BRIEFING OUTLINE

- Institutional Domain
- Challenges
- Vision, Objectives and Functions
- Development Portfolio
- Organizational Hierarchy
- Overview of Development Projects and Activities
- Impact of OFWM Activities
- Work Plan for 2018-19
- Issues, Options and Way Forward
INSTITUTIONAL DOMAIN

IRRIGATED AREAS
- 60,000 Watercourses with 300,000 KMs of Conveyance Network
- 21 Million Acres of Irrigated Land
- 5.2 Million farm families


BARANI AREAS
- Eight (8) million acres of land – 13 districts
- 5.4 million acres in Pothohar – four districts

Potential of
- 200 small dams
- 5,000 mini dams
- 14,000 water storage ponds
- 3.5 MAF runoff
KEY CHALLENGES

- **Water Scarcity**
  (water availability is less than 1,000 m³ per capita against required 1,700 m³)

- **Limited Water Storage**
  (15 MAF of water storage for 30 days only, which is extremely low)

- **Decreasing Surface Water Supplies**
  (low canal water supplies, only 40%)

- **Unregulated Groundwater Pumpage**
  (Water Mining and quality deterioration resulting in land degradation)

- **Wasteful Farm Level Water Conveyance and its Application**
  (irrigation efficiency less than 50%)

- **Climate Change Risk**
  (Pakistan ranks 7th on 2018 Global Climate Risk Index)

- **Technology Gap/ Less Focus on R&D in Irrigation**
  (limited ICT applications)
Crop Water Requirement
65 MAF
for
About 43 MA Cropped Area

PUNJAB WATER BUDGET

AVAILABILITY (MAF)

50 SURFACE
+ 33 GROUND WATER
+ 7 RAINFALL
= 90

LOSSES (MAF)

12 CANALS
+ 10 WATERCOURSES
+ 15 FIELD
= 37

OFWM DOMAIN

Crop Water Requirement
65 MAF
for
About 43 MA Cropped Area

53 MAF Net Availability

= 12 MAF Deficit
WATER SITUATION DURING KHARIF

Plan:
- Average Water Availability: 34.648 MAF
- Punjab Share: 37.070 MAF
- Share Approved by IRSA: 30.634 MAF
- Shortage: -12.9 %

Current Situation: -40%

Source: Irrigation Department

- Management through Canal Rotation
- Close Coordination with Irrigation Department for making availability of water during Kharif in brackish and water stressed areas of southern Punjab to ensure better growth of cotton crop.
Goal 6. “Ensure availability and sustainable management of water”
Goal 13. “Take urgent action to combat climate change and its impacts”

“Enhancing water productivity through infrastructure development and adoption of improved technologies in a sustainable manner”

“Invest in proven methods and technologies to minimize water wastage, promote conservation and gain efficiencies”

“Ensure water security, food security and energy security in the country”

“ Adopt holistic approach focusing on all three elements of improving water efficiency including conveyance, application and use”
Produce More Crop per Drop of Water through Technology Driven, Sustainable and Climate Smart Agricultural Water Management with Private Sector Participation to promote High Value Agriculture for Better Farm Returns
## OBJECTIVES

<table>
<thead>
<tr>
<th>Community Mobilization</th>
<th>• Mobilize farmers and farming community to share investment costs for development, improvement, and management of farm level irrigation infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing Irrigation Efficiency</td>
<td>• Enhance irrigation efficiency (conveyance, application &amp; use) at the farm level through rehabilitation of tertiary level water conveyance network, improvement of irrigation application and water use methods</td>
</tr>
<tr>
<td>Technology Transfer</td>
<td>• Maximize water and crop productivity through promotion of innovative climate resilient technologies with the support of private sector</td>
</tr>
<tr>
<td>Irrigation Advisory Services</td>
<td>• Ensure irrigation advisory services for sustainable agricultural water management</td>
</tr>
</tbody>
</table>
FUNCTIONS

- Watercourse Improvement
- Irrigation Scheme
- LASER Land Leveling
- Solar System for HEIS
- HEIS
- Tunnel
- On-Farm Water Storage Ponds
- Sunken Fields
- Portable Water Pumps
- Capacity Development

OFWM
IMPLEMENTATION MODEL

Unique Implementation Model
(Private Sector led implementation based on Cost Sharing and Community Procurement)
DEVELOPMENT PORTFOLIO
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Project</th>
<th>Gestation Period (FY)</th>
<th>Project Cost (Rs. Million)</th>
<th>Government Share</th>
<th>Farmer Contribution</th>
<th>Total Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Punjab Irrigated-Agriculture Productivity Improvement Project (PIPIP) – Revised (World Bank funded)</td>
<td>2012-13 to 2020-21</td>
<td>41,737</td>
<td>25,721</td>
<td>67,459</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Provision of Laser Land Levelers to Farmers/Service Providers on Subsidized Cost (ADP funded)</td>
<td>2015-16 to 2017-18</td>
<td>1,350</td>
<td>6,750</td>
<td>8,100</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Optimizing Watercourse Conveyance Efficiency through Enhancing Lining Length (ADP funded)</td>
<td>2015-16 to 2019-20</td>
<td>6,829</td>
<td>2,458</td>
<td>9,287</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Promotion of High Value Agriculture through Provision of Climate Smart Technology Package (ADP funded)</td>
<td>2016-17 to 2018-19</td>
<td>3,475</td>
<td>1,292</td>
<td>4,767</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Rainwater Management in Cotton Fields to Minimize Impacts of Climate Change (Pilot Project) (ADP funded)</td>
<td>2016-17 to 2018-19</td>
<td>36</td>
<td>25</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Promotion of Gram Cultivation through life Saving Irrigation with Sprinkler System under Changing Climate (Pilot Testing) (ADP funded)</td>
<td>2017-18 to 2019-20</td>
<td>296</td>
<td>84</td>
<td>380</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td><strong>53,723 (60%)</strong></td>
<td><strong>36,330 (40%)</strong></td>
<td><strong>90,054</strong></td>
<td></td>
</tr>
</tbody>
</table>
ORGANIZATIONAL HIERARCHY
(UNDER PLGA 2013)

Secretary Agriculture

Director General Agriculture (Water Management)

Director (Headquarters)
Deputy Director (Headquarters)
Deputy Director (M&E)
Deputy Director (A&A)
Deputy Project Director (Watercourses), PIPIP
Deputy Project Director (HEIS & LASER), PIPIP
Deputy Director (T), PIPIP

Director (WMTI)

Deputy Director (Farm)

Director Agriculture (OFWM)
(9 Divisions)

Deputy Director Agriculture (OFWM)
(36 Districts)

Assistant Director Agriculture (OFWM)
(126 Tehsils)

Functional Tier

Sanctioned Strength Non-Development 2,252
Development (PIPIP) 1,362

Total Staff 3,614
PROJECTS OVERVIEW AND PROGRESS
Project Development Objective (PDO)
- Improve Water Productivity i.e. Producing more Crop per Drop

Sponsoring
- World Bank/ Punjab Government through Agriculture Department

Financial Outlay (Rs. Million)
- Government: 41,737.955
  - World Bank 39,187.100
  - Punjab Government 2,550.855
- Farmers: 25,721.045
- Total: 67,459.000

Implementation Period
- 01-07-2012 to 30-06-2021 (9 years)

Project Area
- All over the Punjab
PROJECT OBJECTIVES

i) Improve productivity of irrigation water by efficient conveyance and its effective farm level use by adopting conservation agricultural practices

ii) Produce more profitable crops through installation of high efficiency irrigation systems (HEISs) to meet increasing domestic demand and enhancing exports

iii) Strengthen private sector service delivery capacity and sustainability for supporting irrigated agriculture

iv) Build capacity of stakeholders in better management of irrigation water for attaining higher crop yields with less production costs
### PHYSICAL AND FINANCIAL PROGRESS

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particular/ Component</th>
<th>Target (Orig + Add.)</th>
<th>Achievements till date</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Target</td>
</tr>
<tr>
<td>1.</td>
<td>Physical Achievements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.</td>
<td>Improvement of Unimproved Watercourses</td>
<td>6,100 (5,500 + 600)</td>
<td>5,650</td>
<td>450</td>
</tr>
<tr>
<td>B.</td>
<td>Completion of Partially Improved Watercourses</td>
<td>4,000 (1,500 + 2,500)</td>
<td>1,900</td>
<td>625</td>
</tr>
<tr>
<td>C.</td>
<td>Irrigation Schemes in Non-canal Commanded Areas</td>
<td>3,400 (2,000 + 1,400)</td>
<td>2,350</td>
<td>350</td>
</tr>
<tr>
<td>D.</td>
<td>Provision of LASER Units</td>
<td>5,000 (3,000 + 2,000)</td>
<td>5,000</td>
<td>-</td>
</tr>
<tr>
<td>E.</td>
<td>Installation of HEIS</td>
<td>120,000</td>
<td>WO: 52,000 Inst: 42,000</td>
<td>WO: 15,000 Inst: 10,000</td>
</tr>
<tr>
<td></td>
<td>Rainwater Harvesting Schemes/ Water Storage Ponds</td>
<td>500 (New Component)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Financial Utilization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Government Cost</td>
<td>41,737.955</td>
<td>23,881.56** (57%)</td>
<td>2,130.017</td>
<td>2,012.941 (95%)</td>
</tr>
<tr>
<td>Disbursement</td>
<td>IDA: 250</td>
<td>IDA : 198.46</td>
<td>IDA : 12.00</td>
<td>IDA : 12.00</td>
</tr>
<tr>
<td></td>
<td>IBRD: 130</td>
<td>IBRD : 14.50</td>
<td>IBRD : 14.50</td>
<td>IBRD : 14.50</td>
</tr>
</tbody>
</table>

* 70% works on remaining 225 watercourses have been completed
**includes committed expenditures of about Rs. 1,300 million not released by the FD
**PROJECT PROFILE**

- **Project Objective**
  - Increase crop and water productivity through optimal use of water and non-water inputs
  - Strengthen private enterprise for provision of LASER land levelling services in rural areas to improve such technologies access to small farmers
  - Build farmers' capability for better water management at grassroots level to get higher farm returns to alleviate poverty

- **Sponsoring**
  - Agriculture Department through ADP

- **Financial Outlay**
  - ADP: Rs.1,350.000 Million
  - Farmers Contribution: Rs. 7781.520 Million
  - Total: Rs. 9,131.520 Million

- **Target**
  - LASER Units: 6,000

- **Execution**
  - Directorate General Agriculture (Water Management) Punjab
  - Supply and Service Companies (SSCs)
  - Participating Farmers/Service Providers

- **Implementation Period**
  - 36 months (July 2015 to June 2018)
TECHNOLOGY DEVELOPMENT

Animal-drawn Wooden-Log Leveling

Leveling with Bucket Type Scraper

LASER land Leveling
### TARGETS AND ACHIEVEMENTS

**(2015-16 to 2017-18)**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Component</th>
<th>Overall Project</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Targets</td>
<td>Achievements</td>
</tr>
<tr>
<td>A.</td>
<td>Physical Achievements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Provision of LASER Land Levelers to the Farmers/ Service Providers</td>
<td>6,000</td>
<td>6,000</td>
</tr>
<tr>
<td>B.</td>
<td>Financial Utilization</td>
<td>1,350.00</td>
<td>1,350.00 (100%)</td>
</tr>
</tbody>
</table>

**Overall Requirement Versus Availability**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigated Land Requiring Leveling (Million Acres)</td>
<td>27</td>
</tr>
<tr>
<td>Annual Leveling Capacity of one LASER Unit (Acres)</td>
<td>300</td>
</tr>
<tr>
<td>Required Units (No.)</td>
<td>23,000</td>
</tr>
<tr>
<td>Available (No.)</td>
<td>14,000</td>
</tr>
<tr>
<td>Gap (No.)</td>
<td>9,000</td>
</tr>
</tbody>
</table>

Project targets have been achieved within stipulated period
PROJECT PROFILE

- **Sponsoring**
  - Agriculture Department through ADP

- **Physical Target**
  - Target: 3,000 Watercourses (extension of lining of length upto 50%)

- **Financial Outlay (Rs. Million)**
  - Total: 9,287.862
  - Government: 6,829.695
  - Farmers: 2,458.167

- **Execution**
  - Directorate General Agriculture (Water Management) Punjab
  - Participating Farmers/Water Users Associations (WUAs)

- **Implementation Period**
  - 60 months (July 2015 to June 2020)

- **Location**
  - Canal Irrigated Areas of the Punjab
**Project Objectives**

i. Enhance efficiency of tertiary level irrigation conveyance network (community watercourses) for increasing water availability at the farm level.

ii. Harness maximum attainable benefits of watercourse improvement through enhancing lining length.

iii. Strengthen irrigated agriculture at the grassroots level through upgrading farm level water conveyance network.

iv. Support the rural communities in increasing their farm returns by utilizing the available resources more efficiently to alleviate poverty.
## Physical and Financial Progress (2015-16 to 2019-20)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Component</th>
<th>Overall Project</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Targets</td>
<td>Achievements</td>
</tr>
<tr>
<td>A.</td>
<td>Physical Achievements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Extension in Lining of Already Improved Watercourses upto 50% (Nos.)</td>
<td>2,900</td>
<td>1,582</td>
</tr>
<tr>
<td>2.</td>
<td>Watercourses of Agricultural Extension and Research Farms (Nos.)</td>
<td>100</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>3,000</td>
<td>1,620</td>
</tr>
<tr>
<td>B.</td>
<td>Financial Utilization</td>
<td>6,829.69</td>
<td>3,024.46 (44%)</td>
</tr>
</tbody>
</table>

**OPTIMIZING WATERCOURSE CONVEYANCE EFFICIENCY THROUGH ENHANCING LINING LENGTH**
PROJECT PROFILE

- **Sponsoring**
  - Agriculture Department through the ADP

- **Project Cost**
  - Govt. Share: PKR 3,475 Million
  - Farmers’ Contribution: PKR 1,292 Million
  - Total Project Cost: PKR 4,767 Million

- **Targets**
  - Solar System for HEIS: 20,000 acres
  - Tunnels: 3,000 acres

- **Execution**
  - Directorate General Agriculture (Water Management)
  - Private Sector Supply and Service Companies (SSCs)
  - Participating Farmers

- **Implementation Period**
  - Three years (2016-17 to 2018-19)

- **Location**
  - All over the Punjab
Project Objectives

i. Enhance crop and water productivity through optimal use of water and non-water inputs by application of modern irrigated agriculture development technologies

ii. Support production of off-season vegetable through tunnel technology to meet the domestic demands and for export

iii. Promote use of renewable energy in agriculture for promoting irrigated agriculture in remote areas

iv. Build farmers' capability at grassroots level for growing high value crops to get higher farm returns for alleviating poverty

v. Create job opportunities in rural areas through introduction of climate smart technologies for high value irrigated agriculture
## TARGETS AND ACHIEVEMENTS

(2016-17 to 2018-19)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Component</th>
<th>Overall Project</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Targets</td>
<td>Achievements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Targets</td>
<td>Achievements</td>
</tr>
<tr>
<td>A.</td>
<td>Physical Achievements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Installation of Solar System for HEIS (acres)</td>
<td>20,000</td>
<td>11,500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>2</td>
<td>Installation of Tunnels (acres)</td>
<td>3,000</td>
<td>1,800</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td>B.</td>
<td>Financial Utilization (Rs. Million)</td>
<td>3,475.00</td>
<td>1,141.043</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(33%)</td>
<td>904.119</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(100%)</td>
<td>904.119</td>
</tr>
</tbody>
</table>
RAINWATER MANAGEMENT IN COTTON FIELDS TO MINIMIZE IMPACTS OF CLIMATE CHANGE (PILOT PROJECT)

PROJECT PROFILE

- **Sponsoring**
  - Agriculture Department through ADP

- **Financial Outlay**
  - Project Cost: Rs. 60.723 Million
  - Govt. Share: Rs. 34.835 Million
  - Farmers’ Contribution: Rs. 25.887 Million

- **Execution**
  - Directorate General Agriculture (Water Management) Punjab, Lahore
  - Divisional Directors Agriculture (OFWM), Multan and Bahawalpur
  - Participating Farmers

- **Implementation Period**
  - Three years (2016-17 & 2018-19)

- **Location**
  - Bahawalpur, Bahawalnagar, R.Y. Khan, Lodhran, Vehari, Khanewal and Multan districts

- **Targets**
  - Construction of 105 rainwater harvesting ponds
  - Development of 70 sunken fields
  - Provision of 250 portable water pumping system
Project Objectives

i. Protect the cotton crop from extreme rainfall events/impacts of climate change to minimize damages

ii. Produce conducive growing environment for cotton crop by removing excess rainwater from cotton fields

iii. Encourage farmers to grow cotton by incentivizing them for rainwater management

iv. Build cotton growers’ capability for better rainwater management to get optimum crop yields
## TARGETS AND ACHIEVEMENTS

(2016-17 to 2018-19)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Component</th>
<th>Overall Project</th>
<th>2017-18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Targets</td>
<td>Achievements</td>
</tr>
<tr>
<td>A.</td>
<td>Physical Achievements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Construction of Rainwater Harvesting Ponds</td>
<td>105</td>
<td>130</td>
</tr>
<tr>
<td>2</td>
<td>Development of Sunken Fields</td>
<td>70</td>
<td>62</td>
</tr>
<tr>
<td>3</td>
<td>Provision of Portable Water Pumping System</td>
<td>250</td>
<td>260</td>
</tr>
<tr>
<td>B.</td>
<td>Financial Utilization</td>
<td>34.83</td>
<td>21.388 (61%)</td>
</tr>
</tbody>
</table>
PROMOTION OF GRAM CULTIVATION THROUGH LIFE SAVING IRRIGATION WITH SPRINKLER SYSTEM UNDER CHANGING CLIMATE

PROJECT PROFILE

- **Sponsoring**
  - Agriculture Department through ADP

- **Project Cost**
  - Govt. Share: Rs. 296.080 Million
  - Farmers’ Contribution: Rs. 84.000 Million
  - Total Project Cost: Rs. 380.080 Million

- **Execution**
  - Directorate General Agriculture (Water Management) Punjab, Lahore
  - Directorate General Agriculture (Research) Punjab through Director Arid Zone Research Institute (AZRI), Bhakkar
  - Private Sector Supply and Service Companies

- **Implementation Period**
  - Three years (2017-18 to 2019-20)

- **Target**
  - Installation of sprinkler system on 1,680 acres for gram cultivation

- **Location**
  - Six districts of Thal (Bhakkar, Khushab, Layyah, Muzaffargarh, Jhang and Mianwali)
Project Objectives

i. Save the gram crop from failure during drought conditions by providing life saving irrigation with sprinkler irrigation system

ii. Promote cultivation of pulses in the project area through developing site specific agronomic recommendations to enhance production of pulses for self sufficiency

iii. Sustain farm income/profitability of small landholders to improve their livelihoods and alleviate poverty under changing climate in Thal area

iv. Build capacity of the farmers to cultivate pulses under extreme climate change events
## ACHIEVEMENTS

(2017-18 to 2019-20)

<table>
<thead>
<tr>
<th>Component</th>
<th>Project Targets</th>
<th>Achievements</th>
<th>Target for 2017-18</th>
<th>Achievement till date (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Achievements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation of sprinkler system for gram cultivation (Acres)</td>
<td>1,680</td>
<td>210</td>
<td>205</td>
<td>210</td>
</tr>
<tr>
<td>Financial Utilization</td>
<td>296.08</td>
<td>34.32 (12%)</td>
<td>36.63</td>
<td>34.32 (95%)</td>
</tr>
</tbody>
</table>

- Installation of sprinkler system for gram cultivation:
  - Project Target: 1,680 Acres
  - Achievements: 210 Acres
  - Target for 2017-18: 205 Acres
  - Achievement till date: 210 Acres

- Financial Utilization:
  - Project Target: 296.08
  - Achievements: 34.32 (12%)
  - Target for 2017-18: 36.63
  - Achievement till date: 34.32 (95%)
## PIPELINE PROJECTS

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Project</th>
<th>Approved Scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Transforming the Indus Basin with Climate Resilient Agriculture and Climate-Smart Water Management (FAO Assisted) – Rs. 10 million</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Rehabilitation of Degraded Lands through Soil Conservation Measures and Climate Smart Water Management for Sustainable Agriculture in Barani Areas of the Punjab (ADP Assisted) – Rs. 100 million</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Solarization of Drip Irrigation Systems (SDIS) in the Punjab (ADP Assisted) – Not included in the ADP</td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>CAD Component of</td>
<td>Schemes at Feasibility Stage (ADB Funding)</td>
</tr>
<tr>
<td>1.</td>
<td>Greater Thal Canal</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Greater Cholistan</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Smaller Cholistan</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Upper Jhelum Canal System</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Dera Ghazi Canal System</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Chacher Hill Torrents</td>
<td></td>
</tr>
</tbody>
</table>
IMPACT OF OFWM INTERVENTIONS
• 229 Acre Feet Annual Water Saving in Regular Watercourse
• 164 Acre Feet Annual Water Saving in Additional Watercourse
• 55 Acre Feet Annual Water Saving in Irrigation Scheme
• 9% Increase in Cropping Intensity
• Upto 31% Crop Yield Enhancement
• Reduced Theft and Amicable Dispute Resolution
• Improved Equity
• Annual production gain of PKR 3 million per watercourse

LASER LAND LEVELING

**LASER Land Leveling Benefits**

- Saving in irrigation time: **20-30 percent**
- Improvement in crop yield: **23 percent**
- Enhancement in fertilizer use efficiency: **11 percent**
- Saving in farm labour: **18 percent**
- Annual Net Revenue Generation: **PKR 410,000**
- Facilitation in better crop stand, uniform moisture availability and enhanced fertilizer use efficiency

**EIRR**: **29.6%**

*Source: Impact Assessment by M&E Consultants (2018)*
<table>
<thead>
<tr>
<th>Benefit</th>
<th>Percentage/Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water savings</td>
<td><strong>50 percent</strong></td>
</tr>
<tr>
<td>Crop yield enhancement</td>
<td><strong>20-100 percent</strong></td>
</tr>
<tr>
<td>Fertilizer use reduction</td>
<td><strong>40 percent</strong></td>
</tr>
<tr>
<td>Orchards maturing earlier</td>
<td><strong>one-two years</strong></td>
</tr>
<tr>
<td>Early picking of vegetables</td>
<td><strong>10-15 days</strong></td>
</tr>
<tr>
<td>Crop diversification</td>
<td><strong>fruits and vegetables replacing grains</strong></td>
</tr>
<tr>
<td>Value addition</td>
<td><strong>improved produce quality</strong></td>
</tr>
<tr>
<td>Increase in net farm income per acre per annum</td>
<td><strong>PKR 75,000</strong></td>
</tr>
<tr>
<td>EIRR</td>
<td><strong>35.1%</strong></td>
</tr>
</tbody>
</table>

• Reduction in use of fossil fuels vis reduced GHG emissions
• Pollution free energy
• Non-dependant on conventional energy (fuel and electricity)
• Little maintenance and easy to operate & maintain
• Uninterrupted water supply for irrigation during day time
• Decreased irrigation operational cost to almost zero (vegetables)
  • Diesel: 26,000 per acre per annum
  • Electric: 14,000 per acre per annum
  • Solar: 3,000 per acre per annum
• EIRR: 23 %

Source: Impact Assessment Studies by M&E Consultants
• Promote crop diversification
• Meet offseason vegetable demand in peri-urban areas
• Controlled environment
• Minimum insets/pests attack
• Better weed control
• Significant increase in yield as compared to open field cultivation
  • Cucumber: 109%
  • Capsicum: 64%
• EIRR: 30-50%

Source: Impact Assessment Studies by M&E Consultants
OVERALL ECONOMIC IMPACT

Two MAF
Water Saving per annum

2 Million
Farm Families Directly Benefited

15 million acres
Benefitted

PKR 60 billion
Annual Productivity Gains

Over PKR 20 billion
contributed by farmers in OFWM interventions
CAPACITY BUILDING AND AWARENESS CREATION
WMTI has extensive experience of training and capacity development of stakeholders in on farm water management technologies.

- Sanctioned Staffing Strength : 66
- Training Facilities for 25-30 Trainees
### Capacity Building of Stakeholders

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<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Professional</td>
<td>OFWM Staff</td>
<td>5 (125)</td>
<td>18 (336)</td>
<td>14 (239)</td>
<td>17 (634)</td>
<td>20 (810)</td>
<td>74 (2,144)</td>
</tr>
<tr>
<td>2.</td>
<td>Technical</td>
<td>OFWM Staff + Farmers + General Public etc.</td>
<td>38 (771)</td>
<td>82 (2,972)</td>
<td>49 (1,999)</td>
<td>111 (5,723)</td>
<td>122 (6,945)</td>
<td>402 (18,410)</td>
</tr>
<tr>
<td>3.</td>
<td>Refresher</td>
<td>All Stakeholders</td>
<td>15 (359)</td>
<td>32 (629)</td>
<td>9 (141)</td>
<td>4 (71)</td>
<td>8 (224)</td>
<td>68 (1,424)</td>
</tr>
<tr>
<td>4.</td>
<td>Specialized/Tailor-made for Drip</td>
<td>OFWM Staff + SSCs Personnel</td>
<td>5 (105)</td>
<td>8 (166)</td>
<td>17 (358)</td>
<td>16 (349)</td>
<td>6 (335)</td>
<td>52 (1,313)</td>
</tr>
<tr>
<td></td>
<td>Technicians</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>63</strong> (1,360)</td>
<td><strong>140</strong> (4,103)</td>
<td><strong>89</strong> (2,737)</td>
<td><strong>148</strong> (6,777)</td>
<td><strong>156</strong> (8,314)</td>
<td><strong>596</strong> (23,291)</td>
</tr>
</tbody>
</table>
Establishment of Main Demonstration Center on 75 acres is underway

Training facilities for about 25 trainees

95% building works have been completed

Its major functions are

- Technology demonstration
- Practical training of farmers
- Pilot testing/ indigenization of new technologies/ techniques
- Applied research
AWARENESS CREATION ACTIVITIES

Modes of Awareness Creation

Field Demonstration
- Road Shows/Farmers Days
- Field Demonstration Sites
- Signboards

Electronic Media
- Success Stories
- Website
- Radio Programs
- Documentaries
- Media Clips
- Social Media
- TV/Cable

Print Media
- Publicity Material/Pamphlets
- Advertisements
- Agricultural Magazines
100 INTERVIEWS CONDUCTED

90 STORIES DOCUMENTED

80 CIRCULATED AND PUBLISHED

SUCCESS STORIES

STAKEHOLDERS

- Politicians
- Policy Makers
- Administrators
- Planners
- Media Persons
- Growers
- Researchers
- Private Sector Stakeholders
SUCCESS STORIES

DRIP IRRIGATION: Perfect Solution for Vegetable Growers

Mr. Mafi Asim-ul-Din is a progressive farmer of Pakpattan district and growing different crops like Potato, Maize, and orchards including Papaya, Grapes etc. with drip irrigation. A few years ago, he learnt about the drip irrigation technology and contacted OFWM staff to get more information about the technology. He shared that OFWM staff told him about numerous advantages of drip irrigation over conventional method, requirement of less agricultural inputs including water, fertilizers, pesticides, labor etc. and easy management of cropped area. They convinced me to adopt this latest technology on my farm for better returns.

In the light of benefits explained above and the performance of drip irrigation system observed at the farms of other farmers, I decided to do an experiment on my farm. I selected two areas of my productive land having same fertility level for the experiment and cultivated potato on one acre with conventional flood irrigation method and drip irrigation system on other one acre. I applied same amount of all the agricultural inputs to both fields as per relevant recommendations.

The results showed that there was a huge difference between the input costs and production of both fields. The potato crop grown with drip irrigation required about 20% less fertilizer and water than the traditional method. Moreover, I was able to get 2.4 times more production with drip irrigation than the traditional flooding. He added that “I need to grow Potato and Maize crops on my farm even before installation of drip irrigation system. I was, therefore, very easy for me to compare the input costs and production with traditional flood irrigation method and drip irrigation system.”

Mafi Asim-ul-Din
Village: Razi Tek Chand
District: Pakpattan, Punjab, Pakistan
+92 321 173 90872

Mr. Mafi advised other farmers of the area to install drip irrigation system to reduce agricultural input costs and enhancing crop yield for obtaining higher firm returns. At the end, he concluded that “nothing is believing” as observing the successful drip irrigation on another farm and experiences of the fellow farmer motivated me to adopt the drip system. I, therefore, suggest other farmers to visit my farm and see the miracles of drip irrigation system.

Mian Muhammad Anwar had much excitement when he was talking about his size yield @ 96 maunds per acre with drip irrigation. He abandoned the traditional irrigation practices and adopted the most efficient irrigation method for maize crop awaiting the day of happiness for about four months.

Mian Muhammad Anwar is a resident of Chak No. 471/GB, Tehsil Samundri, District Faisalabad where canal water supply is very limited and groundwater is brackish. Moreover, the sandy soil reduces the irrigation application efficiency leading to decreased irrigated area with available canal water supplies. He was obliged to pump brackish groundwater to cover shortage of canal water which was degrading his soil with salinity. He was unable to get sufficient economic returns from his land inspite of much hard work consequentially and he fed up from the traditional farming. He learned about numerous benefits of the drip irrigation system and decided to opt this modern and efficient irrigation system for profitable farming as it gives huge production with less input cost.

He shared his experience that “the drip irrigation system is a real salvation for me because it did not only enhance water and fertilizer use efficiency but also reduced weeds. It used to take three to four hours to irrigate only one acre with available water, but now forty to fifty minutes are required to irrigate the same with drip irrigation. Moreover, fertilization is more effective with this new irrigation method than the traditional flood irrigation because nutrients are applied directly to the plant roots. As such, the costs on fertilizers, weedicides, pesticides etc. have also been reduced after installation of drip irrigation system.”

While comparing his per acre yield with neighboring farmer, he shared that “I spent only Rs 5,580 on fertiliser for obtaining 96 maunds per acre yield with drip irrigation while my neighboring farmer spent Rs 13,500 to get only 56 maunds of corn per acre with narrow irrigation leading to huge saving on fertilizers under drip irrigation.” He highlighted that there was also a huge saving in energy with drip irrigation. With adoption of drip technology, I spent just Rs 1,256 while my neighbor spent Rs 5,500 on the tubewell operation for flood irrigation to mature one acre of maize crop. His success in reaping a good harvest this year will set an example for other farmers in the area who are much impressed with bumper crop.

Mr. Anwar excitedly shared that “enhanced farm income provided me more money to improve my living standard. My children go to better schools now to get quality education and enjoy a healthy life.”

He was of opinion that it is very important now to use available water resources wisely and irrigate the fields intelligently as water scarcity is increasing day by day and groundwater is becoming more brackish and unfit for agriculture. It is encouraging fact for the OFWM staff that Mr. Anwar is not only satisfied with drip irrigation method but also motivates other maize growers facing water shortage to adopt the traditional irrigation practices and adopt the most efficient irrigation method to get higher yield and make farming a profitable business.

DIRECTOR GENERAL AGRICULTURE
(WATER MANAGEMENT) PUNJAB
OTHER MASS MEDIA INTERVENTIONS

Website  Radio Talks  Articles/Interviews in Agricultural Magazines

Road Signboards  Publicity Material/ Pamphlets  Advertisements  WhatsApp Groups
Water scarcity: Punjab govt encouraging drip irrigation

Our correspondent

LAHORE: Agriculture (Water Management) Director General Malik Muhammad Akram said the Punjab government in collaboration with the World Bank is encouraging drip irrigation under Punjab Irrigated-Agriculture Productivity Improvement Project (PIPIP) to overcome water scarcity.

So far, this technology has been adopted by many farmers across Punjab owing to acute shortage of river water and limited rains. With this technology, the farmers could save 40% electricity and diesel costs, augmenting per acre yield by 100%.

The government is helping farmers adopt this system by providing drip irrigation equipment at subsidised rates and providing 60% subsidy on installation of drip irrigation system.

Talking to this correspondent, he said under this project, agriculture department is installing drip & sprinkler irrigation on subsidy basis in the fields.

Drip irrigation system is water, increasing per acre treatment system is used. Currently, the system is used for small scale cultivation.
WORK PLAN
FOR
FY 2018-19
## WORK PLAN (2018-19)

<table>
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<tbody>
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<td>A.</td>
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</tr>
<tr>
<td>1</td>
<td>Installation of HEIS (Acres)</td>
<td>5,454</td>
<td>5,279</td>
<td>5,448</td>
<td>10,000</td>
<td>15,000</td>
<td>8,236</td>
<td>20,000</td>
<td>142.8</td>
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<td></td>
<td>a) Work Orders</td>
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<td>5,454</td>
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<td>10,000</td>
<td>7,236</td>
<td>12,000</td>
<td>65.8</td>
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<tr>
<td></td>
<td>b) Commissioning</td>
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<td>2</td>
<td>Watercourses</td>
<td>1,520</td>
<td>1,525</td>
<td>510</td>
<td>2,160</td>
<td>2,000</td>
<td>1,543</td>
<td>2,125</td>
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<td>3</td>
<td>Installation of Solar System (Acres)</td>
<td>1,500</td>
<td>10,000</td>
<td></td>
<td></td>
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<td>5,750</td>
<td>8,500</td>
<td>47.8</td>
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<td>4</td>
<td>Installation of Tunnels (Acres)</td>
<td>300</td>
<td>1,500</td>
<td></td>
<td></td>
<td></td>
<td>900</td>
<td>1,200</td>
<td>33.3</td>
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<tr>
<td>5</td>
<td>Water Storage Ponds/ Tanks (Nos.)</td>
<td>20</td>
<td>145</td>
<td></td>
<td></td>
<td></td>
<td>83</td>
<td>200</td>
<td>142.4</td>
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<td>6</td>
<td>Development of Sunken Fields (Nos.)</td>
<td>15</td>
<td>30</td>
<td></td>
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<td></td>
<td>23</td>
<td>25</td>
<td>11.1</td>
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<td>7</td>
<td>Portable Water Pumping Unit (Nos.)</td>
<td>50</td>
<td>110</td>
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<td>80</td>
<td>80</td>
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<td>8</td>
<td>Training Courses</td>
<td>63</td>
<td>135</td>
<td>89</td>
<td>136</td>
<td>149</td>
<td>114</td>
<td>152</td>
<td>32.9</td>
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<tr>
<td>9</td>
<td>Farm Income (Rs. Million)</td>
<td>2.60</td>
<td>3.74</td>
<td></td>
<td></td>
<td></td>
<td>3.17</td>
<td>4.00</td>
<td>26.2</td>
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<tr>
<td>10</td>
<td>Success Stories to be Documented (Nos.)</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>17</td>
<td>18</td>
<td>11</td>
<td>24</td>
<td>122.2</td>
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<tr>
<td>11</td>
<td>Acres to be Made Climate Smart</td>
<td>5,454</td>
<td>5,279</td>
<td>5,448</td>
<td>10,000</td>
<td>10,000</td>
<td>7,236</td>
<td>12,000</td>
<td>65.8</td>
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<tr>
<td></td>
<td>Overall Average of Physical Works</td>
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<td></td>
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</tr>
<tr>
<td>A.</td>
<td>Financial</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>12</td>
<td>Development Budget (Rs. Million)</td>
<td>3,451.82</td>
<td>3,716.00</td>
<td>3,428.14</td>
<td>6,097.15</td>
<td>6,300.00</td>
<td><strong>4,598.62</strong></td>
<td><strong>9,123.53</strong></td>
<td>98.4</td>
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</tbody>
</table>

**Note:** All targets are subject to timely provision of requisite funds by the Agri. Dept. / P&D/ FD.
YEAR-WISE WATERCOURSE IMPROVEMENT

![Year-wise Watercourse Improvement Chart]

<table>
<thead>
<tr>
<th>Year</th>
<th>Watercourse Improvement (No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-12 (PP)</td>
<td>301</td>
</tr>
<tr>
<td>2012-13</td>
<td>1204</td>
</tr>
<tr>
<td>2013-14</td>
<td>1520</td>
</tr>
<tr>
<td>2014-15</td>
<td>1525</td>
</tr>
<tr>
<td>2015-16</td>
<td>763</td>
</tr>
<tr>
<td>2016-17</td>
<td>2,160</td>
</tr>
<tr>
<td>2017-18</td>
<td>2,015</td>
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</table>
YEAR-WISE DELIVERY OF LASER UNITS

<table>
<thead>
<tr>
<th>Year</th>
<th>Delivery</th>
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</thead>
<tbody>
<tr>
<td>2012-13</td>
<td>821</td>
</tr>
<tr>
<td>2013-14</td>
<td>1,343</td>
</tr>
<tr>
<td>2014-15</td>
<td>816</td>
</tr>
<tr>
<td>2015-16</td>
<td>48</td>
</tr>
<tr>
<td>2016-17</td>
<td>3,000</td>
</tr>
<tr>
<td>2017-18</td>
<td>3,000</td>
</tr>
</tbody>
</table>
YEAR-WISE HEIS INSTALLATIONS

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>HEIS Installations (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-12</td>
<td>932</td>
</tr>
<tr>
<td>2012-13</td>
<td>2,887</td>
</tr>
<tr>
<td>2013-14</td>
<td>5,454</td>
</tr>
<tr>
<td>2014-15</td>
<td>5,279</td>
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<tr>
<td>2015-16</td>
<td>5,448</td>
</tr>
<tr>
<td>2016-17</td>
<td>10,000</td>
</tr>
<tr>
<td>2017-18</td>
<td>18,000</td>
</tr>
</tbody>
</table>
HEIS CROPPING TREND

- **58% Orchards** (24,360 acres)
- **20% Field Crops** (Wheat, Rice etc.) (8,400 acres)
- **18% Vegetables** (7,560 acres)
- **4% Row Crops** (Cotton, Maize etc.) (1,680 acres)
YEAR-WISE FINANCIAL UTILIZATION

<table>
<thead>
<tr>
<th>Financial Year</th>
<th>(Rs. Million)</th>
</tr>
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<td>2012-13</td>
<td>2,701</td>
</tr>
<tr>
<td>2013-14</td>
<td>3,452</td>
</tr>
<tr>
<td>2014-15</td>
<td>3,717</td>
</tr>
<tr>
<td>2015-16</td>
<td>3,428</td>
</tr>
<tr>
<td>2016-17</td>
<td>6,098</td>
</tr>
<tr>
<td>2017-18</td>
<td>6,300</td>
</tr>
</tbody>
</table>
SPECIAL ASSIGNMENTS

- Additional Charge of Director General (Pest Warning & Quality Control) for last two years
- Focal Person of the Agriculture Department on Climate Change – attending Court proceedings and other meetings/ workshops
- Liaison Officer for coordination with the Irrigation Department for water distribution and other water shortage issues
- Technical Support for undertaking Social and Environment Assessment of SMART
- Technical Support for preparation of new agro-ecological zones being prepared by the University of Agriculture, Faisalabad
- Focal Person of Agriculture Department to coordinate and assist the Irrigation Department for development of Punjab Water Policy and Groundwater Regulatory Framework