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INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE (ICID)

Cropping Pattern Based Economic Comparisons of Few Major Irrigation Projects in India

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Existing Irrigation Practices

- ❑ Canals Systems
- ❑ Conveyance through Main Canal Systems
- ❑ Distribution through a network of Canals (Secondary and tertiary)
- ❑ Application through flow Irrigation by gravity
- ❑ Supply Based System
- ❑ Huge Water Losses
- ❑ Lower Efficiencies
- ❑ Low Water Productivity



Existing Irrigation Practices

- ❑ Piped Distribution Networks (PDN)
- ❑ Conveyance through Main Pipes (MS/DI)
- ❑ Distribution through a network of Pipes(HDPE/PVC)
- ❑ Application mostly through flow Irrigation by Pressure/Gravity
- ❑ Supply Based System
- ❑ Moderate Water Losses
- ❑ Lower Field Application Efficiencies
- ❑ Low Water Productivity



Existing Irrigation Practices

- ❑ Integrated Micro Irrigation Systems
- ❑ Conveyance through Main Pipes (MS/DI)
- ❑ Distribution through a network of Pipes (HDPE/PVC)
- ❑ Application mostly through Drip/Sprinkler by Pressure/Gravity
- ❑ Demand Based System
- ❑ Minimal Water Losses
- ❑ Higher Efficiencies
- ❑ Higher Water Productivity



Value Creation

- ❑ Value creation” is a net result of
 - ❑ Selection of crops/Cropping patterns
 - ❑ Water Management Practices
 - ❑ Fertigation /Nutrition Management
 - ❑ Yield of Crops
 - ❑ Water Use by the crop
 - ❑ Price Fetched



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Value Creation - MS (Five Projects)

Sr No	Project	Area Under Irrigation (2011-12), Ha	Capacity of Dam, Mm3	Assumed Cropping Pattern	Productivity, Mt/Ha	Price, Rs /Mt	Gross Value of Produce, Rs Crore	Area Irrigated, Ha per Mm3	Value Creation Rs per M3
1	Ujani	227708	1517	Sugarcane	81	3400	6271	150	41.34
2	Jayakwadi	183322	1992	Cotton	0.9	55000	907	92	4.56
3	Upper Wardha	75080	564	Cotton	0.7	55000	289	133	5.13
4	Pench (Totladoh)	104476	1091	Soybeans	1	40000	418	96	3.83
5	Hatnur	50000	255	Banana	40	15000	3000	196	117.65
6	Total	640586	5598				10885	114	11.12

Value Creation - MS (Five Projects)

Sr No	Project	Area Under Irrigation (2011-12), Ha	Capacity of Dam, Mm3	Assumed Cropping Pattern	Productivity, Mt/Ha	Price, Rs/Mt	Gross Value of Produce, Rs Crore	Area IrrigatedHa per Mm3	Value Creation per M3
1	Tawa	165472	1944	Wheat	5	20000	1655	85	8.51
2	Gandhisagar	250945	6827	Wheat	5	20000	2509	37	3.68
3	Barna	62000	539	Wheat	5	20000	620	115	11.50
4	Upper Wainganga	69700	507	Wheat	5	20000	697	137	13.75
5	Harsi	30223	193	Wheat	5	20000	302	157	15.66
6	Total	578340	10010				5783	58	5.78

Value Creation - Gujarat (Two Projects)

Sr No	Project	Area Under Irrigation (2011-12), Ha	Capacity of Dam, Mm3	Assumed Cropping Pattern	Productivity, Mt/Ha	Price, Rs/Mt	Gross Value of Produce, Rs Crore	Area Irrigated, Ha per Mm3	Value Creation per M3
1	Sardar Sarovar	1905000	5860	Cotton	1	55000	10478	325	17.88
2	Ukai	88564	6730	Cotton	1	55000	487	13	0.72
3	Total	1993564	12590				10965	158	8.71

Assumptions

- ❑ Data collected from respective websites.
- ❑ In all the three states, since we could not get cropping pattern of individual projects, we assumed the cropping patterns
- ❑ The area irrigated per Mm³ of water is the highest (158 in Gujarat), higher
- ❑ (114 Ha in MS) than MP (58 Ha). That means irrigation systems in MS are much more efficient than in MP, Also the value creation in MS (Rs 11.12 per m³) is higher than in MP (Rs 5.78 per m³). This is because of the cropping patterns and cash crop cultivation practices in MS.

Assumptions

- ❑ In Gujarat, for SSP, cropping pattern is assumed as Cotton only. Area irrigated per Mm³ seems to be on higher side. Perhaps it is because of the fact that the project is designed based on “Future Ready” micro irrigation project. In Ukai , the water use is very high and there is a scope to increase water guzzling high value crops such as sugarcane and Banana.



Why the new approach is not adopted/popular

- ❑ For cash crops, reliable and regular supply with adequate quantities of water is essential.
- ❑ Due to unreliable supply of water through canals, farmers do not invest in cash crops and tend to cultivate field crops
- ❑ In supply based systems , water is applied in rotations
- ❑ Lack of technical know how and financial resources
- ❑ Lack of awareness and willingness
- ❑ Lack of community participation



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Limitations

- ❑ Reliable Water Supply
- ❑ Water Supply on demand
- ❑ High investments
- ❑ Disparities between cash crops and rainfed OR field crops
- ❑ Perennial Water supply
- ❑ Technical know how required



Way Forward.....

- ❑ Identify the potential sites.
- ❑ Carry out Techno- socio- economic survey of the proposed project area
- ❑ Tailor-made Designing and Planning
- ❑ Project site not to exceed 5000 ha
- ❑ Initially design “Future Ready “systems with appropriate irrigation scheduling.
- ❑ Later on the “Future Ready” systems to be converted in to Integrated Micro Irrigation projects.



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