INDIA'S TRYST WITH

THE BIG DAMS

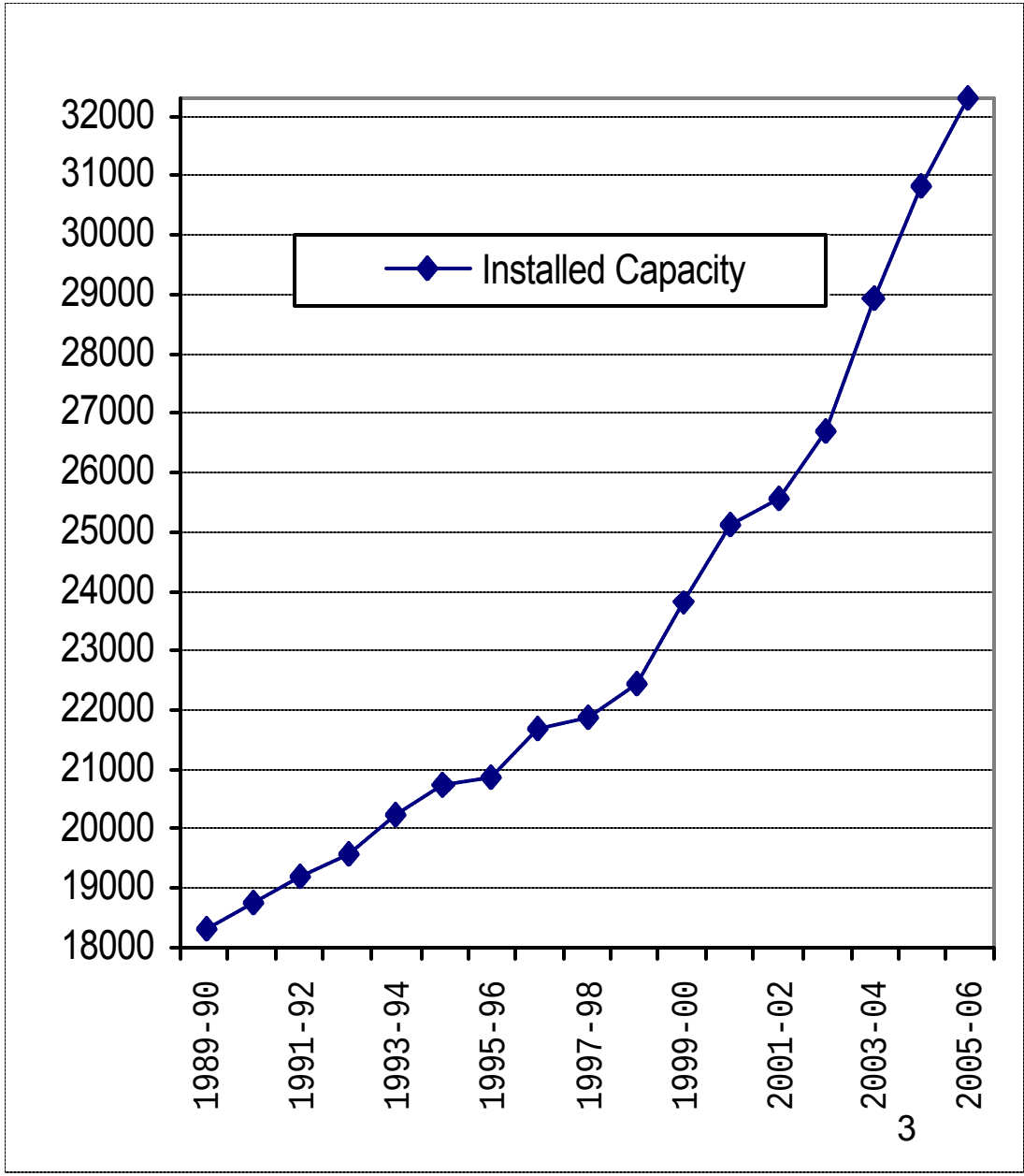
Why democratic options are desirable & possible.

The Dam domination in India's WRD

- 346 large dams in 1950: 4600+ now
- 80% of water sector budget goes for big projects – also proposed in the 11th plan **(2007-12)**
- To the exclusion of local water systems or groundwater recharging or repair and maintenance of created infrastructure
- As if people and ecosystems do not matter
- New ways are being attempted to push big projects: ILR and advocacy to increase storage capacities

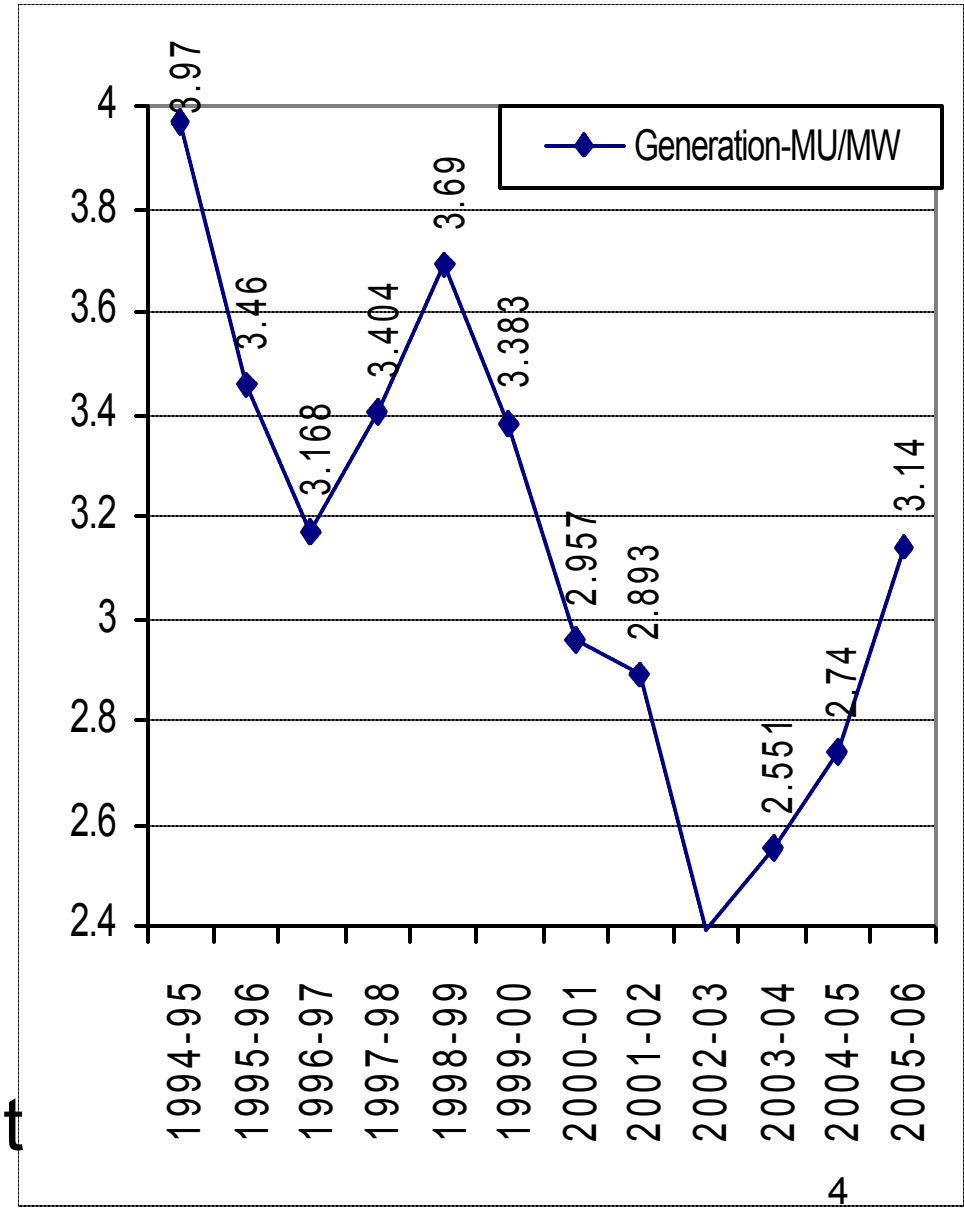
Advocacy for large hydro

- There is strong push for large hydro projects today, as if large hydro projects are good in themselves.
- In fact installed capacity of large hydro has increased at a compound growth rate of 4.35% per annum during 1991-2005, HIGHER than all other power sub-sectors.
- There is little attempt for credible assessment of performance of large hydro. How have they performed?



Diminishing Returns from Large Hydro

- As can be seen from the chart here, the Million Units energy generated from large hydro projects has been almost continuously falling over the last eleven years.
- The fall from 1994-5 to 2005-6 is huge 20%.
- There are many reasons for this, use of increasing large hydro to provide peaking capacity is surely not one of them to the best of our information.



Monsoon was above normal in majority of these years

Year	Monsoon Rainfall
1994	**110 %**
1995	**100 %**
1996	**103 %**
1997	**102 %**
1998	**105 %**
1999	96 %
2000	92 %
2001	91 %
2002	81 %
2003	**105 %**
2004	87 %
2005	99 %
2006	99 %

Idle Reservoir Capacity during 1994-2006

Sr No	Year (Annual monsoon rainfall)	No of reservoirs monitored	Monitored capacity (BCM)	Capacity filled up (BCM)	BCM Idle Capacity	% Idle Capacity
1	1994 (110%)	63	125.14	112.63	12.51	10
2	1995 (100%)	63	125.14	98.44	26.7	21.34
3	1996 (103%)	63	125.14	89.53	35.61	28.46
4	1997 (102%)	68	129.4	101.2	28.2	21.18
5	1998 (105%)	70	130.6	106.1	24.5	18.76
6	1999 (96%)	70	130.6	97.6	33.0	25.27
7	2000 (92%)	70	130.6	82.66	47.94	36.71
8	2001 (91%)	70	130.6	87.49	43.11	33.01
9	2002 (81%)	70	130.6	69.25	61.35	47.09
10	2003 (105%)	71	131.28	78.76	52.52	40.01
11	2004 (87%)	71	131.28	85.1	46.18	35.18
12	2005 (99%)	76	133.021	109.695	23.326	17.54
13	2006 (99%)	76	133.021	120.451	12.430	9.34

Implications of empty storage capacity

- On an average, each year about 34.41 BCM (equivalent of 6 Sardar Sarovar Projects) of storage capacity out of only the monitored storage capacity is not filled up for the last 12 years.
- That means that on an average an investment of Rs 34886 crores has remained idle in each of the last 13 years.
- This happens when in 9 of the 13 years the rainfall was almost average or above. (See the figures in brackets in col. 2.)
- Should we not be trying to understand why this is happening? How we can make the existing storage capacity play the useful role it is supposed to, in stead of pushing for more storages?

Note: This analysis needs to be done storage wise and river basin wise for all large storages. We could not do it as we could not get the required information.

High water storage in Reservoirs before the monsoon in 2005 and again 2006

DAM	Reservoir Capacity filled up before monsoon	DAM	Reservoir Capacity filled up before monsoon	DAM	Reservoir Capacity filled up before monsoon	DAM	RCapacity filled before monsoon
TAPI BASIN		*MAHI BASIN*		*KRISHNA BASIN*		*GODAVARI BASIN*	
UKAI	**21.56%**	KADANA	**40.69%**	KOYNA	**25.19%**	JAYAKWADI	**28.33%**
GIRNA	**10%**	PANAM	**19.37%**	KHADAKVASLA	**12.5%**		
		MAHI BAJAJ SAGAR	**28.17%**	NARAYANPUR	**44.15%**		
NARMADA BASIN				SRISAILAM	**17%**	*SABARMATI BASIN*	
TAWA	**22.58%**			NAGARJUNSAGAR	**47.08%**	DHAROI	**42.59%**

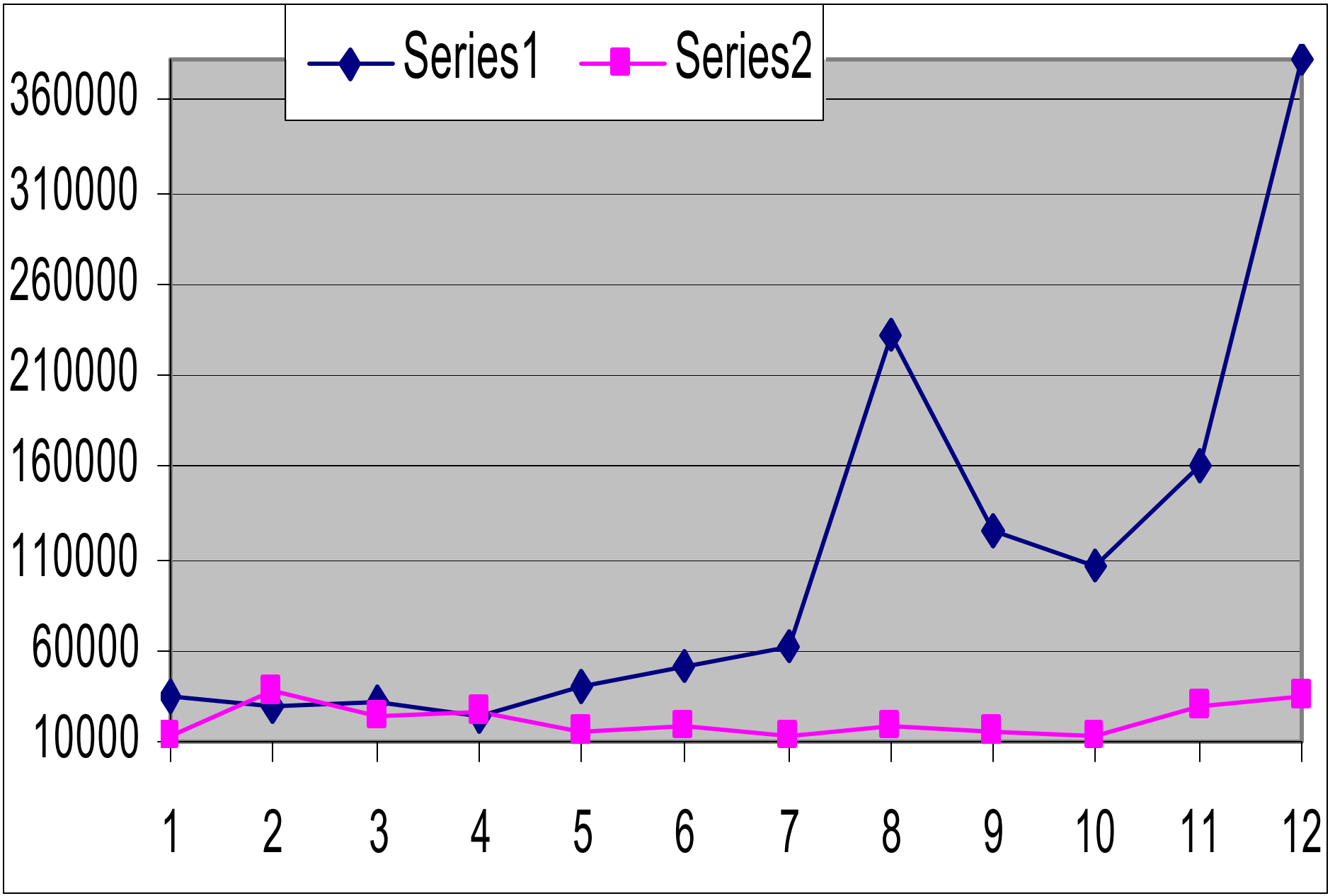
Water Storages are silting up fast

- As per the report of NCIWRD (Govt of India, Sept 1999), about 1.4 BCM of existing storage capacity is getting silted up every year.
- At today's rates creation of 1.4 BCM storage capacity would cost Rs 1448 crores.
- Our calculations, based on CWC reports of siltation for 27 dams, show the loss is at 1.95 BCM per year.
- That means that on an average, each day we are losing Rs 4 crores worth of storage capacity through siltation.
- And there is little serious attempt to stop this.
- The required Catchment Area Treatment for even Bhakra was not done. Same for other projects

Per Ha cost of irrigation for M&M and Minor Irrigation Projects (at Constant 1996-97 PL, Planning Commission)

Plan years	Major and Medium Projects	Minor Projects
1951-56	34226	11733
1956-61	29053	37061
1961-66	31485	22821
1966-69	23476	25735
1969-74	41116	16739
1974-78	50686	18456
1978-80	63093	13909
1980-85	232306	17330
1985-90	126158	14991
1990-92	106442	13187
1992-97	161417	29935
1997-2002	382910	33654
2002-2007 (current prices)	125377	39156[10]

Per Ha cost of irrigated area over the years



Larg infrastructure = poor performance?

- India has the largest Irrigation Infrastructure in the world but it is performing far below its capacity.
- Finance Minister Chidambaram said in his budget speech in Feb 2005, "Water-use efficiency in the Indian agriculture is one of the lowest in the world".
- The mid term appraisal of 9th 5 Year Plan had noted, "With a 10% increase in the present level of water use efficiency, it is estimated, an additional 14 m ha can be brought under irrigation from existing irrigation facilities".
- The 14 m ha of additional irrigation is an agenda for over a decade at current rate of additional irrigation being created.
- Gap between potential created and realised is over 20 m ha and is growing
- Annual R&M requirement is $ 4 billion – a tiny fraction is being provided and the result is poor performance.
- Why is there no serious attempt to make amends in this situation?

The hidden costs – who pays them - 1

- Total reservoir area of India's 4528 large reservoirs is 4.42 million ha as per SANDRP estimates.
- In 2000, the Planning Commission acknowledged about WRD that "25 million persons have been displaced since 1950 on account of development. Less than 50% have been rehabilitated – the rest pauperised by the development process". The actual numbers are more likely to be nearer to 35-40 million and proportion of those rehabilitated much lower.
- Decades after the celebrated Bhakra dam was completed, when in 1970s the then Union Irrigation Minister KL Rao visited it he recorded "it is curious how we handle our projects. The village of Bhakra on the bank of the river Sutlej was submerged. The Dam resulted in great suffering to the people of the village, but nobody took note of the people's representations. I found that the new village of Bhakra had neither drinking water nor electricity though surrounded by blazing brilliant lights. This was indeed unfair." The story is not much different for other large dams.

The hidden costs – who pays them - 2

- Pong, Bhakra, Hirakud, Tawa, Bargi, Nagarjunsagar… - you name the dam and you will find that people affected there from are still fighting for R&R.
- Large dams also submerge forests, lead to practices resulting in water logging and salinisation and also water intensive cropping patterns
- WB: India's rivers are fetid sewers
- CPCB: No rivers has potable water in plains area of the country (1981)
- Dams kill rivers – no water is allowed downstream from the dams for the river, for the environment or even for downstream communities & economic / livelihood activity like fisheries

Large Dams also contribute to Global Warming

- Scientific studies published in research journals show that large dams emit significant amounts of methane, which is 21 TIMES more powerful than CO2 in global warming.
- Methane is emitted from reservoir area, from spillways, from turbines and from downstream rivers.
- Indian large dams, even by conservative estimates, emit 17 million tons methane a year, which is equal to emission of 357 MT of CO2.
- This is about 18% of India's TOTAL official emission of 1889 MT in 2000; or almost same as the total power sector emission of India in 2004-05.
- Indian govt does not even measure methane emission from large dams, even though planning commission has been asking for it for the last five years.
- The proposed 3000 MW Dibang HEP in Arunachal Pradesh, for example, even by conservative estimates, would emit at least 3.3 MT CO2 equivalent methane every year.

The achievements: claims vs the reality

- It can be nobody's case that nothing has been achieved.
- While net irrigated area has increased to 57 m ha (11th plan working group report), the lands irrigated by large dams stand at 22.5 m ha, the rest is by groundwater and small systems. This means that only about 15% of cultivated lands get benefit from large dams
- India's foodgrains production that was 50 MTA in 1950 has reached 216 MTA in 2006-07
- However, what is the contribution of large dams? 10-12% as per two independent assessments. And this is gross contribution. Net contribution would be much lower.
- In the process, we have precipitated an agrarian crisis and also an ecosystem crisis (dried and polluted rivers, decreasing GW levels, pollution of GW…)
- **Is that good enough?**

The Agrarian crisis and large dams

- Everyone from the Prime Minister, the President, down to the farmers agree that India's agriculture is facing serious crisis. Farmers are committing suicides in thousands every year. Agriculture growth rates are down to 1-2%, yields are stagnating or declining, and canal irrigated areas are decreasing in a number of states
- Everyone also agrees that every farmer would benefit from better water management
- India continues to be blessed with a bountiful monsoon which can be a great resource for every farmer if put to use through local water systems.
- GW is India's lifeline and is on a DRIP
- Only way to sustain this lifeline is through local water systems, recharging GW
- But big dam dominated WRD won't allow that to happen

Large Dams – Some Broad Issues

- **Large Dams generally tend to be undemocractic**: They do not come out of the framework of planning and decision making process like the one suggested by WCD. If they were to come from such a framework, they would certainly be more acceptable.
- **Large Dams exclude the needs of the poorest and neediest** As they are indicated by aggregation of demands of a large number of people, but they do not address the specific components of those aggregate demands, particularly those of the poorest and the weakest.
- **LD involve tradeoffs** at the expense of the poorest and benefiting relatively better off.
- **Large Dam Developers are unaccountable**. There have been no credible post facto evaluation of performance of the projects as against the demands they were set out to satisfy and as against the benefits they were to deliver. On the other hand they create huge social impacts, which are seldom addressed, thus creating more problems rather than solving existing problems.
- **Large Dams are poor performers** Performance appraisal of India's large projects show: Diminishing generation from large hydro projects, large hydro projects not providing peaking power, large storage capacities remaining unutilised, Stored water remains unutilised, creation of unviable storage capacities, high costs of irrigation from large projects when less expensive options exist & large dams providing hardly 10% of the food grains production, when options could have provided greater output.

UNEP: Darfur can be considered a tragic example of social breakdown resulting from ecological collapse

- **The UNEP Report "Sudan: Post-Conflict Environmental Assessment" of June 2007 says about the role of Big Dams in Sudan situation:**
- How many know that small, rainfed farms are the backbone of rural economy in much of Sudan? But the big dam centered water resources development has little place for such systems.
- "Agriculture, which is the largest economic sector in Sudan, is at the heart of some of the country's most seriousandchronicenvironmentalproblems,including land degradation in its various forms, riverbank erosion, invasive species, pesticide mismanagementin the large irrigation schemes, and water pollution."
- "UNEP considers the principal and most important environmental issue in the water resource sector in Sudan to be the ongoing or planned construction of over twenty large dams."

Is there hope for the future?

- Yes, if there is will:
- Report of the World Commission

on Dams: The report was a result of an exercise in which majority of commissioners were supporters of large projects. This was the first ever and most transparent, open, inclusive process to assess the development effectiveness of large dams and it came out with a unanimous report in November 2000. The Report offers a framework for decision making process on Large projects and options.

Better Options Exist – Lessons-1

- There are some success stories in India where people and ecosystems are given priority over everything else. Here the improved decision making through multi-stakeholder planning processes on water services have delivered sustainable solutions rather than trade offs
- It is possible to cater to the justifiable demands of the people over large areas spanning over several districts, through hundreds of small projects.
- These projects have much more equitable, sustainable benefits and there could be unexpected spin off benefits, as against unexpected, spin off losses in large projects. (e.g. GW levels go up, sometimes the seasonal rivers become perennial)
- These projects can also help evolution of institutional mechanism for decision making and management.

Better Options Exist – Lessons-2

- These provide real option for people to earn decent livelihood in sustainable way, without brutalising them first, without involving toxic, dehumanising corporate dreams. On the lines of what is making organic cool and chemical uncool.
- People are striving, fighting for this in different ways. E.g. in Alwar (Rajasthan) and Narmada Valley
- The large stock of created infrastructure and the poor performnace of the same also provides an option to achieve better benefits
- Techniques like the SRI also offer great potential
- An important exception though: In all such success stories, demand is not sacrosanct by itself, unlike it is in the market. This is also indicated by the global warming issues. Only justifiable demand can have a place in a just world.
- There can be many ways for a better future, status quo is not one of them…..
- **Let us end on that hopeful note on this day of celebration for the Indians.**

THANK YOU

We publish **Dams, Rivers and People**

- www.sandrp.in
- cwaterp@vsnl.com

August 15, 2007 – 60th Anniversary of India's Independence

This presentation was made at a seminar on "*Putting People and Ecosystems first – how improved decision-making processes on water services create win-win situations instead of trade-offs*" at the Stockholm World Water Week, Stockholm Sweden on Aug 15, 2007. The seminar was convened by the Swedish Society for Nature Conservation and World Wide Fund for Nature with support from Swedish Water House.