STATE - PUNJAB

TWO DAYS CONFERENCE OF CEOs OF SLNA

TO REVIEW IMPLEMENTATION OF WDC-PMKSY (ERSTWHILE IWMP) (18-19th February, 2016)
In addition to other projects under WDC, the State has prepared a project with total cost of Rs. 87.30 cr for 44 nos of Dark Blocks under PMKSY. The GOI has already released 27.80 cr as 1st instalment.

- Project shall be on 60:40 (GOI: State) sharing basis.
- The Project shall be implemented in 2 years.
- The Project shall focus upon conservation and management of ground water resources through recharging projects, increasing efficiency of existing irrigation conveyance methods along with waste water utilization in agriculture.
Two Practices/ Activities besides other are proposed to be executed under PMKSY especially in dark blocks

1. Increasing Irrigation water efficiency through use of Underground Pipeline System for conveyance of irrigation water
2. Creation of Alternate source of Irrigation water by utilization of waste water from village ponds and its further conveyance to agricultural fields using solar energy
Problems/ Issue that necessitated the initiatives

1. Underground Pipeline for Irrigation

- Ground water depletion in the State is major issue. More than 70% of irrigation water need is met from ground water as surface water resources are limited.
- State has almost 110 blocks categorized as over exploited out of total 144 blocks.
- Conventional Irrigation conveyance methods involving Kaccha or open channels leads to wastage of water to the extent of 30% in terms of evaporation, seepage etc.
- Replacing these open channels with underground pipelines shall save 30% of water which in other terms mean 30% less water shall be drawn from underground aquifers.
2. Creation of alternate water source by utilizing waste water for irrigation using solar energy

- Tremendous amount of waste water is generated from various towns/villages of the State.
- Utilizing this waste water for irrigation shall reduce stress on existing water resources.
- Waste water being rich in nutrients shall lower fertilizer consumption by the farmers.
- Utilizing solar energy for water pumping shall mean lowering carbon footprint of the State.
- Curbing dependence on electricity, supply of which is limited to agri sector. Farmers shall get assured irrigation water supply.
Description of the outcome of the Innovative practices

- Ensuring longevity of ground water resources by reduction in underground water drawl.
- Decreasing diversion of potable water sources for irrigation related needs by utilization of waste waters for irrigation
- Ensuring assured irrigation water supply which shall be helpful in drought like conditions.
- Combating environmental pollution by regular recycling of village pond water.
- Providing one time solution for irrigation water conveyance
The underground pipeline system projects for irrigation water conveyance are being implemented in the State by Department of Soil and Water Conservation, Punjab.

These projects are being implemented on community basis as well as individual basis. Different assistance is provided for both type of projects.

These projects have been immensely beneficial for the farming community and have a great demand.

Underground pipelines help in saving of land which is wasted on account of construction of open channels.

Farmer saves on account of labour costs, which is required for maintenance of open channels.

A Recent evaluation study by ICAR has rated this activity as the best in terms of water saving in agriculture (Report annexed).

Given the limited budget available with existing schemes, this activity is proposed to be promoted on mass scale under PMKSY.
Efforts taken for Upscaling/Replication at other sites - Experience sharing

Waste Water Utilization With Solar Energy

• A pilot project at village Tarkheri, Distt Patiala and another one in Distt Gurdaspur have been executed.
• The village pond at Village Tarkheri was polluted, with all kinds of waste flowing into it.
• Project was executed in year 2010 and villagers were made aware and encouraged not to throw waste into it. Farmers in command area were motivated into using waste water of pond for irrigation.
• Pond was renovated, Solar (SPV) Pumpset was installed for pumping of water. Underground pipeline was laid from pond to farmers fields for irrigation water conveyance.
## Analysis between Open Channel and Underground Pipeline

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Open Channel</th>
<th>Underground Pipeline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Losses</strong></td>
<td>Heavy Losses in form of Evaporation and Seepage</td>
<td>No to negligible losses</td>
</tr>
<tr>
<td><strong>Land</strong></td>
<td>Land Required for construction Channels</td>
<td>Underground Pipeline is beneath the land, no land wasted</td>
</tr>
<tr>
<td><strong>Labour Costs</strong></td>
<td>Labour Costs involved in maintenance of channels</td>
<td>Negligible Maintenance Costs</td>
</tr>
<tr>
<td><strong>Life Span</strong></td>
<td>Very Short, <em>Kaccha</em> channels have to be built every season, Repair required on <em>pucca</em> channels continuously</td>
<td>Very Longer Lifespan (25-50 years)</td>
</tr>
<tr>
<td><strong>Livestock threat</strong></td>
<td>Being on surface are prone to damage by livestock or others</td>
<td>No Such threats involved</td>
</tr>
<tr>
<td><strong>Flow</strong></td>
<td>Reduced Velocity, more time period required to irrigate</td>
<td>Piped flow leads to increased velocity hence lesser time taken to irrigate</td>
</tr>
<tr>
<td><strong>Energy consumption</strong></td>
<td>More Power and fuel required for pumping due to less velocity and increased friction in water conveyance</td>
<td>Less Power and fuel consumption due to Lower friction losses and increased velocity</td>
</tr>
</tbody>
</table>
Learning regarding process restructuring/ reorganization

- State of Punjab has highest number of blocks categorized as over exploited in the country. Need of hour is to judiciously use these water resources and agriculture being major consumer of water needs special emphasis.
- There are number of other methodologies for conservation of water like ground water recharging etc but for agriculture intensive state these have limited impact as water infested with pesticides can contaminate ground water if recharged.
- Improving irrigation water efficiency and utilization of waste water is most viable activity and has direct benefits too.
- These activities shall also generate awareness about use of solar energy for agricultural purposes.
- Implementation of these projects shall bring awareness among farming community about conservation and management of water resources.