Monitoring and Evaluation Framework

24-04-19
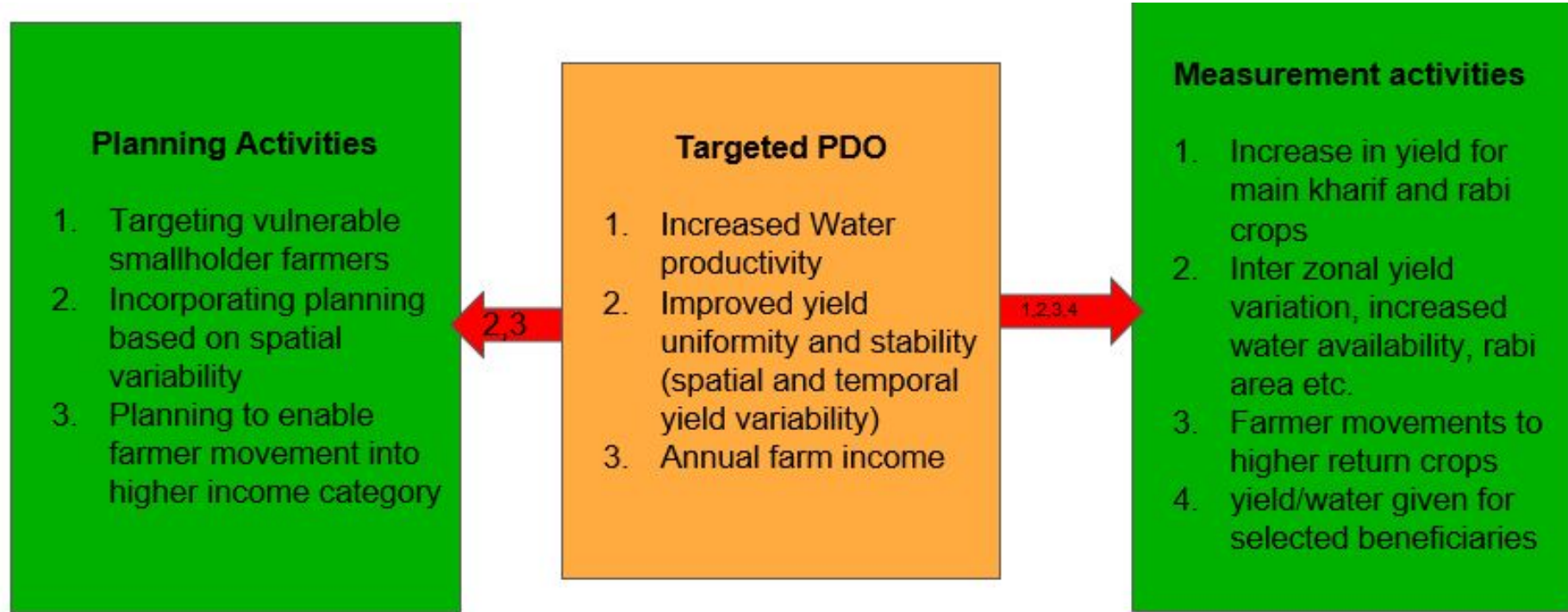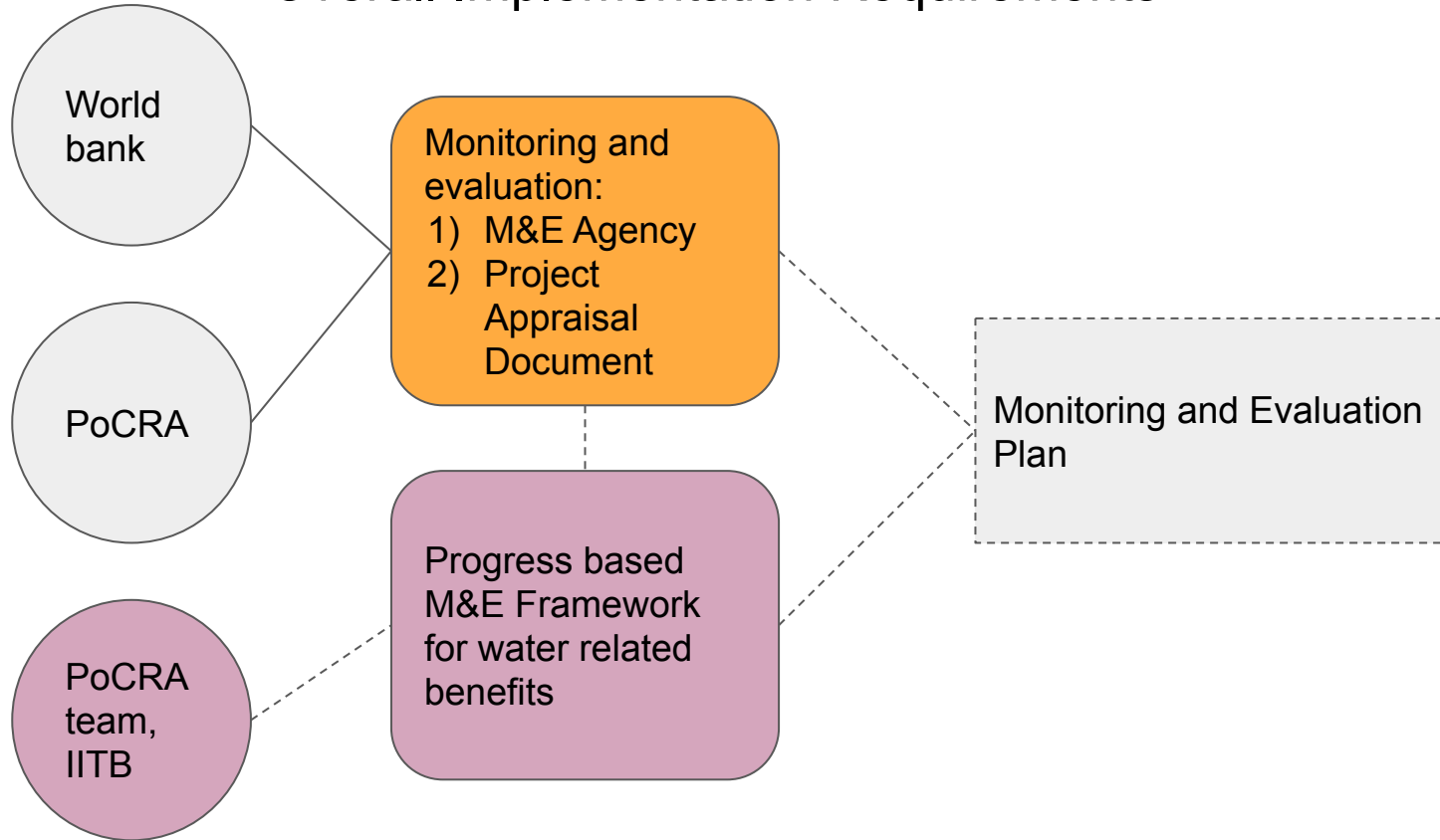PoCRA Team
IIT Bombay

Outline

1. Work Areas
2. Overall Implementation requirements
3. M&E Framework
4. Village Sampling Mechanism
5. Farmer Sampling Mechanism
6. Crop Level indices
7. Farmer Level indices
8. Village level indices
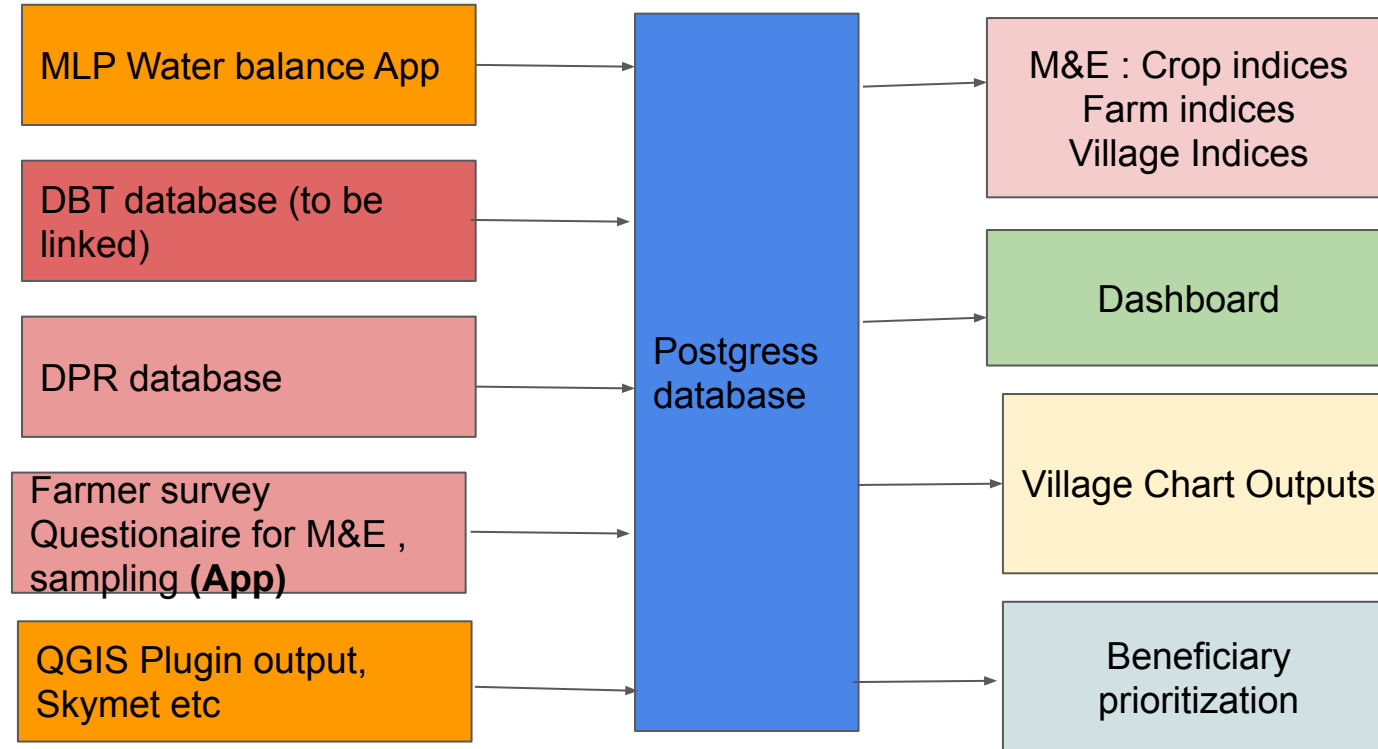9. Beneficiary Prioritization for target beneficiaries

Target Project Development Objectives by streamlining Planning and Measurement Framework

Planning Activities

1. Targeting vulnerable smallholder farmers
2. Incorporating planning based on spatial variability
3. Planning to enable farmer movement into higher income category

2,3

Targeted PDO

1. Increased Water productivity
2. Improved yield uniformity and stability (spatial and temporal yield variability)
3. Annual farm income

1,2,3,4

Measurement activities

1. Increase in yield for main kharif and rabi crops
2. Inter zonal yield variation, increased water availability, rabi area etc.
3. Farmer movements to higher return crops
4. yield/water given for selected beneficiaries

Overall Implementation Requirements

Data collection tools: Integration of tools and database

MLP Water balance App

DBT database (to be linked)

DPR database

Farmer survey Questionaire for M&E , sampling **(App)**

QGIS Plugin output, Skymet etc

Postgress database

M&E : Crop indices
Farm indices
Village Indices

Dashboard

Village Chart Outputs

Beneficiary prioritization

M&E Framework

1. Multiframe random sampling - Villages
   a. District level selection
   b. Taluka proportional sampling - 10% villages
   c. Even coverage across revenue circles
2. 10% sampling - Around 528 villages from 5143
   a. 5% constant longitudinal samples (Set A)
   b. 5% varying samples (Set B)
3. Indicators
   a. Longitudinal samples - Temporal indicators (264 villages)
   b. One time samples - Spatial indicators at one temporal point (1056 villages)

5143 PoCRA Villages – 528 Samples (10% of total samples)

Varying Village Samples (5%)	Longitudinal Constant Village Samples (5%)

Phase-I

62 Villages	62 Villages
Set B1 – Baseline	Set A
Set B2 – Midline	
Set B3 – Endline	

Phase-II

148 Villages	148 Villages
Set B1 – Baseline	Set A
Set B2 – Midline	
Set B3 – Endline	

Phase-III

54 Villages	54 Villages
Set B1 – Baseline	Set A
Set B2 – Midline	
Set B3 – Endline	

Total Varying Villages - 264	Total Constant Villages – 264

M&E villages sampling schedule

M&E Phases - Selection in Taluka	Year 2	Year 3	Year 4	Year 5	Year 6
Phase I Constant	Set A – 62 Circle A	Set A – 62 Circle A	Set A – 62 Circle A	0	0
Phase I Varying	Set B1 – 62 Circle B	Set B2 – 62 Circle C	Set B3 – 62 Circle F	0	0
Phase II Constant	0	Set A – 148 Circle D	Set A – 148 Circle D	Set A – 148 Circle D	0
Phase II Varying	0	Set B1 – 148 Circle E	Set B2 – 148 Circle G	Set B3 – 148 Circle J	0
Phase III Constant	0	0	Set A – 54 Circle H	Set A – 54 Circle H	Set A – 54 Circle H
Phase III Varying	0	0	Set B1 – 54 Circle I	Set B2 – 54 Circle K	Set B3 – 54 Circle L
Total Yearly Samples	**124 villages**	**420 villages**	**528 villages**	**420 villages**	**108 villages**

*green,red-baseline, yellow,orange-midline, blue,purple-endline

Sampling Data Frames

Combinations / Data Frames	Longitudinal village samples	Varying Village samples
Longitudinal Farmer samples	50%	0%
Varying Farmer samples	50%	100%

1. Longitudinal indicators: spatial and temporal coverage (map beneficiary impact)
2. Varying sample : to be used for spatial coverage

Farmer Selection Criteria

Farmer Type	Main crops	Stream proximity	Land holding	Beneficiary	Frame
with / without assets	Primary crops - kharif (Soybean/Cotton)	Near/ Away from stream	Marginal/small/large	Beneficiary/Non beneficiary	Sampling frames
No assets	P3 kharif	Away from stream	Marginal	Non beneficiary	Frame 1: Most vulnerable
No assets	P3 Kharif	Near from stream	Small	Non beneficiary	Frame 2: benefit due to stream proximity / community intervention
With assets	P2 Kharif	Away from stream	Large	Beneficiary	Frame 3
With assets	P2 kharif	Near from stream	Marginal	Non beneficiary	Frame 4

1. Preparation of Randomized survey number list based on **geographical frame sampling**

2. Sample size to be decided based on number of samples required to complete 6 surveys of each criteria

3. ⅓ cadastral numbers selected at random after elimination of LULC

Land Distribution and Land Holding Criteria

- Village:- Dahigaon,Tal-Chandur Bazar, Dist-Amravati
- Total Survey number:-481
- Land Holding Criteria:-1.99 hectare
- From land holding criteria it is very clear that out of 481 survey numbers 360 survey numbers covers 50%(half) of total agricultural land.

-This is based on gat wise area in cadastral shapefile

- 8A list for village will be useful for deciding this criteria (similar to that used for deciding PoCRA beneficiary)

Land Distribution and Land Holding Criteria

- Satisfying Land Holding Criteria
- Not Satisfying Land Holding Criteria
- Selected for interview
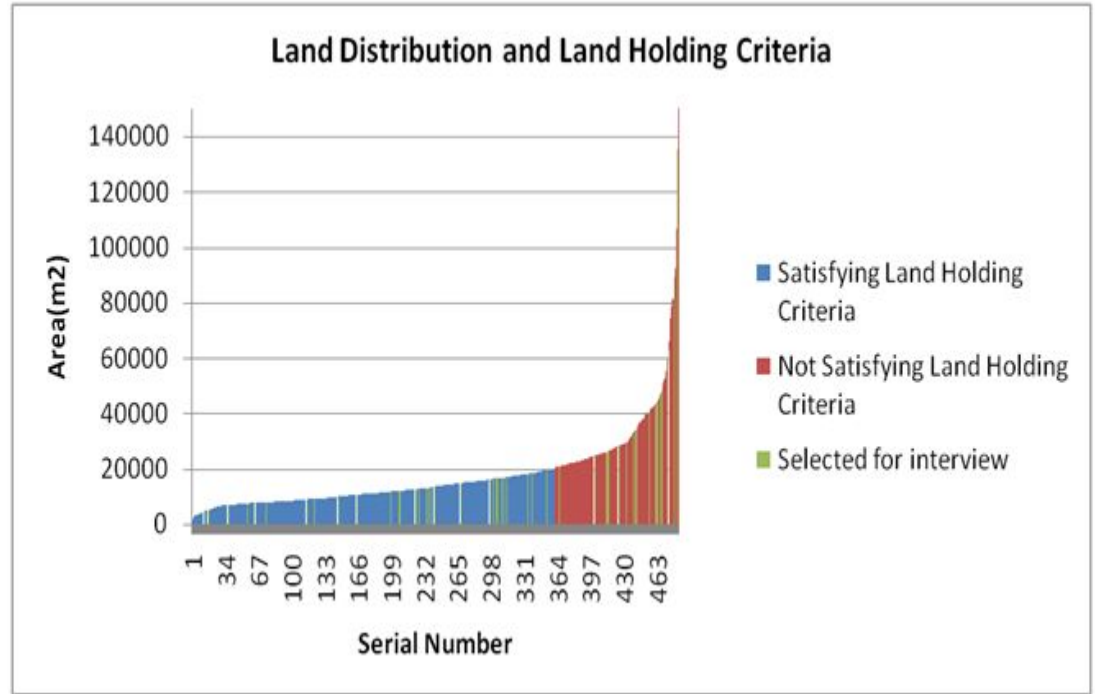
e.g Final Summary Table While surveying

Serial Number	Survey Number	Farmers name	Crop 1 e.g Cotton	Crop 2 e.g Soya	Crop 3 e.g Tur	PoCRA Beneficiary		Stream Proximity		Water Source Availability		Land Holding Criteria		Remark
						Yes	No	Yes	No	Yes	No	Yes	No	
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	
1.	362		✓	✓		✓			✓		✓	✓		
2.	14		✓	✓	✓	✓		✓			✓		✓	
3.	163			✓	✓		✓		✓	✓		✓		
4.	184		✓	✓	✓		✓	✓		✓		✓		
5.	165		✓			✓			✓		✓		✓	
6.	287		✓		✓		✓		✓		✓	✓		
7.	476			✓	✓		✓	✓				✓		
8.	373			✓	✓		✓	✓				✓	✓	
		Frame count	5	6	6	3	5	4	4	2	6	6	2	
9.	358		✓		✓		✓	✓				✓	✓	
	91	**Farmer not available**				✓			✓			✓		
10.	375			✓	✓	✓		✓			✓		✓	
	475	**Repeated in same family**		✓		✓			✓		✓	✓		
11.	197		✓				✓	✓		✓		✓		
12.	155		✓		✓		✓		✓		✓	✓	✓	
13.	119			✓	✓		✓		✓		✓	✓	✓	
		Frame count	8	8	10	3	10	6	6	3	10	8	6	

- Attributes having Cumulative count above 6
- ❏ newly selected survey numbers

- Survey number discarded due to unavailability of farmer at time of interview and newly selected.475 for 476
- ❏ ~~discarded survey numbers~~ as required number of attributes fulfilled

e.g Final Summary Table While surveying

			8	8	10	3	10	6	6	3	10	8	6	
		Frame count	8	8	10	3	10	6	6	3	10	8	6	
14.	401				✓		✓	✓		✓			✓	
	~~266~~	No primary crop					✓	✓		✓		✓		
15.	254			✓			✓		✓		✓	✓		
	158	Not cultivating Land					✓	✓					✓	
	482	Not living in same village					✓		✓			✓		
16.	455		✓	✓		✓		✓			✓		✓	
17.	78			✓	✓		✓	✓		✓		✓		
18.	388		✓	✓	✓	✓		✓			✓	✓		
		Frame count	10	12	13	5	13	9	8	5	13	11	8	
	~~396~~		✓	✓	✓		✓	✓			✓		✓	
	~~268~~						✓	✓				✓		
	~~264~~		✓	✓			✓		✓		✓	✓		
19.	443		✓		✓	✓		✓			✓		✓	
	~~457~~		✓	✓	✓	✓		✓					✓	
	~~119~~		✓		✓	✓		✓					✓	
	~~126~~		✓		✓	✓			✓			✓		
	~~33~~			✓	✓	✓		✓				✓		
	~~120~~		✓		✓	✓		✓				✓		
	~~345~~			✓		✓		✓					✓	
	~~386~~			✓	✓	✓		✓				✓		
20.	293		✓	✓	✓	✓			✓	✓			✓	
		Frame count	11	13	15	7	13	10	9	6	14	11	10	
	~~282~~						✓		✓			✓		
	~~192~~						✓		✓				✓	

- Attributes having frame count above 6
❏ newly selected survey numbers

- Survey number discarded due to unavailability of farmer at time of interview and newly selected.475 for 476
❏ ~~discarded survey numbers~~ as required number of attributes fulfilled

Farmer Sampling issues

1. Cadastral shapefile issue
   a. old survey numbers, do not match with updated 7/12 numbers (issue in identifying the farmers on ground)
   b. Issue with assigning vulnerability
2. Landholding Criteria
   a. Decided from reference value for 50% landholding farm size - cadastral shapefile.
   b. Correct method would be to use 8A farmer list for village
3. Longitudinal and one time farmers
   a. 50% of selected farmers from top to be selected as longitudinal (baseline survey list.

Sr. No	Data Required	Data Source
1	Stream Proximity	QGIS generated
2	PoCRA Beneficiary's List	PoCRA DBT App
3	Farmers Name and Land Holdings(8A)	Field officer/KrusiMitr

b. Remaining list to be provided by random shuffling for selection - Midline.

c.list with longitudinal farmers, constant frame count and random farmers list

Key Performance Indicators

PDO 2 Improved water use efficiency at Farm Level (KPI 1)

PDO 4 Annual Farm Income: Profitability (KPI 4)

PDO 5 Direct project Beneficiaries (KPI 5)

PDO 6 Improved Yield uniformity and Stability (KPI 2)

PDO 7 Improved availability of surface water from agriculture

Crop Indicators (longitudinal and varying): Survey

1. Water productivity
2. CV for yields
3. Economic productivity

Farm Indicators (longitudinal and varying) : Survey

1. P1:P2:P3 area ratio
2. Water access in mm
3. Rabi Area
4. Water access: Water deficit
5. Annual income
6. Last Watering month

Village Indicators (longitudinal): from secondary data (MLP & DBT)

1. Surface water storage in mm
2. Budyko point
3. P1:P2:P3 area
4. Project beneficiaries

Data Collection and Analysis

- **Data Themes** included in the questionnaire:
  - Socio-economic information- total land, no. of family members, allied activities, loan information
  - Cropping pattern- watering information, pest/ animal attacks/ input costs
  - Asset information - Well/ Borewell profiles
  - Sources of finance- PoCRA interventions
- Data was to be analysed at 2 levels:
  - Crop data
  - Farm level data

Crop level Indices through Farmer Survey

Water productivity (kg/m3)	Economic productivity (Rs/m3)	CV for yield
$\underline{\text{Yield * Area}}$ (AET+Water Allocation)	$\underline{\text{Yield * Area* Selling Price per unit}}$ (AET+Water Allocation)	$\underline{\text{Std. Dev of yield}}$ Average Yield

-Conducted at Village level for 3 main P2 and P3 kharif crops. (soybean/cotton/tur/moong/udid)

- Conducted for sample farmers to gauge spatial yield variability

-To be conducted at baseline, midline and endline for longitudinal farmers and once for varying farmers

Water Productivity
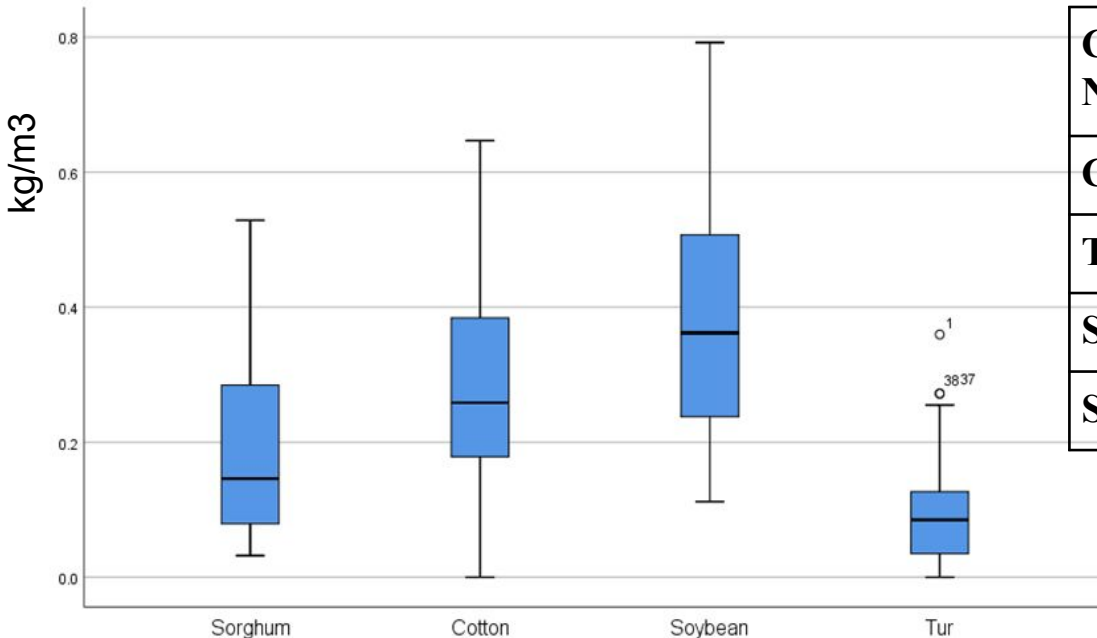
Crop Name	WP Range	WP Mean	WP std dev	Sample size
Cotton	0.00-0.98	0.35	0.13	142
Tur	0.00-0.91	0.36	0.20	101
Sorghum	0.03-0.53	0.21	0.13	56
Soybean	0.00-0.80	0.36	0.17	85

Source: Field visit to Yelda & Mamdapur, Beed, Wabgaon, Wardha, Yewati, Jalgaon, Tadmugli, Latur

1. Longitudinal Farmers: improvement in WP for one common crop will be monitored for 3 years
2. Variable Farmers: will be used to determine WP mean for primary crops in village

Economic Productivity

Economic productivity of different crops
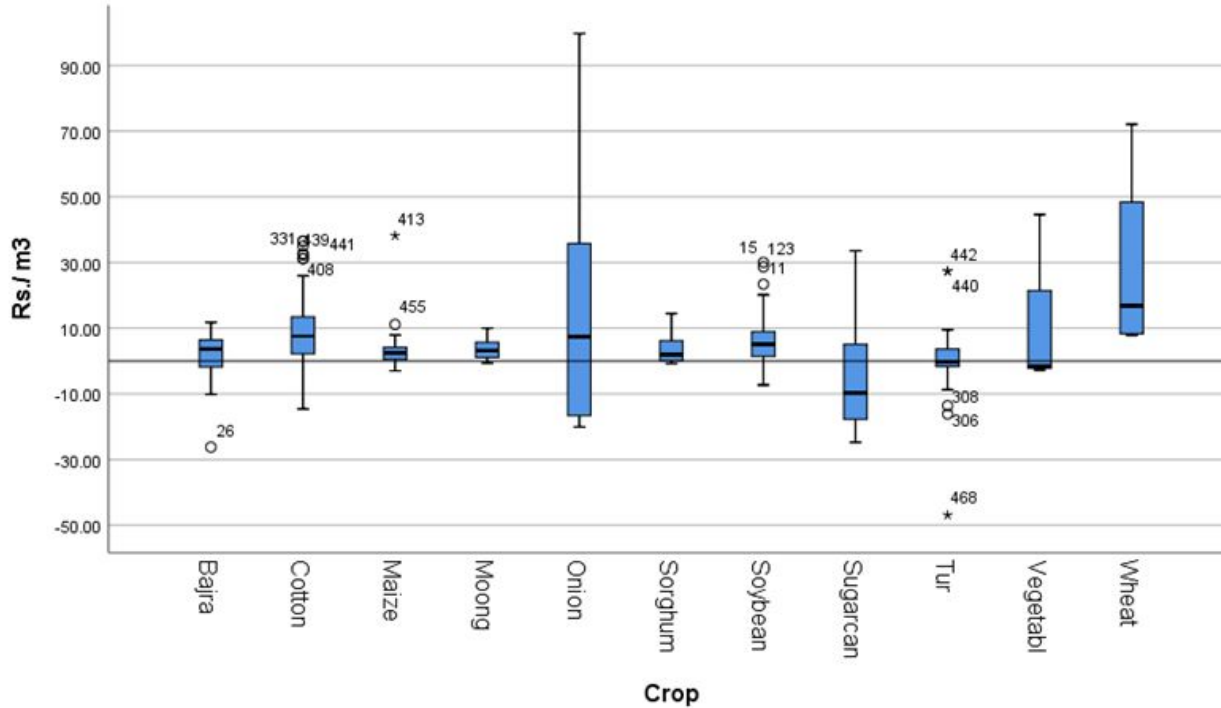
Source: Field visit to Yelda & Mamdapur, Beed, Wabgaon, Wardha, Yewati, Jalgaon, Tadmugli, Latur

Economic productivity makes it possible to compare productivity amongst crops

Calculated CV - Spatial & Temporal Variability of yield

Crop Name	Tadmugli	Wabgaon	Yewati	Yelda	Mamdapur
cotton	0.92	1.85	0.99	0.89	0.89
gram	0.84	2.87	-	0.87	0.87
maize	0.68	-	1.48	1.23	1.23
rabi_onion	-	-	1.64	1.23	1.23
rabi_wheat	-	2.01	0.78	1.1	1.1
sorghum	1.2	-	-	0.98	0.98
soybean	1.63	1.85	-	1.35	1.35
Sugarcane	-	1.66	-	1.2	1.2
tur	1.30	2.09	0.46	1.18	1.18
Udid	-	-	-	1.22	1.22

Crop name	CV 2018	CV 2017	Number
cotton	0.97	0.52	63
gram	0.61	0.43	22
maize	1.54	1.41	51
rabi_onion	0.66	3.79	11
rabi_wheat	0.70	0.43	25
sorghum	0.79	0.68	14
soybean	0.99	0.36	52
Sugarcane	1.61	0.51	3
tur	2.23	2.89	58

Year- 2018

CV difference over mid term and end term can be used to evaluate the yield variability spatially and temporally.

Source: Field visit to Yelda & Mamdapur, Beed, Wabgaon, Wardha, Yewati, Jalgaon, Tadmugli, Latur

Farm level indicators

Sr.	Indicator	PDO	KPI	Data Source	Frequency
1	Economic productivity	2	1	Fixed frame & variable frame farmer survey for beneficiary and non-beneficiary	Annual
2.	Budyko point	2	1	Fixed frame farmer survey for beneficiary and non-beneficiary	Annual
3	Ratio of water access on farm in mm to total deficit in mm	7	1&2	Fixed frame survey for beneficiary	Annual
4	Annual farm income for P1 category	4	4	Fixed frame survey for beneficiary and non-beneficiary	Annual
5	Annual farm income for P2 category farmers	4	4	Fixed frame survey for beneficiary and non-beneficiary	Annual
6	Annual farm income for P3 category farmers	4	4	Fixed frame survey for beneficiary and non-beneficiary	Annual

Farm level Indicators

Sr.	Indicator	PDO	KPI	Data Source	Frequency
7	Ratio for water access on farm in mm to total deficit for P1, P2 and P3 category crops	7	1&2	Fixed frame survey for beneficiary	Annual
8	Last watering month	7	1&2	Fixed frame and variable frame farmer survey for beneficiary and non-beneficiary	Annual
9.	W1/ W2/ W3 water access in mm	7	1&2	Fixed frame and variable frame farmer survey for beneficiary and non-beneficiary	Annual
10.	Area under P1/ P2/ P3 crops	7	1&2	Fixed frame farmer survey for beneficiary and non-beneficiary	Annual

Profit per acre- for fixed and variable farmer frame

Spatial variability of profit per acre

Range	Yewati	Tadmugli	Wabgaon
<-10000	3	0	6
-10000-(-5000)	4	0	7
-5000-0	2	2	4
0-5000	8	3	8
5000-10000	2	3	4
10000-20000	1	3	2
>20000	1	2	1

Farmer category	Tadmugli	Wabgaon	Yewati
P1		-6179	-8666
P2	3834	2132	8236
P3	1277	2283	7222

(profit per acre in Rs.)

- It thus becomes important to look at profit per acre values for different farmer categories separately.
- The scale and the maturity of the farmer after crop change (year 1,2,3 in horticulture makes a large difference).

Water access to total deficit: longitudinal and fixed frame farmer survey
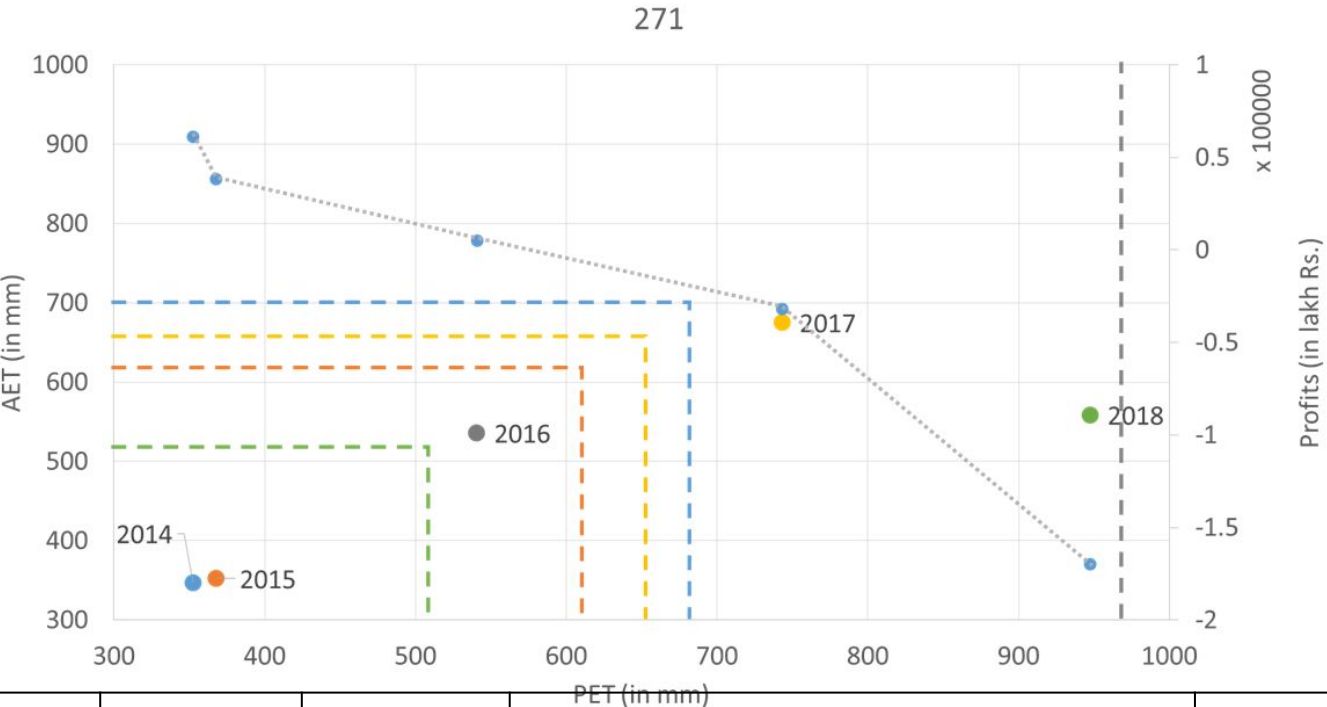
Water Access vs. Farmer name
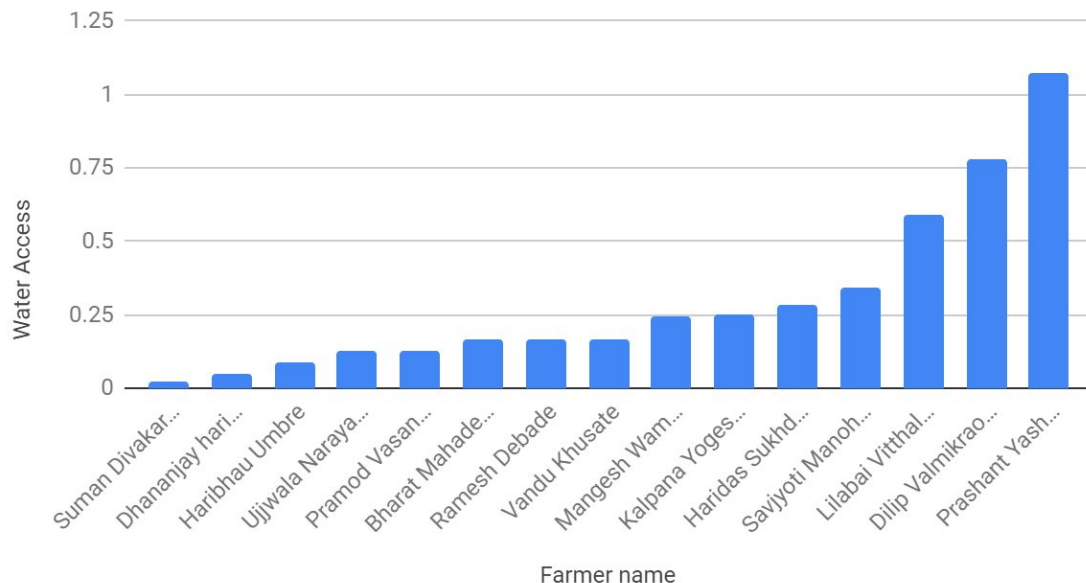
No. of farmers without water access = 17 out of 32.
Average water access/ total deficit =0.29

Source: Wabgaon, Wardha

Budyko point- Longitudinal indicator for fixed farmer frame

GAT No. 271
Farmer name: Yamunabai Dhawale
Location: Away from stream
Family size: 6
Alternate sources of income: One family member works in Partur

(all values in mm)

	2017	2018	Cropping pattern in 2017			Cropping pattern in 2018		
Assets	Well water available	Well water available	P1 requirement	P2 requirement	P3 requirement	P1 requirement	P2 requirement	P3 requirement
1 well	98.86	49.43	141.36	353.37		564.47		367.73

Farm level indices computed for different farmer categories:
P1 Category Farmer

Sr.	Indicator	2016	2017	2018
1	Economic productivity	Rs. 11.6/m3	Rs. -2.4/ m3	Rs. -68.2/ m3
2	Ratio of water access on farm in mm to total deficit in mm	0.72	0.23	0.14
3	Annual farm income for P1 category	8000	-22,000	-1,23,000
4	Ratio for water access on farm in mm to total deficit for P1, P2 and P3 category crops	P1: 0 P2: 0.72 P3: 0	P1: 0.17 P2: 0.25 P3: 0	P1: 0.29 P2: 0.08 P3: 0
5	Last watering month	Feb	Dec	Dec*
6	W1/ W2/ W3 water access in mm	W2: 98.86	W2: 49.43	W2: 52.32*

Farm level indices computed for different farmer categories

Gat no. 65, 62 Yelda: P2 category farmer

Sr.	Indicator	2016	2017	2018
1	Economic productivity	Rs. 7.6/m3	Rs. 5.2/ m3	Rs. 6.2/ m3
2	Ratio of water access on farm in mm to total deficit in mm	0.25	0.42	0.23
3	Annual farm income for P2 category	12,252	8461	9520
4	Ratio for water access on farm in mm to total deficit for P1, P2 and P3 category crops	P1: 0 P2: 0.25 P3: 0	P1: 0 P2: 0.42 P3: 0	P1: 0 P2: 0.23 P3: 0
5	Last watering month	Dec	Nov	Nov
6	W1/ W2/ W3 water access in mm	W2: 62	W2: 35	W2: 47

Gat no. 326, 127, 452 Yelda: P3 category farmer

Sr.	Indicator	2016	2017	2018
1	Economic productivity	Rs. 6.2/m3	Rs. 2.3/ m3	Rs. 1.2/ m3
2	Annual farm income for P3 category	11,000	5200	2300

Village level Indicators

Sr.	Indicator	PDO	KPI	Data Source	Frequency
1.	Number of farmers using drip/ sprinkler for the first time.	5	5	MIS	Annual
2.	Number of farmers provided horticulture benefit upto year 1, year 2 and year 3.	5	5	MIS	Annual
3.	Number of farmers provided with polyhouse/ polytunnel	5	5	MIS	Annual
4.	Number of farmers provided with farm pond- GW based/ run-off based	5	5	MIS	Annual
5.	Number of farmers provided with plastic sheet for farm pond	5	5	MIS	Annual
6.	Number of farmers going for sericulture	5	5	MIS	Annual
8.	Budyko point	2	1	DPR/MLP	Annual
9.	W1/ W2/ W3 water access in mm	7	1&2	DPR/MLP	Annual
10.	Area under P1/ P2/ P3 crops	7	1&2	DPR/MLP	Annual

Anecdotes from field: DPR and other Issues

1. Many farmers do not have idea about complete application process.
2. For marginal farmers, getting subsidized dug well is crucial.
3. Crop animal/ pest attacks is also a major issue in moving to higher crop category
4. GSDA certificates available easily at a nominal informal fee without technical validation.
5. Farmers applying for the scheme include a big share of farmers with and above 5 acres of land. The data being filled in DBT portal by Cluster Assistants majorly represents 7/12 data for single gat no.s (8A data missing)
6. Timelines for different benefits do not match with sanctioning of approvals.

Beneficiary Prioritization- Criteria and data source

Sr. No.	Criteria	Current Data source	Problems with current data source	Proposed data sources
1	Land Area	DBT based on form 8A	Total land column in many villages missing in DBT. Land area currently filled only for 1 gat no. according to 7/12	Total land as per form 8A to be used- Farmer beneficiary form / 8A list for each village
2	Stream proximity	Not collected		Farmer beneficiary form
3	Household size	Not collected		Farmer beneficiary form
4	Salaried members in the immediate family	Not collected		Farmer beneficiary form
5	Biophysical vulnerability	Available but not used	Gat number issues in cadastral shapefile - repeated/null/mismatch with updated ones	Computed for every cadastral number from QGIS water balance plugin

Beneficiary Prioritization- Criteria and data source

Sr. No.	Criteria	Current Data source	Problems with current data source	Proposed data sources
6	Water assets	Farmer beneficiary form	Inadequate data collected and not present on DBT portal	Farmer beneficiary form
7	Cropping pattern	Farmer beneficiary form	Inadequate data collected and not present on DBT portal	Farmer beneficiary form
8	Migration	Not collected		Farmer beneficiary form
9	Labour work	Not collected		Farmer beneficiary form
10	Allied business	Not collected		Farmer beneficiary form

Beneficiary Prioritization- demand/ supply side

Different prioritization criteria are required for demand side benefits and supply side benefits.

- **Demand side benefits** includes: Horticulture, Sericulture, Tree Plantation, Shade-net, Polyhouse, Polytunnel
- **Supply side benefits** includes: well, well rehabilitation, farm pond, lining of farm pond, drip irrigation, sprinkler irrigation, electric/ diesel pumps, pipes, compartment bunding.

The priorities for different indicators is set through certain yes/no questions regarding the different criteria

Beneficiary Prioritization- Questions

Id	Category	Questions
1	Land Area	**1A)** Is the land area available more than the reference value of the land area in the village
2	Stream proximity	**2A)** Is there a stream within 100 m from your farm?
3	Household size	**3A)** Is your household size more than 4?
4	No. of salaried members	**4A)** Is there a salaried member in your immediate family?
5	Biophysical vulnerability	**5A)** This parameter will be precomputed for all the cadastral numbers in the village for a reference crop soybean.
6	Water Assets	**6A)** Do you have a well / borewell / farm pond or any other irrigation source on your land? **6B)** Is the well/ borewell/ farm pond functioning? **6C)** Does any one of your water source have water available for irrigation after the month of January?

Beneficiary Prioritization- Questions

Id	Category	Questions
7	Cropping pattern	**7A)** Do you cultivate an annual crop? **7B)** Do you cultivate a rabbi crop? **7C)** Do you provide irrigation to your kharif crop?
8	Migration	**8A)** Do you migrate for more than 3 months in the year?
9	Labour work	**9A)** Do you engage in labour work in the village for more than 3 months?
10	Allied business	**10A)** Do any of your immediate family members engage in any allied business?

Beneficiary Prioritization- Formulae

Category	Benefit	Elimination criteria	Prioritization formula	Relevance
Demand side benefits	Horticulture	6A+6B	1A+2A+3A+4A +5A+6C+7A+7 B+7C+8A+9A+ 10A	The elimination criteria considered eliminates farmers without a water source and further prioritizes farmers with water for longer durations. The prioritization formula is in accordance with the demand side benefits.
Supply side benefits	Well	1A+6A	2A+3A+4A+5A +7B+8A+9A+1 0A	Wells should be provided to farmers without any existing source of irrigation. Source of irrigation should include borewells or well.

Horticulture- ranking (Village - Wabgaon, Wardha)

Farmer Name	Index	Priority rank
Suman Lokhande	8	1
Haribhau Umbre	8	1
Pramod Bale	7	2
Kalpana Lokhande	7	2
Bharat Shidulkar	7	2
Lilabai Rajurkar	6	3
Haridas Hande	6	3
Dhananjay Didphay	6	3
Vandu Khusate	5	4
Dilip Lotkar	5	4
Ramesh Debade	5	4
Mangesh thote	4	5
Ujjwala Narayane	3	6

Backup

Indicator selection for progress monitoring and evaluation

1. The indicators mainly look at water supply and demand indicators.
2. The indicators are based on the PDO indicators mentioned in the REOI and respective KPIs.
3. The indicators are divided in 3 parts: crop level indicators, farm level indicators and village level indicators.

Farm level Indicators

Sr.	Indicator	PDO	KPI	Data Source	Frequency
1	Economic productivity	2	1	Fixed frame & variable frame farmer survey for beneficiary and non-beneficiary	Annual
2.	Budyko point	2	1	Fixed frame farmer survey for beneficiary and non-beneficiary	Annual
3	Ratio of water access on farm in mm to total deficit in mm	7	1&2	Fixed frame survey for beneficiary	Annual
4	Annual farm income for P1 category	4	4	Fixed frame survey for beneficiary and non-beneficiary	Annual
5	Annual farm income for P2 category farmers	4	4	Fixed frame survey for beneficiary and non-beneficiary	Annual
6	Annual farm income for P3 category farmers	4	4	Fixed frame survey for beneficiary and non-beneficiary	Annual

Farm level Indicators

Sr.	Indicator	PDO	KPI	Data Source	Frequency
7	Ratio for water access on farm in mm to total deficit for P1, P2 and P3 category crops	7	1&2	Fixed frame survey for beneficiary	Annual
8	Last watering month	7	1&2	Fixed frame and variable frame farmer survey for beneficiary and non-beneficiary	Annual
9.	W1/ W2/ W3 water access in mm	7	1&2	Fixed frame and variable frame farmer survey for beneficiary and non-beneficiary	Annual
10.	Area under P1/ P2/ P3 crops	7	1&2	Fixed frame farmer survey for beneficiary and non-beneficiary	Annual