"Water – Harvesting" – Who benefits, the nature or the utility?

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In my article "WATER – ENERGY TWO FACES OF A COIN – BULLETIN ON ENERGY EFFICIENCY, AUGUST 2005 VOLUME 6 ISSUE 1", I made my first discussion on the impact of water table on energy consumption. The receipt of this article for publication encouraged me to further fortify my findings and thus the **URBAN WATER SUPPLY – UTILITY** i.e. the KARNATAK WATER BOARD @ HUBLI – DHARWAD, KARNATAK.

Introduction

Recently while I was addressing a team of club members in one of their weekly meetings, a friend asked me if it is worth the effort harvesting rainwater while it is raining. The same situation arose in a different situation where in another friend decided to wait till the rainy season commenced.

In both these cases I thought whom am I addressing? I was really worried, what are we up to? Where are we heading? . If one waits for the season to commence the other decides to wait for the season to end, why this lethargic approach when it comes to water? It is these same classes of members who raise hue & cry when there is shortage of water supply. It is the same class of people who say the roads have gone from bad to worst, and it is the same class of people who stand up to question the authority and the technicality of those few who speak for the measures to be adopted. Every one of us expects that the results should be over night. It is also a common cause for people to discuss about the efficiency, and irregularity in supplying the water.

At one point I really thought and also wished that the Rajasthan (desert) like situation should arise so that our friends learn to worship water with sincerity and honesty. I wish to express my regards to all those fore-fathers who have sown the seeds of RAINWATER harvesting in Rajasthan and many more salutes to those next of kin who sincerely have upheld the tradition laid by their fore fathers.

It was during these days that the idea of giving a thought to community based rainwater harvesting germinated in my thought. I also decided to confine my discussion to one particular area, so that the discussion is more relevant and practical.

Case Study

Geographical area:	- HUBLI-DHARWAD MUNICIPAL CORPORATION limits .
Base:	- The 2001 census-Figures as presented.
Population	- 786,195 in 149,279 House holds.
Area under Municipal limits	- 202.28 Sq Kmts.

Water source –

1. Savadatti Reservoir, which is 45-65 KMS from Dharwad & Hubli respectively.
2. The second source is the Neer Sagar Reservoir which is around 25 Km from Hubli.

Energy Statistics

Energy consumed at various stages for bulk supply at

Power consumed at Neer Sagar Reservoir.	137,880 KWH during April 2005 198,164 KWH during July 2005 149,776 KWH during June 2005
Power consumed at JACKWELL at Savadatti	975,360 KWH during Nov 2004 908,340 KWH during April 2005 993,510 KWH during July 2005

Power consumed at AMMINBHAVI (re-pumping)	1,342,488 KWH during Nov 2004 1,378,512 KWH during April 2005 1,521,408 KWH during July 2005
Periodicity of water supply:	Once in Eight (8) days
Rainfall average:	400mm

To generalize for a month let us take data for the two common months i.e. April and July 2005. It is summed up to 2,424,732 KWH during April 2005 and 2,713,082 KWH during July 2005. Now let us average to 2.5 Million KWH i.e. **2500 MWh** of power every month. In addition 3 Mw of power load for local distribution at HUBLI and it may be generalized for another 3 MW for DHARWAD. Just look as to how much of power we consume for bulk pumping from reservoir i.e. nearly 400 times the power needed for local distribution.

2500 MWh of power is consumed every month for bulk supply from reservoir to distribution points.

Let us consider the fact that each member consumes **100 Ltrs** (Again 50 Ltrs as recommended) per day. For 786,195 members the water required is 786,195 x 100 i.e. 78,619,500 Ltrs. For 365 days it is **14,348,058,750 Ltrs**. At **50%** leakage in pumping and at reserve we need to stock a minimum of **28,696,117,500 Ltrs**.

Minimum OF 28,696,117,500 ltrs of water is required for one year.

Geographical parameters.

Now let us look at the geographical area under the control of Hubli Dhawad Municipal Corporation. Which is 202.28 Sq Kms. Which means 202,280,000 Sq Mtrs. The average rainfall from 1950 to 2000 is 738 mm, however the rainfall in **2001 was 247mm, 2002 was 429mm, 2003 was 253mm, 2004 was 602.1mm** and in 2005 till date it is 832.12 mm(15^{th} Sept.). However on the safer side let us **consider this low average of 400mm**. At this stage the water received on the surface of the HDMC limits is 80,912,000,000 Ltrs. Now against the actual need of 28,696,117,500 Ltrs the RAIN GOD gives us 80,912,000,000 Ltrs of pure clean water. That is a 2.82 times more than what we actually need @ 400mm of rainfall. Which implies that we can survive for another year without rains at all.

An average rainfall of 400MM is considered on the lower level.

Why then are we all crying for want of water? Simple, We fail to realize or it was never quantified that we receive this huge quantum of water.

True, we receive this huge quantity of rainwater, but how can we store it? To store this huge quantity of water we need 80,912,000 Cu Mtrs of space i.e., depth of 6 Mtrs, width of 3672 Mtrs, and length of 3672 Mtrs. Now this too needs to be managed in such a way that the water retention tanks are split at various **areas of natural flow**. This means that our objective can be met if we **REVIVE THE LAKES** that already exist (but neglected?) and increase their water holding capacity. If implemented the HUBLI-DHARWAD citizens would get water on daily basis at an economical price instead of once in 8 days as it is now and can also be regulated by themselves **(Community participation in public utilities is a healthy sign).**

Now the point is, why are we sourcing the water from Savadatti and Neersagar reservoirs**? It is the amount of energy consumed for pumping this bulk quantity of water by one utility that is of major concern**. Now, can you yourself quantify how much of power could be consumed by all the other water supplying bodies in India? May be, we may never again need to generate power by any more new thermal power plants. Now on the emissions side we can minimize CO2 emissions by over 545450 tonnes of CO2. which would mean over 25 Crores of revenue earner every year for the utility. Hence water conservation doesn't just help conserve energy it also adds many other values to life.

Suggestions

Now let us consider the rainwater harvesting or the old lake revival scheme as suggested. For a depth of 6 Mtrs it is an area of 3.5 Kms by 3.5 Kms, that would be required, however they're already exists the lakes at various areas and they are only to be revived. The area that is available now, may not be sufficient enough taking into consideration the density of the population. We will necessarily have to look for creating some more check dams at all possible run off points. Cost of working on various check dams may be worked out, but, the main fact is that the kind of water that is received is more than required for the entire HUBLI – DHARWAD citizens. Hence, if the surrounding villages are considered, the availability of land for lakes is available and more important is that such of those villages under consideration too get good purified water. Hence if every individual, every corporate organization, every Government body supports and implement, more so the KARNATAKA WATER BOARD, who are the utility in this case, can certainly stand to benefit from this project. Ultimately the whole of mankind can benefit by helping reduction in after effect of global warming.

It is of prime priority and a reason to give a serious thought before any more investment is made on additional pipelines, pumping arrangements and more manpower recruitment. A saving 2700 MW every month is worth the efforts keeping in view the growth in demand, population and the capital investment on the basic infrastructure is proposed to be made.

Caution

A word of CAUTION is that, GUTKA, chemical spillage, excreta and also the drainage water that takes an entry into the lake contaminate the rainwater harvested. These contaminating factors are applicable to the existing reservoirs as well. However they are considered to be minimal due to large catchment area. Since the area under consideration is the urban area, the contaminants accumulate (concentration) in large quantity, it is suggested that the water be treated by natural purifying agents like WATER HYACINTH (please refer to **http://journeytoforever.org/farm_library/dymond.html** & **http://journeytoforever.org/edu_pond.html:/waterhyacinth**) and related family (aqua) plants. (The commercial benefit of the WATER HYACINTH is of importance and needs to be viewed to exploit commercially) It is necessary to build HYACINTH TSNKS along the drainage line that already exist at various locations and store the drainage water. The water so treated should then be opened out to open lakes. The other major factor of concern is to build public UTILITY toilets and regulate people against defecating in open. There is serious need for the concerned authorities to realize that unless the basic amenities are provided, the concept of COMMUNITY BASED RAINWATER harvesting will remain a myth. Unless this myth is en-cashed into reality, we will continue to pay heavy price and our next of kin will really punish & curse us in our absence.

It is also more important that we educate the people on water management, introduce some measures and campaigning activities in sowing the seeds of water management. Some attractive prize winning contest could be initiated, sending out message through the school going children and such other possible ways. I wish to stress upon the school children who will be our cheapest, effective and the bulls eye in achieving our aim.

Our HAPPINESS LIES IN OUR FAMILY'S HAPPINESS, OUR FAMILY'S HAPPINESS LIES IN OUR SOCIETY'S GOOD BEING, OUR SOCIETY'S GOOD BEING IS WHEN THERE IS ADEQUATE WATER, ADEQUATE WATER IS AVAILABLE WHEN THERE IS COSISTANCY IN RAINFALL, CONSISTANCY IN RAINFALL IS WHEN GLOBAL WARMING IS UNDER CONTROL, GLOBAL WARMING IS UNDER CONTROL WHEN WE MINIMISE OR DON'T CONSUME ENERGY UN-NECESSARILY.

You and me – together can make it happen

YOU are now the best JUDGE to Judge who wins – the NATURE or the UTILITY or we the

MANKIND

THOUGHT FOR EVERY MOMENT

There are about 19,00,00,000 students in INDIA. If every student saves one sheet of paper every day, 19,00,00,000 sheets of paper, or 988 tonnes of paper will be saved every day. This equivalent to saving 2748.54 tonnes of wood a day. This will lead to saving about 33,00,678 trees per year.