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A Study of Hebbala Nagavara Valley Project Impact's on Devanahalli Taluk Farmers: A Social Work Study.

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Abstract
Chikkaballapur and Kolar both districts has most number of lakes included in Karnataka state, also these twin cities named as dry districts in the view of scarcity of water. These districts facing good drinking water problem, underground water filled with fluoride content it cause to bones and teeth problems. Here Farmers are using water very scientifically through sprinkling and drip irrigation.they growing Vegetables,Grains,Floriculture and Sericutue crops. In this situation ***HN VALLEY PROJECT*** *implemented.*
Conducting a social work study on the use of preserved sewage water for agriculture requires a multidimensional approach. Unlike a purely environmental or engineering study, a social work perspective focuses on the intersection of human well-being, economic stability, and environmental justice.
Based on the core research themes of the Hebbala-Nagavara (HN) Valley ProjectIn this context, the social worker acts as a Mediator and Educator:
Advocacy*: Ensuring that tertiary treatment is prioritized to protect the long-term health of the farming community.*
Awareness Campaigns*: Organizing community meetings to explain the science of secondary treatment, reducing fear while promoting safe handling practices.*
Resource Linkage*: Connecting farmers with health check-ups to monitor potential heavy metal exposure.*
Keywords: *HN valley, underground water,Social work.*

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I. Introduction

In many developed and developing nations, lakes are the primary source of drinking water. In the present scenario, due to speedy mobilization in anthropogenic activities, lakes are becoming increasingly contaminated. Such practices not only destroy lake ecosystems.

The 65 big tanks spread across the taluks of Bengaluru Urban, Bengaluru Rural and Chikkaballapur districts will have water as the minor irrigation is set to complete the Rs 948 crore Hebbal-Nagawara (HN) Valley project aimed at recharging water.

Out Of the 65 tanks, 44 are located in Chikkaballapur district spread across the taluks of Chikkaballapur (24), Shidlaghatta (9), Gauribdanur (8) and Gudibande (3). As many as 12 tanks are located in Yelahanka taluk (Bengaluru Urban) and 9 are in Devanahalli (Bengaluru rural).

Importance of the Study

This study includes effect of H N (Hebbala - Nagavara) Valley project on rural farmer's day to day farming. Majority of farmers growing cereals, vegetables and Fruits through various irrigation systems.

The outcomes showed that due to H N (Hebbala-Nagavara) valley project, there arisen both positive & negative effects. Amongst the positive effects listed viz. ground water level increased, cropping design changed (Domestic to Commercial), increased crop yield, they have improved area under irrigation after the project. Similarly, among negative effects listed, water pollution increased due to sewage water, cropping pattern changed, using of heavy fertilizers and chemicals, arising health issues, unscientific management of lakes, unusual death of fish etc.

ADVANTAGES

- Improvement of the economic efficiency of investment in the irrigation.
- Conversion of fresh water sources.

- Groundwater level is improved.
- Improved cropping patterns

DISADVANTAGES
- Secondary treated water is not preferred for irrigation purpose.
- Tertiary treatment is required.
- Some Farmers using water directly for Agriculture purpose.

SCOPE OF THE STUDY
Secondary treatment Hebbala Nagavara valley water from Bangalore city to the adjoining parched of Devanahalli Taluk. Out of 9 lakes received first phase sewage water. So this study limited to 3 Lakes (Karahalli ,Mudiganahalli and Venkatagirikote lakes) Devanahalli taluk's H N (Hebbala-Nagavara) valley project area.

Objectives
- To Know the Farmers opinion on H N (Hebbala-Nagavara) Valley Project
- Study the benefits of H N (Hebbala-Nagavara) Valley Project.
- Study effects on Forming Patterns.
- To Know the Economic Impacts on Farmers.
- To know the related Departments concerns towards awaking people.

II. Review of literature

Poojashri et.al. : Water Excellence Calculation of Hebbal lake in Bengaluru city, International Journal of Innovative Technology & Exploring Engineering. Bengaluru consists of several artificial lakes which was created for industrial, agricultural, domestic water supply and also for amusing purposes. Due to massive population growth, pollution and urbanization the lakes of Bengalore are depleting day-by-day.

Varun et.al. : Studies of Water Excellence Assessment of Hebbal Lake, IJESC.A lake which is occupied with water, limited in basin that is surrounded by land, away from each other from any river or other outlet that serves to supply / drains the lake. Historically lakes in Bangalore region were managed by public works department, but the Hebbal lake was managed by Karnataka state forest department.

K. K. Tanji, Irrigation with Marginal Quality Waters is an issue. The Journal of Irrigation and Drainage Engineering talks about this. We have rules about getting rid of waste water now. It is very hard to find water. So we need to think about using Marginal Quality Waters for Irrigation. This paper looks at problems with using Marginal Quality Waters. These waters include treated waste water, food processing waste water and water from animal farms. It also includes water and water that drains from farms and pastures. We even use this water on parks and trees. We should think about using Marginal Quality Waters for Irrigation on types of land. This includes land for crops and pastures. We can also use it on parks and trees and other types of landscapes. Using Marginal Quality Waters for Irrigation is very important. Marginal Quality Waters can be used for things, including Irrigation on farms and pastures and other landscapes. The use of Marginal Quality Waters, for Irrigation is a deal.

Ramesh N, Krishnaiah S. : The situation with lakes in cities is a problem. Lets look at Bellandur lake in Bangalore as an example. This is somewhat that was written about in the IOSR journal of Mechanical & Civil engineering. Our environment is made up of things like land, water and air. Everything people do is helped by these things in some way.In India we do not have usual resources, especially water. This is because several people are living here and the economy is growing. As more people are born farming gets better cities get bigger and industries grow our lakes and riversre getting polluted. This means we have water that is safe to drink. The problem of water pollution in lakes is an issue. We need to think about what's happening to lakes like Bellandur lake, in Bangalore. Water is a part of our environment and we need to take care of it.

Maria et.al, "Wastewater Reuse in Agriculture: A Review about its Limitations and Benefits. In this study it reveals that agricultural reuse significantly affects soil texture properties, while also causing possible alterations of the biomass and microbiota. The use of treated waste water is agriculture benefits human health, the environment and the economy. Thus, the lack of quantitative of evaluation of microbiological risk, referring to the concentration of helminths, is the missing piece that is required for the proper implementation of agricultural reuse.

Mohamed et.al, : The people of Dayrout City in Upper Egypt need to know if their groundwater is safe for drinking & irrigation. To find this out we looked at the water excellence index. How it relates to the excellence of the water. We also used Gibbs and Piper diagrams to see if the groundwater is good enough for drinking and irrigation. We checked the water levels in thirty boreholes from January to August 2016. Saw that they go up and down with the seasons. The water levels changed by 2.3 meters. When we looked at the water excellence index values we found that the groundwater is not good sufficient for drinking in the area west of the Ibrahimmia Canal. This is a problem for the people who live there and use the ground-water for drinking. The water excellence index values showed that the groundwater quality is low in this area. We need to be careful about using the groundwater for drinking & irrigation in Dayrout City, in the urban area west of the Ibrahimmia Canal.

Anupam Khajuria: Application on reuse of wastewater to improve Irrigation. Water resource management is a challenge in developing countries. This is because set-up growth has not kept up with population growth and urbanization. India has rivers but water availability is still not enough to meet the countrys needs. The issue of water scarcity is a problem. Reusing wastewater is one way to save our water resources.In this work we discuss the issues and opportunities of reusing wastewater. This helps meet the demand for water supply. We also provide recommendations and policy suggestions for reusing wastewater in irrigation & other purposes. This article highlights the importance of utilizing wastewater. New and innovative technologies and policies can encourage the use of wastewater as a resource. The reuse of wastewater can help enhance irrigation purposes.Wastewater reuse is crucial, for water management.

Details of the Study Area

A Lake is an open area occupied with water, surrounded by land. Lakes lie on the land which is larger & deeper than ponds. The drought-prone Devanahalli Taluk of Bengaluru Rural District in Karnataka has suffered water scarcity for years. Venkatagirikote Lake was once the largest lake in the Taluk, but it is not what it used to be 25 years ago when it had water. Spread over 180 acres, the dried-up lake is full of weeds.To resolve this, the government has decided to rejuvenate the lake using treated water from the Hebbal-Nagavara sewage treatment plants. This refresh programmed is part of the second phase of the Hebbal-Nagavara valley project, in which 9 irrigation tanks will be revived in the Devanahalli which involves. The project, which is expected envisages rejuvenating the lakes & improving the groundwater table. Waste water is slightly water that has been contaminated by social use. Waste-water is used water from slightly combination of domestic, agricultural activities, commercial, industrial, surface runoff or storm water & any sewer inflow. Due to progressively stringent guidelines on the discharge of waste-waters as well as the falling We need to think about using freshwater resources in a way. The thing is, we have to consider using water that's not perfectly good for things like irrigation. We can use this kind of water. Users have to be careful.

The water may not be good enough for some things. That is a problem. We have to think about the soil and the weather and the crops we are growing. If we want to use this water, we have to watch it closely. Users have to make sure it does not hurt the crops or the soil.

There are ways to use this kind of water that can be good. For example, we can use it for irrigation. We have to be very careful. We have to check the water all the time to make sure it is not hurting anything. Using freshwater resources, like this can be a thing but it is not easy. We have to work to make sure it works. Marginal quality waters can be used. It requires a lot of work to do it right.

III. METHODOLOGY

Selection of the Study Area

To understanding impact of Hebbal Nagawara (H N) valley project on the beneficiary farmers, this Study is an attempt to enlist and analyses the perceptions from Devanahalli taluk farmers after project inception. For this study, 48 farmers who fall under project use area were randomly selected. The collected data was analyzed using descriptive statistics, tabular analysis.

Karahalli kere, Mudiganahalli kere, Venkatagirikote kere was selected as a study area to analyze and assess effects on Farmers, which is nearly 280 acres in area. These all lakes receive water from rainfall covering catchment area localities like Nandi valley mountain region, rural area of Devanahalli, Hebbal- Nagavara valley treated waste water filled.

IV. RESULTS AND DISCUSSIONS

Researcher get data from 5 lakes area Farmers regarding HN valley Project Significance out of 48 Farmers 24 said that this is a good project for recharging water. But the same time they worried about tertiary treatment because of Water Quality decreasing day by day. Sometimes they noticed dirty smell, changing water Color Etc.

Table No 1: Researcher Asked a Question regarding opinion of HN valley Project.

Sl/no	Options	Responses	Percentage
1	Useful	24	50%
2	Harmful	9	18.75%
3	Cannot say	15	31.25%
	Total	48	100%

Above table indicates that 50 Percentage of People expressed their opinion it is useful for recharge ground water. 18.75% Farmers said it is not good for Agriculture, remaining said they are not able to say anything because of bias.

Table No.2: Benefits of HN Valley Project.

Sl.No	Options	Responses	Percentage
1	Ground Water Increased	39	81.25%
2	Production from crops Increased	9	18.75%
	Total	48	100

Above table indicates that groundwater level is increased last 3years very high, but production is remains same as past.

Majority of farmers changed their cropping patterns from traditional food crops like cereals to Floriculture, Fruits and Vegetables. This shows the farmers mindset towards profit mindset.

Table no:3 Cropping Patterns changing details.

Sl.No	Options	Responses	Percentage
1	Traditional Crops	5	10.41%
2	Floriculture	26	54.16%
3	Fruits	6	12.5%
4	Vegetables	11	22.91%
	Total	48	100

Above table shows that more than 50% farmers depending on Floriculture next option is Vegetables followed by fruits and traditional crops.

Farmers are using more Fertilizers and Pesticides, Insecticides for more yielding trials it causes to Economic Burden as well as soil pollution.

Table No:4 Usage Level Of Fertilizers.

Sl.No	Options	Responses	Percentage
1	Fertilizers increased Less than 50%(Last 5 years)	16	33.33%
2	Fertilizers increased More than 50%(Last 5 years)	32	66.66%
	Total	48	100

Table No: 5 Usage Level Of Pesticides, Insecticides Etc. Increased.

Sl.No	Options	Responses	Percentage
1	Pesticides, Insecticides Etc. Increased Less than 50%(Last 5 years)	19	39.58%
2	Pesticides, Insecticides Etc. Increased More than 50%(Last 5 years)	29	60.41%
	Total	48	100

Above tables shows that increasing level of Fertilizers, Pesticides, and Insecticides Etc. is main cause for expenditure.

Minor irrigation department and other channel departments are sole responsible for informing people regarding HN valley water usage. Main purpose this project is to increase groundwater table. But some farmers using treated water directly to agriculture purpose. Livestock also consuming treated water directly because lack of proper guidance and awareness they were victims of this project.

Table no: 6 Departments role in building awareness

Sl.No	Options	Responses	Percentage
1	Minor irrigation dept or any other depts. given any awareness/notices regarding water usage : YES	14	29.16%
2	Minor irrigation dept or any other depts. given any awareness/notices regarding water usage : No	34	70.38%
	Total	48	100

Above tables shows the negligence of departments to building awareness to people for proper usage of treated sewage water. It leads to direct use of water for Agriculture and livestock consumption.

Table No:7 Opinion on Tertiary treatment of Sewage water

Sl.No	Options	Responses	Percentage
1	Yes, Tertiary treatment is Compulsory required.	37	77.08%
2	No,Tertiary treatment is not required.	6	12.5%
3	Cannot Say	5	10.41%
	Total	48	100

Findings :

- Many farmers said that HN valley Project is useful for increasing groundwater level.
- Farmers noticed Underground Water level is positively changed in last 3-4 years.
- Croping pattern Shifted from traditional to floriculture, vegetables and Fruits.
- Farmers using more Fertilizers for their crops and also increased in the level of spraying varieties of Pesticides, Insecticides Etc.
- Minor irrigation and Allied departments are failed to reach the people for instructing regulation of usage HN Valley water.
- Majority of farmers demanding for tertiary treatment.

Suggestions

1. This helps the farmers to largely depend on groundwater to irrigation.
2. The water stored in lake cannot be used for local purpose, irrigation. If the water is filtered it can be used for various purpose also.
3. Hence by observing and analyzing usage of Fertilizers and Agro chemicals is more, concern departments must regulate unscientific use.
4. Tertiary treatment must be Preferable.

V. CONCLUSIONS

The HN Valley project serves as a transformative "bridge" between urban waste management and rural survival. For the farmers in these drought-prone districts, the project has been a literal lifesaver, yet it remains a subject of intense scientific and environmental scrutiny. Heavy Metal Concerns: There are ongoing fears regarding the accumulation of heavy metals (like Lead or Cadmium) in the soil and their subsequent entry into the food chain through vegetables and milk. Long-term Soil Health: Continuous use of treated wastewater can alter soil pH and salinity, potentially affecting land fertility over decades. The Hebbala-Nagavara Valley project has successfully reversed the migration of farmers to cities by making agriculture viable again. However, to ensure this isn't a "short-term gain for a long-term pain," the government must implement rigorous, transparent water quality monitoring and invest in advanced filtration. The project is a global example of circular water economy, but its ultimate legacy depends on safeguarding the health of the consumers and the longevity of the soil.