BRIEFING
for
SECRETARY AGRICULTURE
on
WATER MANAGEMENT WING

DIRECTOR GENERAL AGRICULTURE
(WATER MANAGEMENT) PUNJAB

AGRICULTURE DEPARTMENT
JANUARY 2015
RATIONALE
PUNJAB WATER BUDGET

Canal Diversions (average last 20 years) 50 MAF
Punjab’s Share in Water Accord 1991 56 MAF

Losses in Canals (25%) 13 MAF
Losses in Watercourses (30%) 11 MAF
Improved (44,000) = 7.5 MAF (25%)
Unimproved (14,000) = 3.5 MAF (40%)

Water Availability at Mogha 37 MAF

Available at Farm Gate 26 MAF
Groundwater Abstractions 33 MAF

Total Available at Field Level 59 MAF
Net Available at Field Level 38 MAF
Available for Crop Use 45 MAF
Actual Crop Water Requirements 65 MAF
PUNJAB WATER BALANCE SHEET

Available (MAF)

Surface Water: 50
Ground Water: 33
Rainfall: 7
Sum: 90

Losses (MAF)

Canals: 13
Watercourses: 11
Field: 21
Sum: 45

Crop Water Requirement

65 MAF for 43 MA Cropped Area

Net Availability

45 MAF

Deficit

20 MAF
ON FARM WATER MANAGEMENT

RATIONALE

OVER-EXPLOITATION OF GROUNDWATER

- Recharge in freshwater areas: 23 MAF
- Average pumpage: 33 MAF
SIGNIFICANCE OF IRRIGATED AGRICULTURE

- Punjab’s more than 80 percent of cropped area is irrigated
- Irrigated agriculture is the backbone of provincial economy
  - Contributes 90 percent in total agricultural output
  - Generates employment opportunities for 45 percent of labour force
  - Provides income to two third of rural population
- Vast groundwater aquifer with excellent hydraulic characteristics providing 33 MAF water through over 1,026,000 tubewells annually
- World’s distinct water conveyance network serves 21 million acres of fertile alluvial soils
- In addition, about 8.5 million acres land is under irrigation outside canal commands
IRRIGATION WATER CONSTRAINTS

- Surface supplies are 20 MAF deficient to meet existing cropped area of 43 million acres under irrigated agriculture.
- Groundwater is being over pumped to the tune of 10 MAF.
  - Depletion of groundwater is exorbitantly increasing pumping costs.
  - Use of brackish water is degrading soil leading to low productivity.
- Any increase in irrigation supplies is not expected in the near future.

Only option for sustainability of irrigated agriculture is efficient use of available water resources.
OFWM MISSION

Maximizing productivity of irrigation water at the farm level

“More Crop Per Drop”
OBJECTIVES

Irrigation Efficiency
Increase efficiency of tertiary (community watercourses) and quaternary (farm channels) level irrigation conveyance network

Water Productivity
Enhance water productivity by producing more crop per drop

OFWM Service Delivery
Create sustainable mechanisms for irrigation service delivery in the private sector

Farmers/Community Mobilization
Mobilize farmers and farming communities to share investment costs for development, improvement, and management of farm level irrigation infrastructure
CORE FUNCTIONS

OFWM

- Watercourse Improvement
- Water Users Association
- LASER Land Leveling
- Training and Capacity Building
- Research & Development
- High Efficiency Irrigation Systems
- Irrigation Schemes
ORGANIZATIONAL SETUP

PROVINCIAL LEVEL

Director (Training)

Agricultural Engineer
Agri. Economist
Soil Scientist
Agronomist
Sociologist
Agri. Ext. Specialist
Deputy Director (A&A)
Assistant Agronomist
Asst. Agri. Engineer

SECRETARY AGRICULTURE

Director General Agriculture (Water Management)

Director (Hqs)
Deputy Director (Hqs)
Deputy Director (M&E)
Deputy Director (A&A)
System Analyst
Asst. Dir. Technical
Asst. Dir. (A&A)
Computer Programmer
Publicity Officer

DISTRICT LEVEL

District Coordination Officer

Executive District Officer (Agriculture)

District Officer (OFWM)

Asstt. Agri. Engineer
Asstt. Agronomist

TEHSIL LEVEL

Deputy District Officer (OFWM)

Water Management Officer
Water Management Supervisor

Staff Strength
Permanent : 1,953
Project : 1,856
STRATEGIC NEED GAP

CANAL COMMANDED AREAS  (Nos.)
- Total canal watercourses  58,770
- Improved  45,630
- Nominally improved  7,000 (Approx.)
- Completely unimproved  13,140
- Requiring improvement up-gradation  20,140 (13,140+7,000)

NON CANAL COMMANDED SYSTEMS
- Total irrigated land (Million Acre)  8.57
- Existing irrigation schemes (Nos.)  195,000
- Improved (Nos.)  16,122
- Balance (Nos.)  178,878
STRATEGIC NEED GAP

LASER LAND LEVELERS
- Area requiring leveling (Million Acres) 29
- Annual leveling capacity per LASER unit (Acres) 300
- Required units (No.) 25,000
- Available (No.) 6,000
- Gap (No.) 19,000

HIGH EFFICIENCY IRRIGATION SYSTEMS (HEIS) (Drip and Sprinklers)
- Area under HEIS (Acres) 22,000
- Irrigated Land (Million Acres) 29
- Gap (at least 10% of irrigated land or till enough demand is generated) 2.9
IMPACT OF OFWM INTERVENTIONS
HIGH EFFICIENCY IRRIGATION SYSTEMS

- Increase in water use efficiency by 95%
- Enhancement in crop yields upto 100%
- Reduction in use of fertilizers to the tune of 40%
- Facilitation in easy, precise, efficient and uniform nutrient application
- Better produce quality

- ERR (43.2%)
- B/C Ratio (1: 2.1)

LASER LAND LEVELING

- Reduction in irrigation application losses up to 50%
- Increase in crop yield by 25%
- Enhancement in cultivated area by 2%
- Curtailment of labor requirement to the tune of 35%
- Facilitation in better crop stand, uniform moisture availability and enhanced fertilizer use efficiency

- ERR (32.7%)
- B/C Ratio (1:1.5)

ON FARM WATER MANAGEMENT

- Annual water saving of 123 AF per watercourse
- Increase in crop yield by 11%
- Reduction in conveyance losses up to 25%
- Curtailment of irrigation time to the tune of 22%
- Increase in irrigated area by 8.3%
- Saving in labor by 65%

- ERR (28.1%)
- B/C Ratio (1: 2.3)

Source: Impact Evaluation Study for NPIW (2011) carried out by the Planning Commission of Pakistan
ADDITIONAL LINING OF PARTIALLY IMPROVED WATERCOURSE

- Annual average water saving of 62 AF per watercourse
- Increase in crop intensity by 4%
- Increase in crop yield by 11%
- Average reduction in conveyance losses by 12%
- Curtailment of irrigation time to the tune of 11%

- ERR (23.1%)  
- B/C Ratio (1:1.9)

IRRIGATION SCHEMES OUTSIDE CANAL COMMANDS

- Enhance cropping intensity up to 130%
- Increase in crop yield by 13-20%
- Annual water saving of 58 AF per scheme
- Increase in irrigated area up to 100%

- ERR (19.7%)
- B/C Ratio (1:1.6)

PUNJAB IRRIGATED-AGRICULTURE PRODUCTIVITY IMPROVEMENT PROJECT (PIPIP)
Integrated development approach with comprehensive package of already tested OFWM interventions
**PROJECT DIGEST**

- **Sponsoring**
  - Punjab Government through Agriculture Department

- **Financial Outlay (Rs. Million)**
  - Punjab Government/ World Bank 21,249.997 (US$ 250.00)
  - Farmers 14,750.709 (US$ 173.54)
  - **Total** 36,000.705 (US$ 423.54)

- **Implementation Period**
  - 60 months (01-07-2012 to 30-06-2017)

- **Project Area**
  - All over the Punjab
PROJECT COMPONENTS

- Installation of High Efficiency (drip and sprinkler) Irrigation Systems on 120,000 acres
- Provision of 3,000 LASER land leveling units to farmers/service providers
- Improvement of 5,500 unimproved canal area watercourses
- Completion of 1,500 partially improved watercourses
- Rehabilitation of 2,000 irrigation schemes outside canal network
- Awareness creation, demonstration, capacity building, and research & devolvement regarding modern irrigation technologies and practices
- Development and updation of GIS database
**PROJECT IMPLEMENTATION ARRANGEMENTS**

**PROVINCIAL AGRICULTURE DEPARTMENT**
- Resource mobilization
- Project management
- Coordination among stakeholders
- Progress monitoring
- Training and capacity building
- Pre-qualification of SSCs

**DISTRICT GOVT. (OFWM STAFF)**
- DGA (WM)
- PMU
- Farmers’ mobilization
- Registration of WUAs
- Surveys and designs
- Collection of farmers’ share
- Scrutiny, balloting, allotment & delivery of laser units
- Implementation supervision
- Backup support services

**CONSULTANTS**
- PIS
- Prepare standards and specifications
- Draft technical documents/agreements/formats
- Facilitate in finalization of rates
- Quality assurance through spot checking
- Third party validation
- Verify pre-requisites for payments to WUAs/SSCs
- Provide technical assistance

**M&E**
- Impact assessment of project interventions
- Monitoring and evaluation of project development objectives (PDOs)
- Recommend course correction measures in implementation strategy
- Develop computer based state-of-the-art project monitoring and information system
WATERCOURSE IMPROVEMENT IMPLEMENTATION ARRANGEMENTS

**OFWM**
- Publicity and Mobilization
- Organization & Registration of WUA
- Carry out Survey
- Prepare Design and Cost Estimates
- Issuance of Technical Sanction
- Collection of Farmer’s Share (Rs. 1,035 million)
- Got Constructed 3,929 Km of Earthen Length with Rs. 1,294 million
- Supervision of Construction Work
- Release of Payment to WUA

**CONSULTANT**
- Approval of Survey, Design and Cost Estimates
- Quality Assurance through Spot Checking
- Certification of Completed Works
- Recommend Release of Payments to WUA

**WUA**
- Application Submission
- Formation of WUA
- Opening of Bank Account
- Deposit of Labor Cost
- Execution of Earthen Improvement
- Lining of Critical Reaches
- Maintenance of Improved Watercourse
- Release of Payment to WUA

On Farm Water Management Project Punjab, Lahore
# HEIS IMPLEMENTATION ARRANGEMENTS

<table>
<thead>
<tr>
<th>OFWM</th>
<th>CONSULTANT</th>
<th>SSC</th>
<th>FARMER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-qualification of SSCs</td>
<td>Support in Pre-qualification Process</td>
<td>Carry Out Survey</td>
<td>Application Submission</td>
</tr>
<tr>
<td>Publicity and Mobilization</td>
<td>Observance of Selection Criteria</td>
<td>Prepare Design</td>
<td>Deposit of Farmer Share</td>
</tr>
<tr>
<td>Application Scrutiny</td>
<td>Approval of Design and Cost Estimates</td>
<td>Installation of HEIS</td>
<td>Signing of Tripartite Contract</td>
</tr>
<tr>
<td>Verification of Design</td>
<td>Vetting Quantity and Quality of Material</td>
<td>Training of Farmer</td>
<td>Operation &amp; Maintenance of HEIS</td>
</tr>
<tr>
<td>Collection of Farmers’ Share (Rs. 769 million)</td>
<td>Commissioning Certification</td>
<td>Provide Irrigation and Fertigation Schedule</td>
<td></td>
</tr>
<tr>
<td>Issuance of Work Order</td>
<td></td>
<td>Agronomic Backup Support (2 years)</td>
<td></td>
</tr>
<tr>
<td>Payment to SSCs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Installation Support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training and Capacity Building</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LASER LEVELERS PROVISION IMPLEMENTATION ARRANGEMENTS

**OFWM**
- Pre-qualification of SSCs
- Publicity and Mobilization
- Application Scrutiny
- Balloting and Allotment
- Collection of Farmers’ Share (Rs. 966 million)
- Issuance of Work Order
- Inspection of LASER Unit
- Payment to SSC
- Training of Farmer/Service Provider

**CONSULTANT**
- Support in Pre-qualification Process
- Assist in Scrutiny and Balloting
- Inspection and Field Testing of LASER unit
- Recommend Payment
- Demonstration of LASER Unit
- Backup Support

**SSC**
- Supply of LASER Unit
- Deposit of Farmer Share
- Provision of LASER Land Leveling Services

**FARMER**
- Application Submission
- Demonstration of LASER Unit
- Backup Support

OFWM = Office of Water Management
CONSULTANT = Consultant
SSC = Service Supplier Committee
FARMER = Farmer
PREQUALIFICATION PROCESS FOR SSCs

1. Publishing of EOI after Approval from the World Bank and Government
2. Submission of Proposals by SSCs/Firms
3. Opening of Proposals by PQC
4. Constitution of Sub-Committee by PQC
5. Scrutiny and Evaluation of Proposals and Preparation of Report by Various Working Groups
6. Scrutiny of Report by PQC and Submission of Recommendations to PSC
7. Preparation of Report by Sub-committee and Submission to PQC
8. Preparation of Report by Sub-committee and Submission to PQC
9. Pre-qualification by the PSC
10. Concourse by the World Bank
11. Notification of Pre-qualified SSCs by Government
COST SHARING ARRANGEMENTS

GOVERNMENT

• Drip & sprinkler irrigation systems (subsidy limit 15 acres)
  • 60 percent of system cost
  • Rs.10,000/acre for water storage pond

• LASER units
  • Rs. 225,000

• Unimproved watercourses
  • Entire cost of construction materials

• Partially improved watercourses
  • - do-

• Irrigation schemes
  • Up to Rs. 250,000
    (for materials)

FARMERS

• Remaining all costs (about 40 %)
## PIPIP Physical Progress

<table>
<thead>
<tr>
<th>Sr. #</th>
<th>Component/ Activity</th>
<th>Component Details</th>
<th>Overall</th>
<th>F.Y. 2014-15</th>
<th>Anticipated upto 30 June 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Project Target</td>
<td>Achievements as on 31 Dec 2014</td>
<td>% age ach.</td>
<td>Target</td>
</tr>
<tr>
<td>1</td>
<td>Improvement of Unimproved Canal Irrigated Watercourses (No.)</td>
<td>Approval of Designs/Cost Estimates</td>
<td>3,472</td>
<td>63</td>
<td>1,570</td>
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<tr>
<td></td>
<td></td>
<td>Completed</td>
<td>2,077</td>
<td>38</td>
<td>204</td>
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<td></td>
<td></td>
<td>Work in Progress</td>
<td>540</td>
<td>10</td>
<td>540</td>
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<td>2</td>
<td>Completion of Partially Improved Watercourses (No.)</td>
<td>Approval of Designs/Cost Estimates</td>
<td>1,460</td>
<td>97</td>
<td>338</td>
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<td></td>
<td></td>
<td>Completed</td>
<td>1,315</td>
<td>88</td>
<td>210</td>
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<td></td>
<td></td>
<td>Work in Progress</td>
<td>128</td>
<td>9</td>
<td>128</td>
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<tr>
<td>3</td>
<td>Rehabilitation of Irrigation Conveyance Systems in Non-Canal Commanded Areas (No.)</td>
<td>Approval of Designs/Cost Estimates</td>
<td>1,419</td>
<td>71</td>
<td>163</td>
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<tr>
<td></td>
<td></td>
<td>Completed</td>
<td>1,315</td>
<td>66</td>
<td>59</td>
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<td></td>
<td></td>
<td>Work in Progress</td>
<td>56</td>
<td>3</td>
<td>56</td>
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<tr>
<td></td>
<td></td>
<td>Period Elapsed (%)</td>
<td>60</td>
<td>-</td>
<td>72</td>
</tr>
</tbody>
</table>

**Sr. #**: Serial number
**Milestone**: Milestone against the project
**Project Target**: Target for each milestone
**Achievements as on 31 Dec 2014**: Achievements reached as on 31 Dec 2014
**% age ach.**: Percentage of achievement
**Target**: Target for the financial year 2014-15
**Achievements todate**: Achievements reached as on the date
**% age ach.**: Percentage of achievement
**Achievements**: Achievements reached as on the date
**% age ach.**: Percentage of achievement

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*Cont.*
## ON FARM WATER MANAGEMENT

### PIPIP PHYSICAL PROGRESS

<table>
<thead>
<tr>
<th>Sr. #</th>
<th>Component/ Activity</th>
<th>Milestone</th>
<th>Project Target</th>
<th>Overall</th>
<th>F.Y. 2014-15</th>
<th>Anticipated upto 30 June 2015</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Achievements as on 31 Dec 2014</td>
<td>% age ach.</td>
<td>Target Achievements todate</td>
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<tr>
<td>4</td>
<td>Strengthening of Precision Land Leveling Services in Private Sector by Provision of LASER Units (No.)</td>
<td>Balloting and Allotment</td>
<td>3,000</td>
<td>2,890</td>
<td>96</td>
<td>179</td>
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<tr>
<td></td>
<td></td>
<td>Booking by Allottees</td>
<td></td>
<td>2,683</td>
<td>89</td>
<td>36</td>
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<tr>
<td></td>
<td></td>
<td>Issuance of Works Order</td>
<td></td>
<td>2,660</td>
<td>89</td>
<td>15</td>
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<tr>
<td></td>
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<td>Delivery of Units</td>
<td></td>
<td>2,626</td>
<td>88</td>
<td>4</td>
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<tr>
<td>5</td>
<td>Installation of High Efficiency Irrigation Systems (Acres)</td>
<td>Completion of Survey</td>
<td>120,000</td>
<td>27,068</td>
<td>23</td>
<td>7,150</td>
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<td></td>
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<td>Approval of Designs</td>
<td></td>
<td>25,540</td>
<td>21</td>
<td>6,512</td>
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<td>Issuance of Works Order</td>
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<td>18,605</td>
<td>16</td>
<td>3,206</td>
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<td>Commissioning</td>
<td></td>
<td>12,150</td>
<td>10</td>
<td>512</td>
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<td></td>
<td>Work in Progress</td>
<td></td>
<td>6,455</td>
<td>5</td>
<td>2,694</td>
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</table>

**Period Elapsed (%)**

- **60**
- **72**
## PROJECT PERFORMANCE RATING BY THE WORLD BANK

<table>
<thead>
<tr>
<th>Project Aspect</th>
<th>Performance Rating by the World Bank Implementation Review Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1&lt;sup&gt;st&lt;/sup&gt; (Nov 2012)</td>
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<tr>
<td>Achievement of PDO</td>
<td>HS</td>
</tr>
<tr>
<td>Financial Management</td>
<td>S</td>
</tr>
<tr>
<td>Procurement</td>
<td>HS</td>
</tr>
<tr>
<td>Project Management</td>
<td>HS</td>
</tr>
<tr>
<td>Overall Implementation Progress</td>
<td>HS</td>
</tr>
</tbody>
</table>

Ratings: HS=Highly Satisfactory; S=Satisfactory; MS=Moderately Satisfactory; MU=Moderately Unsatisfactory; U=Unsatisfactory; HU=Highly Unsatisfactory; NA=Not Applicable; NR=Not Rated
## DISBURSEMENT STATUS
(IDA Credit 50810-PK)

<table>
<thead>
<tr>
<th>Particular</th>
<th>(Figures in million)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>US$</td>
<td>Rs.</td>
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<tr>
<td>Commitment</td>
<td>250.00</td>
<td>21,250.00</td>
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<tr>
<td>Disbursement</td>
<td>104.266</td>
<td>10,385.823</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td><strong>41.71</strong></td>
<td><strong>48.87</strong></td>
</tr>
</tbody>
</table>
OVERALL ANTICIPATED BENEFITS

- Direct Benefit to about 580,000 farm families
- Creation of 12.9 million person days per annum of employment as farm labor
- Estimated benefited area of about 5 million acres
- Saving of about 2.2 MAF water per annum
- Additional income of over Rs. 11 billion annually

ERR (32.6%)  B/C Ratio (1:1.9)
HEIS ADOPTION CHALLENGES

- HEIS is new technology in Pakistan
- Involves complete paradigm shift to move from inexact to exact agricultural practices
- High initial cost of HEIS equipment
- Inadequate (negligible) capacity of SSCs in terms of manpower and inventory to cater even whatever demand is available
- Lack of technical knowhow amongst all stakeholders
PIPIP HEIS COMPONENT EXPECTED OUTCOMES

Create Enabling Environment for Wide Scale HEIS Adoption

1. Capacity Building and Skill Development
   - Training of Trainers
   - Comprehensive courses for staff in designing, installation and O&M
   - Specialized trainings for Farm Operators and local Technicians/Plumbers
     - Installation
     - Operation
     - Maintenance
   - International collaboration/Foreign experience

2. Demonstration and Awareness
   - Field Days/Road Shows
   - Electronic and print media campaigns
   - Demonstration through about 10,000 sites established all over the province
   - Success Stories

International collaboration/Foreign experience
3. Generation of Demand
- Subsidized (60%) installation
- Farmers’ mobilization
- Assured demand of 120,000 acres

4. Develop Service Provision in Private Sector
- Create installation capacity to cater the demand
- Availability of backup support services for sustainability
- Establish service provision network at local level

5. Technology Indigenization
- Local manufacturing of system components
- Research and development

PIPIP HEIS COMPONENT EXPECTED OUTCOMES
<table>
<thead>
<tr>
<th>Item</th>
<th>(Nos.)</th>
<th>2014-15</th>
<th>Overall</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road Shows/Field Demonstration Programs</td>
<td></td>
<td>49</td>
<td>248</td>
<td>17,824</td>
</tr>
<tr>
<td>Professional Training Courses (OFWM Staff)</td>
<td></td>
<td>19</td>
<td>55</td>
<td>1,115</td>
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<tr>
<td>Technical Training Courses (Farmers)</td>
<td></td>
<td>26</td>
<td>146</td>
<td>4,433</td>
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<tr>
<td>Refresher Training Courses (OFWM Staff and Farmers)</td>
<td></td>
<td>2</td>
<td>49</td>
<td>1,029</td>
</tr>
<tr>
<td>Specialized / Tailor-made Training Courses (Drip Technicians)</td>
<td></td>
<td>-</td>
<td>8</td>
<td>209</td>
</tr>
<tr>
<td>Documentaries</td>
<td></td>
<td>-</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Technical Material Developed (technical briefs, O&amp;M manual etc.)</td>
<td></td>
<td>12</td>
<td>28</td>
<td>-</td>
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<tr>
<td>Success Stories</td>
<td></td>
<td>20</td>
<td>54</td>
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<tr>
<td>Articles/Feature Stories/Interviews</td>
<td></td>
<td>21</td>
<td>41</td>
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<tr>
<td>Radio Programs</td>
<td></td>
<td>40</td>
<td>113</td>
<td>-</td>
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<tr>
<td>Advertisements in National Media</td>
<td></td>
<td>5</td>
<td>17</td>
<td>-</td>
</tr>
<tr>
<td>Website (<a href="http://www.ofwm.gov.pk">www.ofwm.gov.pk</a>), Facebook etc.</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
COLLABORATIVE ARRANGEMENTS WITH CHINA, USA, AND ELSEWHERE

- Former Secretary Agriculture visited China during 2006 and signed MOU for collaboration regarding HEIS technology with National Center for Efficient Irrigation Engineering & Technology Research-Xinjiang (NCEIXJ)

- NCEIXJ invited nominations of two officers for participation in the International Training Workshop at Sheihze, Xinjiang, China and District Officers (OFWM) Attock and R.Y. Khan participated the training course

- NCEIXJ China has now indicated to provide technical assistance in HEIS and the MOU has been renewed during September 2014 for the purpose

- NCEIXJ is preparing a project for Pakistan sponsored by Chinese Ministry of Science & Technology (MOST)

- It would be a grant for the Punjab government for research & development, training, demonstration and promotion of efficient irrigation technologies

- Similar collaborative arrangements are being explored with United States Department of Agriculture (USDA)
ISSUES

- There is no major issue raised in the recent World Bank Mission Aide Memoire.
- The routine agreed actions are being complied with as per schedule.
Feasibility Study for Bringing Wastelands of Thal, Pothohar and Cholistan Areas under Cultivation through a Comprehensive Strategy
- Groundwater in most of the area is useable but land is undulated and soils are sandy.
- Tropical climate with average rainfall of 250 mm (10 in).
- Desert environment is less susceptible to insect/pest and diseases due to dry conditions.
- Enormous potential of high value agriculture with modern irrigation technologies and practices.
ON FARM WATER MANAGEMENT

THAL REGION – GENERAL OUTLOOK
HEISs INSTALLED IN THAL REGION
Out of 5.5 million acres of cultivable land, only 45 percent (2.50 million acres) is under rain fed agriculture.

Soils are highly fertile with high organic matter.

Semi-arid to sub-humid mild climate having average annual rainfall of 380 mm to 510 mm (15 in to 20 in).

Only 0.14 MAF (< 3%) of 3.5 MAF water is tapped within the region.

Highly suitable for irrigated agriculture with HEIS.

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**Latitude:** 32° 10' to 34° 90' North

**Longitude:** 71° 10' to 73° 55' East
POTHOHAR PLATEAU - GENERAL OUTLOOK
HEISs INSTALLED IN POTHOHAR
CHOLISTAN – SALIENT FEATURES

- Spread over 2.67 million hectares (6.6 million acres) in the districts of Rahim Yar Khan, Bahawalnagar and Bahawalpur
- Agricultural development is confronted with following constraints
  - Groundwater is brackish
  - Soils are saline
  - Annual rainfall is very low (100 to 200 mm)
- Potential for desert agriculture needs exploration

Latitude: 27° 42’ to 29° 52’ North
Longitude: 69° 52’ to 73° 05’ East
About 8 million acres irrigated land is located outside canal commands system.

There is lack of proper irrigation system for agriculture in these areas.

Soils are mostly sandy/porous having high water losses.

Proper management of irrigation water can help to expand irrigated agriculture.
CONCEPTUAL FRAMEWORK

Feasibility Study

Promote resource efficient, environment friendly, socially acceptable, and economically profitable irrigated agriculture through integrated management of available resources (land, water, climate etc.)
OBJECTIVES

i) Explore the potential of uncultivated waste lands in Thal, Pothohar, Cholistan, and Riverine areas of the Punjab in terms of agricultural, technical, hydrological, socio-economic, institutional, financial, environmental, and all other related aspects for bringing under cultivation

ii) Assess the potential of available resources (type, quantity & quality) for development of irrigated agriculture in these lands.

iii) Identification of issues hindering the development of irrigated agriculture in these areas

iv) Formulate cost effective potential solutions alongwith models/packages for implementation of each recommended intervention in various areas
PROJECT DIGEST

Estimated Cost

- Punjab Government: Rs. **39.983 Million**

- An allocation of Rs. 30.00 million has already been made in ADP 2014-15 for the purpose

Sponsoring

- Government of the Punjab, Agriculture Department through Annual Development Program

Execution

- Agriculture Department, Punjab through Directorate General Agriculture (Water Management) Punjab, Lahore

Implementation Period

- 24 months (01-07-2014 to 30-06-2016) including consultancy services for 12 months
WAY FORWARD

- Establish linkage with Asian Institute of Technology, Bangkok for capacity building in HEIS through Master degree program
- Continue HEIS awareness campaign and capacity building program
- Convene Project Steering Committee (PSC) meeting for
  - Finalizing prequalification of PCPS firms/SSC
  - Re-allocation/ transfer of un-allotted quota of LASER units from districts with lesser demand to high demand districts
- Prequalify more PCPS manufacturing firms to cater the demand of uncovered districts

Cont.
Selection of consultants for feasibility study to develop wastelands for irrigated agriculture

Modify the policy for lining length of watercourses under current economics of irrigation water
“More Crop Per Drop”

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THANKS