practices and diligent use of mineral fertilizers
- Bring urea also under NBS

Thank You

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