Process Evaluation Cum Impact Assessment of Deep Bore Well Scheme

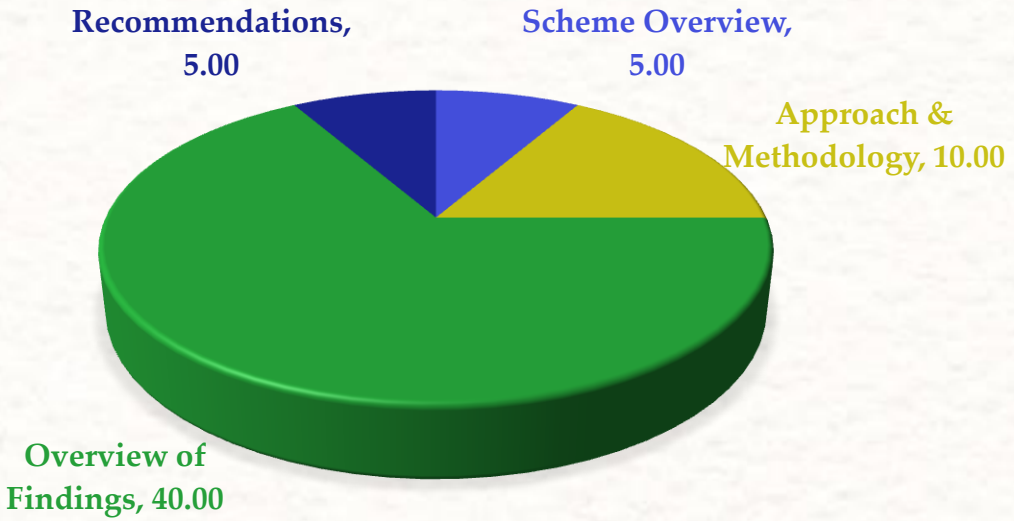
Presentation by
CTRAN Consulting

Presentation Frame

Four Sections

60 Minutes

- Section I: Scheme Overview
- Section II: Approach & Methodology
- Section III: Overview of Findings
- Section IV: Recommendations



Section I

Scheme Overview

Zone	District	Installed Bore Wells						Energised Bore Wells				
		2010-11	2011-12	2012-13	2013-14	Total	CAGR	2011-12	2012-13	2013-14	Total	CAGR
East & South-Eastern Coastal Plain	Cuttack	0	0	120	98	218	-0.18	0	53	82	135	0.55
	Khurda	83	89	411	297	880	0.53	45	247	172	464	0.96
	Nayagarh	71	0	311	515	897	0.94	20	170	191	381	2.09
Eastern Ghat High Land	Koraput	44	0	41	150	235	0.51	59	19	60	138	0.01
	Nabrangpur	154	134	474	137	899	-0.04	116	257	163	536	0.19
Mid Central Table Land	Dhenkanal	0	9	100	80	189	1.98	0	9	52	61	4.78
	Angul	0	45	401	662	1108	2.84	0	201	27	228	-0.87
North Eastern Ghat	Ganjam	0	0	250	162	412	-0.35	0	153	79	232	-0.48
	Gajapati	0	0	0	0	0		0	0	0	0	
	Rayagada	0	72	233	246	551	0.85	45	108	102	255	0.51
	Kandhamal	0	82	129	113	324	0.17	0	113	72	185	-0.36
North-Central Plateau	Keonjhar	0	15	185	51	251	0.84	5	148	25	178	1.24
	Mayurbhanj	0	271	370	655	1296	0.55	154	401	61	616	-0.37
North-Eastern Coastal Plain	Balasore	0	66	223	170	459	0.60	0	208	89	297	-0.57
	Jajpur	0	38	184	120	342	0.78	32	114	47	193	0.21
North-Western Plateau	Deogarh	30	21	496	315	862	1.19	24	123	24	171	0.00
	Sundergarh	0	125	1159	990	2274	1.81	0	329	74	403	-0.78
South Eastern Ghat	Malkangiri	33	60	320	519	932	1.51	47	227	52	326	0.05
Western Central Table Land	Bolangir	115	73	836	1479	2503	1.34	104	489	78	671	-0.13
	Sonepur	115	249	715	1191	2270	1.18	75	320	81	476	0.04
	Boudh	0	94	475	955	1524	2.19	0	228	332	560	0.46
	Sambalpur	0	613	1508	1322	3443	0.47	77	249	247	573	0.79
	Bargarh	93	247	2238	1101	3679	1.28	122	419	418	959	0.85
	Jharsuguda	0	107	384	403	894	0.94	0	103	78	181	-0.24
Western Undulating Zone	Kalahandi	153	98	954	333	1538	0.30	130	525	225	880	0.32
	Nuapada	69	222	259	538	1088	0.98	53	233	196	482	0.92

Agro-Climatic Zone	District	Successful Bore Wells			Energised Bore Wells				
		Total	CAGR	Per Block	Total	CAGR	% Energised	Per Block	% per Block
East & South-Eastern Coastal Plain	Cuttack	218	-0.18	27	135	0.55	61.93	17	61.93
	Khurda	880	0.53	110	464	0.96	52.73	58	52.73
	Nayagarh	897	0.94	112	381	2.09	42.47	48	42.47
Eastern Ghat High Land	Koraput	235	0.51	17	138	0.01	58.72	10	58.72
	Nabrangpur	899	-0.04	90	536	0.19	59.62	54	59.62
Mid Central Table Land	Dhenkanal	189	1.98	24	61	4.78	32.28	8	32.28
	Angul	1108	2.84	139	228	-0.87	20.58	29	20.58
North Eastern Ghat	Ganjam	412	-0.35	19	232	-0.48	56.31	11	56.31
	Gajapati	0		0	0				
	Rayagada	551	0.85	50	255	0.51	46.28	23	46.28
	Kandhamal	324	0.17	27	185	-0.36	57.10	15	57.10
North-Central Plateau	Keonjhar	251	0.84	19	178	1.24	70.92	14	70.92
	Mayurbhanj	1296	0.55	50	616	-0.37	47.53	24	47.53
North-Eastern Coastal Plain	Balasore	459	0.60	230	297	-0.57	64.71	149	64.71
	Jajpur	342	0.78	68	193	0.21	56.43	39	56.43
North-Western Plateau	Deogarh	862	1.19	287	171	0.00	19.84	57	19.84
	Sundergarh	2274	1.81	134	403	-0.78	17.72	24	17.72
South Eastern Ghat	Malkangiri	932	1.51	133	326	0.05	34.98	47	34.98
Western Central Table Land	Bolangir	2503	1.34	179	671	-0.13	26.81	48	26.81
	Sonepur	2270	1.18	378	476	0.04	20.97	79	20.97
	Boudh	1524	2.19	508	560	0.46	36.75	187	36.75
	Sambalpur	3443	0.47	383	573	0.79	16.64	64	16.64
	Bargarh	3679	1.28	307	959	0.85	26.07	80	26.07
	Jharsuguda	894	0.94	179	181	-0.24	20.25	36	20.25
Western Undulating Zone	Kalahandi	1538	0.30	118	880	0.32	57.22	68	57.22
	Nuapada	1088	0.98	218	482	0.92	44.30	96	44.30

Scheme Performance Overview

Year	Target	Achievement		Installation %	Energisation %
		Installation	Energisation		
2010-11	4, 000	2, 312	2, 208	57.80	95.50
2011-12	10, 000	11, 463	9, 381	114.63	81.84
2012-13	24, 900	15, 357	9, 579	61.67	62.38
2013-14	33, 498	28, 500	5, 919	85.08	20.77
Overall	72, 398	57, 632	27, 087	79.60	47.00
Source: OLIC					

Note

- High Installation Achievement in 2011-12
- High Energistion Achievement in 2010-11
- About 30, 545 Installed Bore Wells yet to be Energised
- If 30, 545 Installed Bore Wells Energised, it would irrigate 76, 362.5 Ac. Minimum
- No Energised Bore Well in Gajapati District

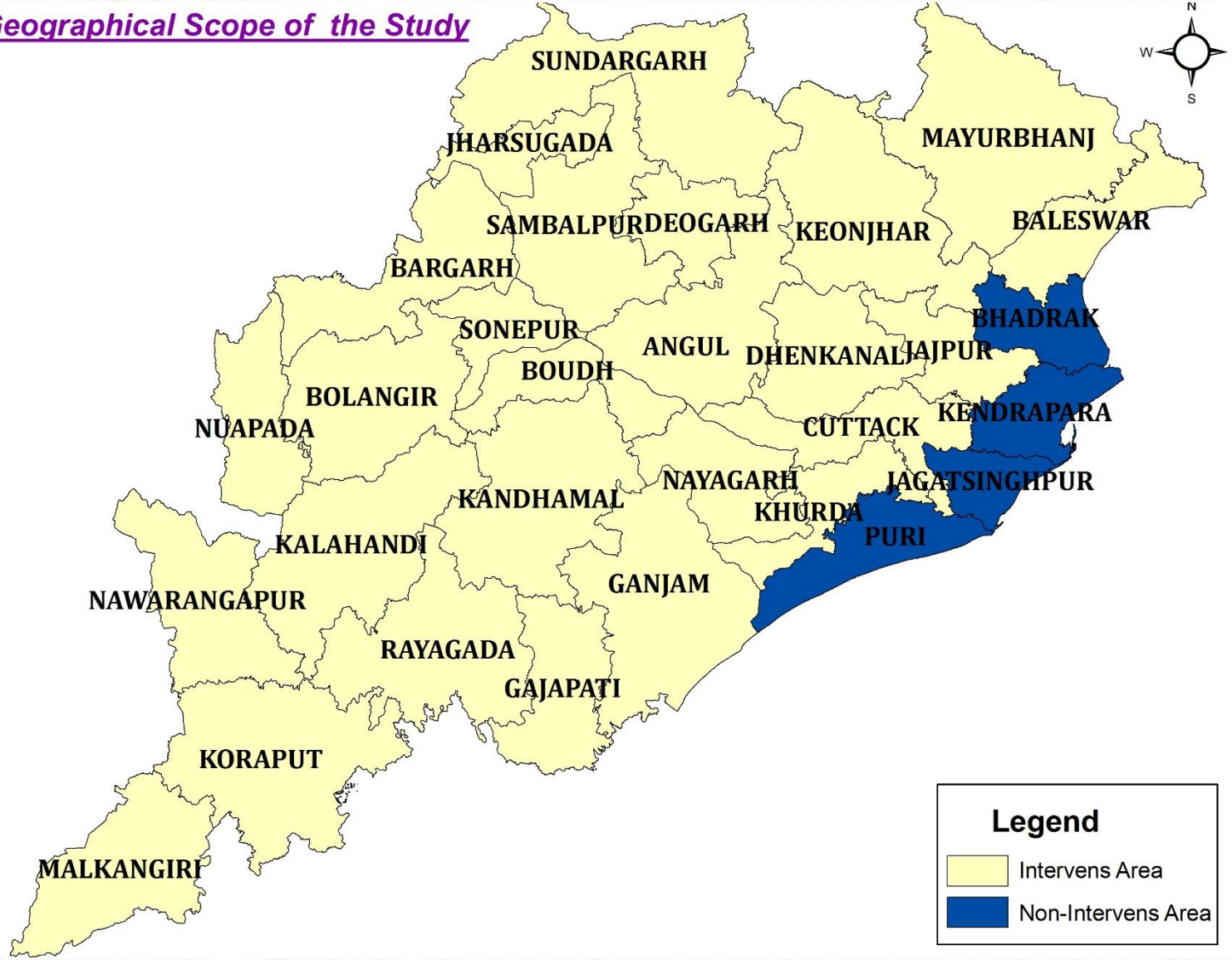
Section II

Overview of Methodology

Geographical Scope

Scope of the Study Covers

10 Agro-climatic Zones
26 Districts



Study Design

Participatory and Consultative

Instruments / Tools
Structured
Semi-Structured
Open & Close Ended

Study Design
Observational / Quasi-Experimental

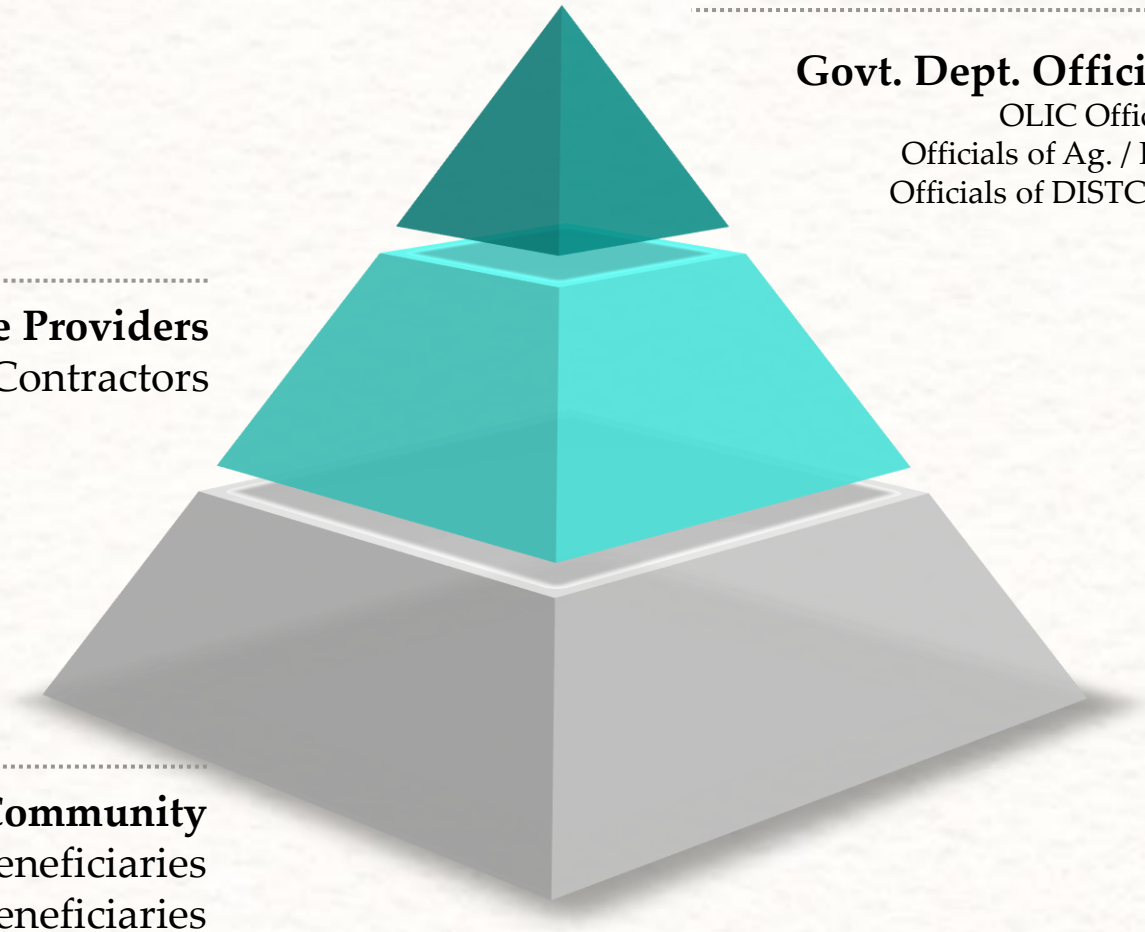
Methodology
Stratified Random Sampling
Literature Review
In depth Interview
Consultation
Field Observation
Focus Group Discussions

Stakeholders

Multi-Stakeholder Consultations

Govt. Dept. Officials
OLIC Officials
Officials of Ag. / Hor.
Officials of DISTCOM

Other Service Providers
Contractors



Community
Beneficiaries
Non-Beneficiaries

Sampling Criteria

Successful Bore Well (Total)			Successful Bore Well (Per Block)			Energised Bore Well (Percentage Total)			Energised Bore Well (No. per Block)		
< = 300	0.05	5	< = 50	0.05	5	< = 25 %	0.05	5	< = 25	0.05	5
> 300 < = 750	0.15	15	> 50 < = 100	0.15	15	> 25 % < = 35 %	0.15	15	> 25 < = 50	0.15	15
> 750 < = 1500	0.20	20	> 100 < = 150	0.20	20	> 35 % < = 50 %	0.20	20	> 50 < = 75	0.20	20
> 1500 < = 2500	0.25	25	> 150 < = 200	0.25	25	> 50 % < = 70 %	0.25	25	> 75 < = 125	0.25	25
> 2500	0.35	35	> 200	0.35	35	> 70 %	0.35	35	> 125	0.35	35
Total	1.00	100	Total	1.00	100	Total	1.00	100	Total	1.00	100
Net Area Sown Difference (in %)			**Gross Cropped Area Difference (in %)**			**Kharif Cropped Area Difference (in %)**			**Rabi Cropped Area Difference (in %)**		
< = - 10	0.05	5	< = - 10	0.05	5	< = - 10	0.05	5	< = - 10	0.05	5
> - 10 < = - 5	0.15	15	> - 10 < = - 5	0.15	15	> - 10 < = - 5	0.15	15	> - 10 < = - 5	0.15	15
> - 5 < = 0	0.20	20	> - 5 < = 0	0.20	20	> - 5 < = 0	0.20	20	> - 5 < = 0	0.20	20
> 0 < = 10	0.25	25	> 0 < = 5	0.25	25	> 0 < = 5	0.25	25	> 0 < = 10	0.25	25
> 10	0.35	35	> 5	0.35	35	> 5	0.35	35	> 10	0.35	35
Total	1.00	100	Total	1.00	100	Total	1.00	100	Total	1.00	100
Cropping Intensity			**Net Irrigated Area Difference (in %)**			**Gross Irrigated Area Difference (in %)**			**Total Cropped Area Difference (in %)**		
< = - 10	0.05	5	< = 0	0.05	5	< = 0	0.05	5	< = 0	0.05	5
> - 10 < = 0	0.15	15	> 0 < = 5	0.15	15	> 0 < = 5	0.15	15	> 0 < = 5	0.15	15
> 0 < = 5	0.20	20	> 5 < = 10	0.20	20	> 5 < = 10	0.20	20	> 5 < = 10	0.20	20
> 5 < = 10	0.25	25	> 10 < = 15	0.25	25	> 10 < = 15	0.25	25	> 10 < = 15	0.25	25
> 10	0.35	35	> 15	0.35	35	> 15	0.35	35	> 15	0.35	35
Total	1.00	100	Total	1.00	100	Total	1.00	100	Total	1.00	100

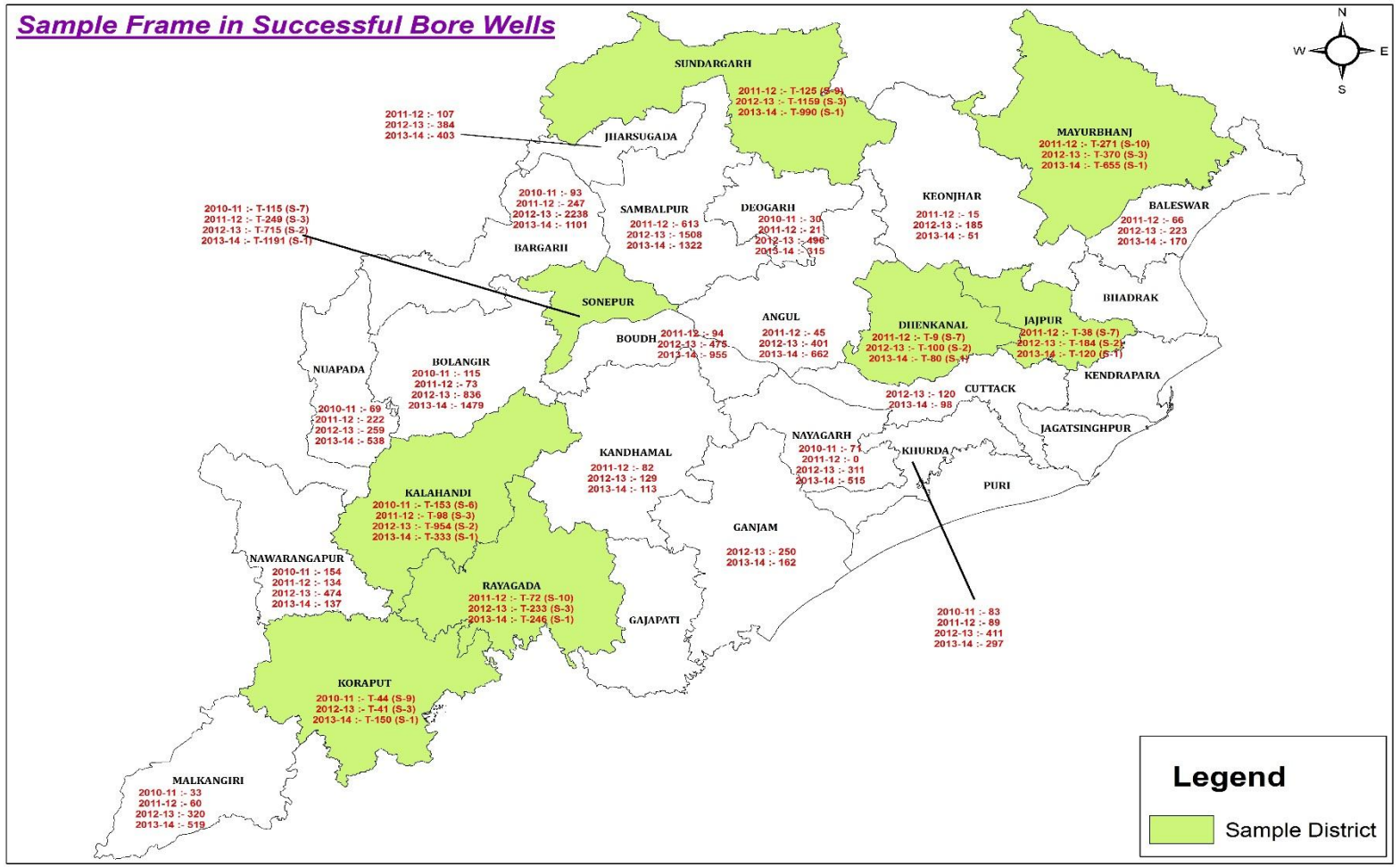
Sample Coverage

Intervention & Control

7 Agro-climatic Zones

8 Districts

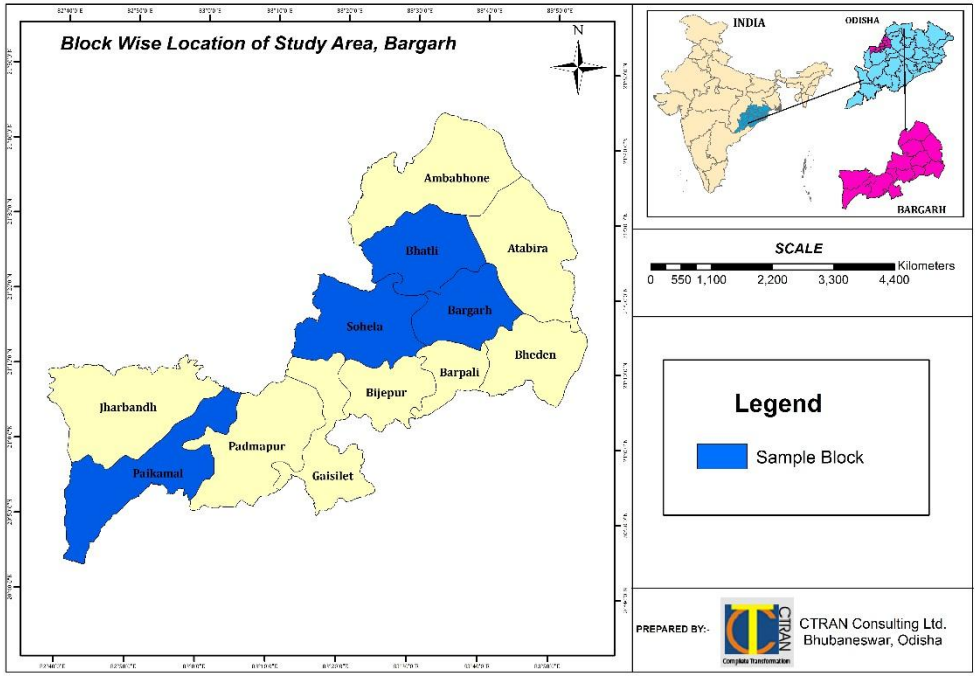
2 Districts from Western Central Table Land



Agro-Climatic Zone	Sample District	Agro-Climatic Zone	Sample District
Western Central Table Land	Bargarh	North Central Plateau	Mayurbhanj
Mid-Central Table Land	Dhenkanal	North Eastern Ghat	Rayagada
North-Eastern Coastal Plain	Jajpur	North-Western Plateau	Sundargarh
Western Undulating Zone	Kalahandi	Western Central Table Land	Subarnapur

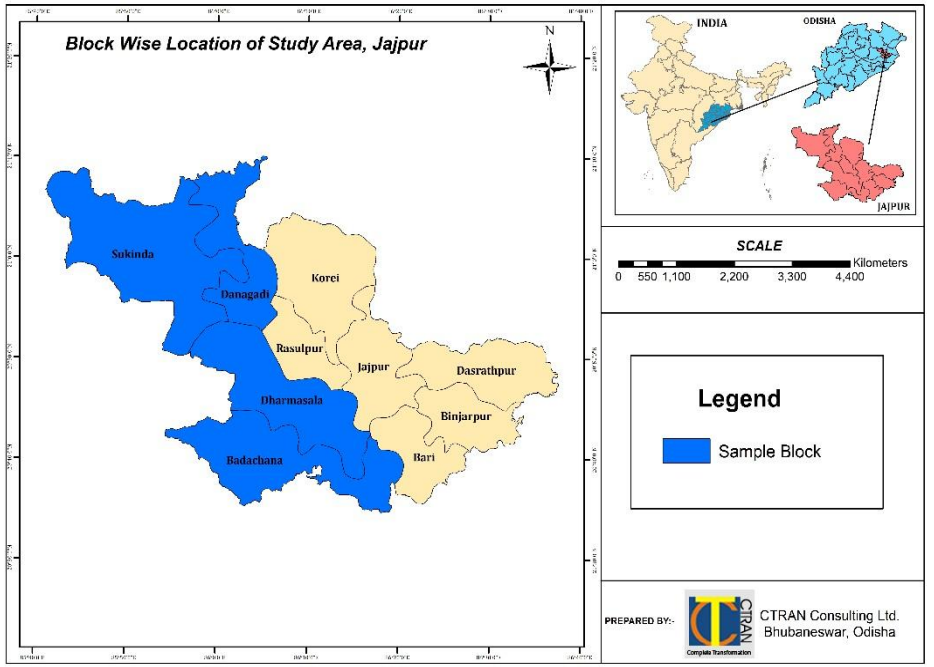
Bargarh

- 4 Blocks
- Exp.: 45 HH
- Control: 21 HH



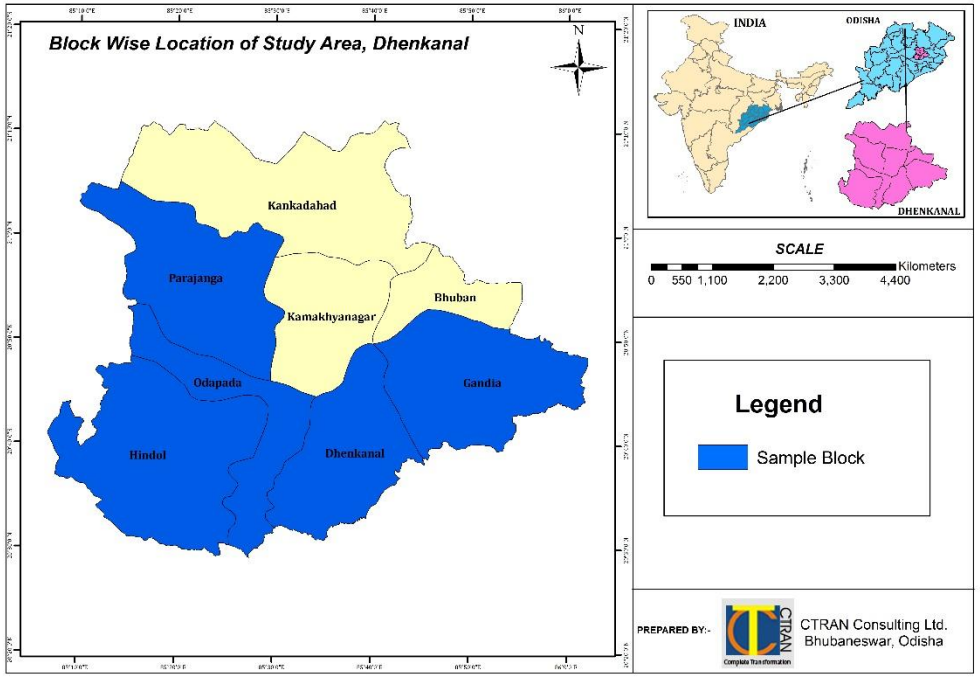
Jajpur

- 4 Blocks
- Exp.: 30 HH
- Control: 17 HH



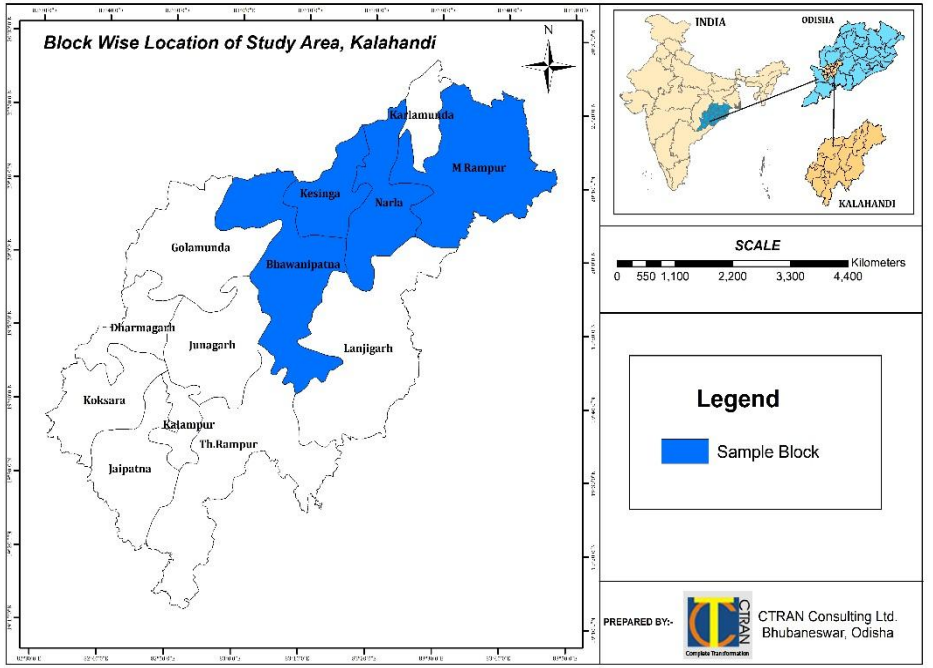
Dhenkanal

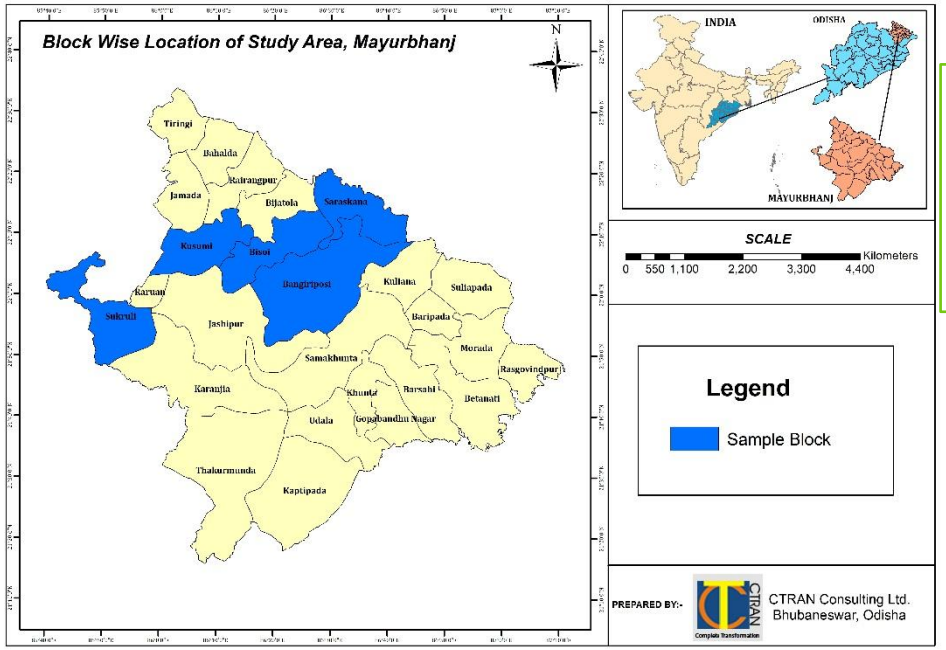
- 5 Blocks
- Exp.: 31 HH
- Control: 16 HH



Kalahandi

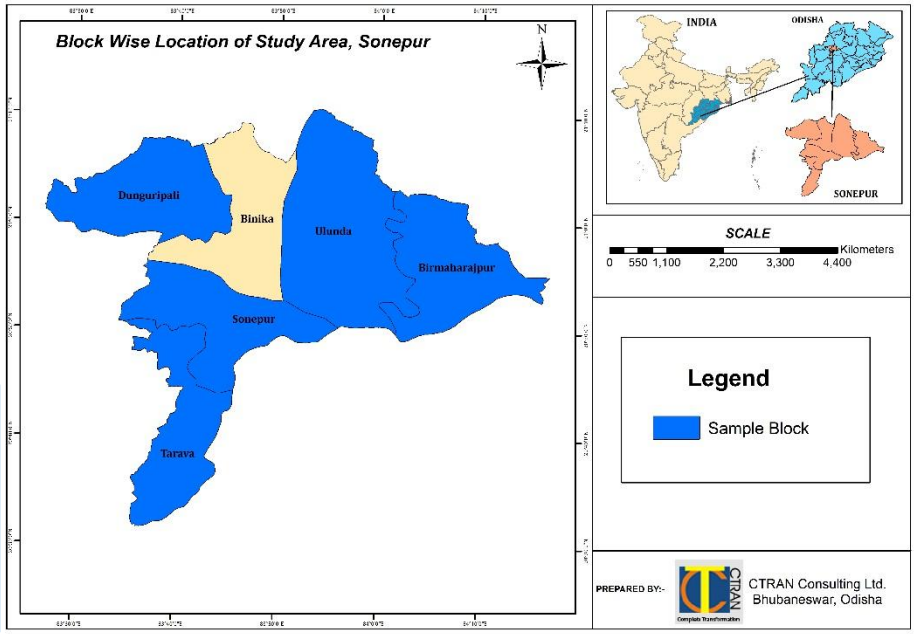
- 4 Blocks
- Exp.: 37 HH
- Control: 18 HH





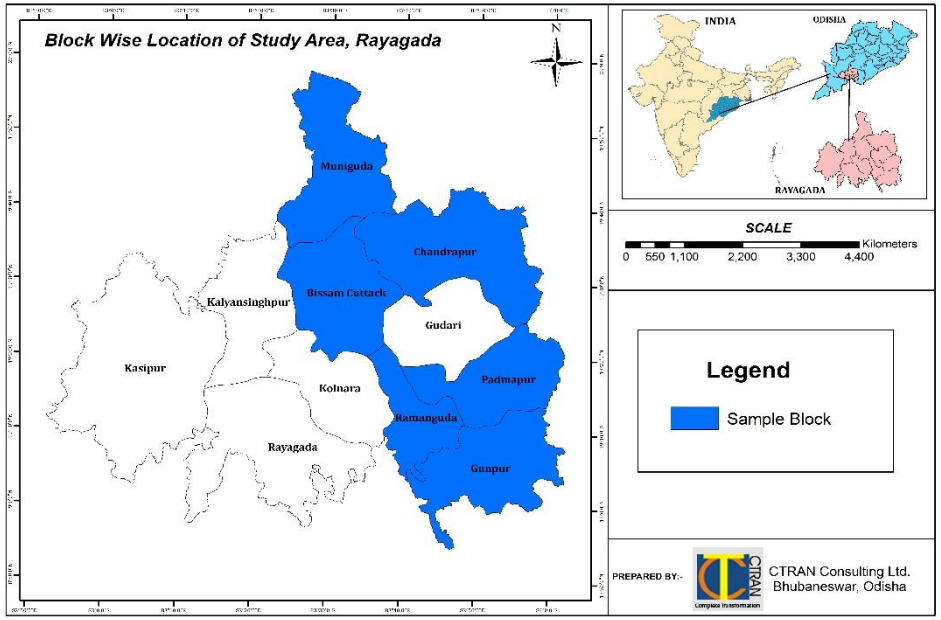
Mayurbhanj

- 5 Blocks
- Exp.: 41 HH
- Control: 21 HH



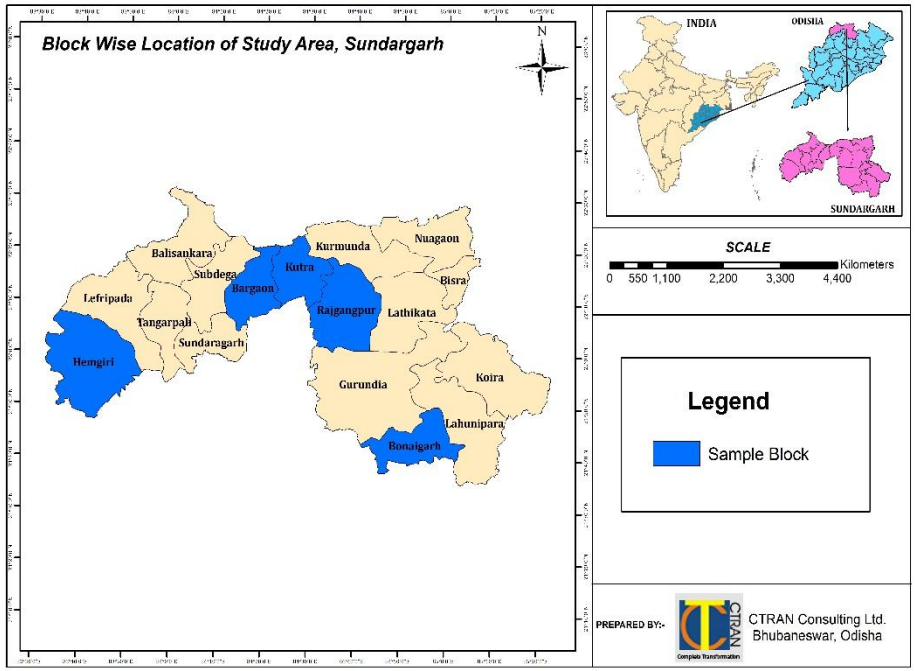
Sonepur

- 5 Blocks
- Exp.: 56 HH
- Control: 23 HH



Rayagada

- 6 Blocks
- Exp.: 42 HH
- Control: 22 HH



Sundargarh

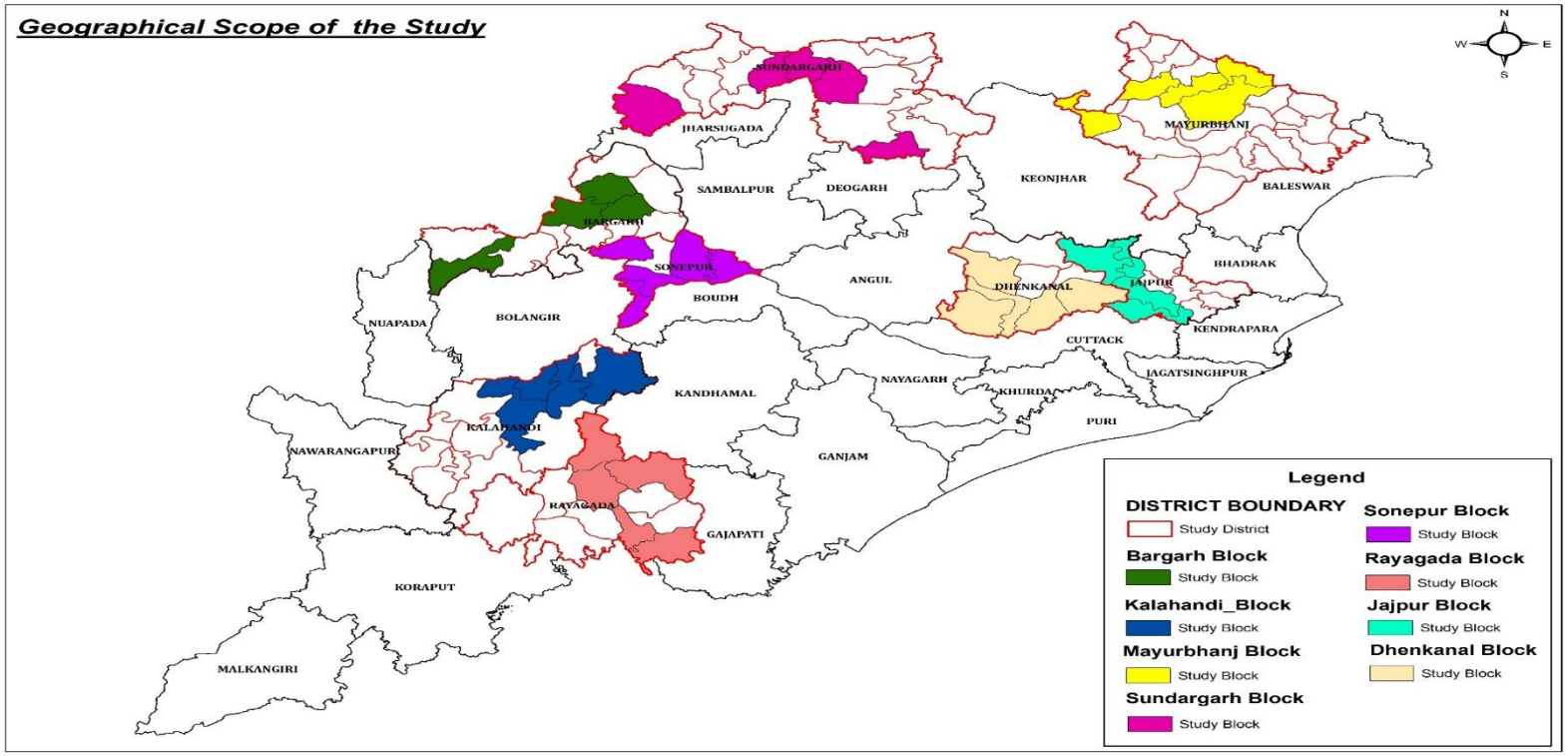
- 5 Blocks
- Exp.: 43 HH
- Control: 22 HH

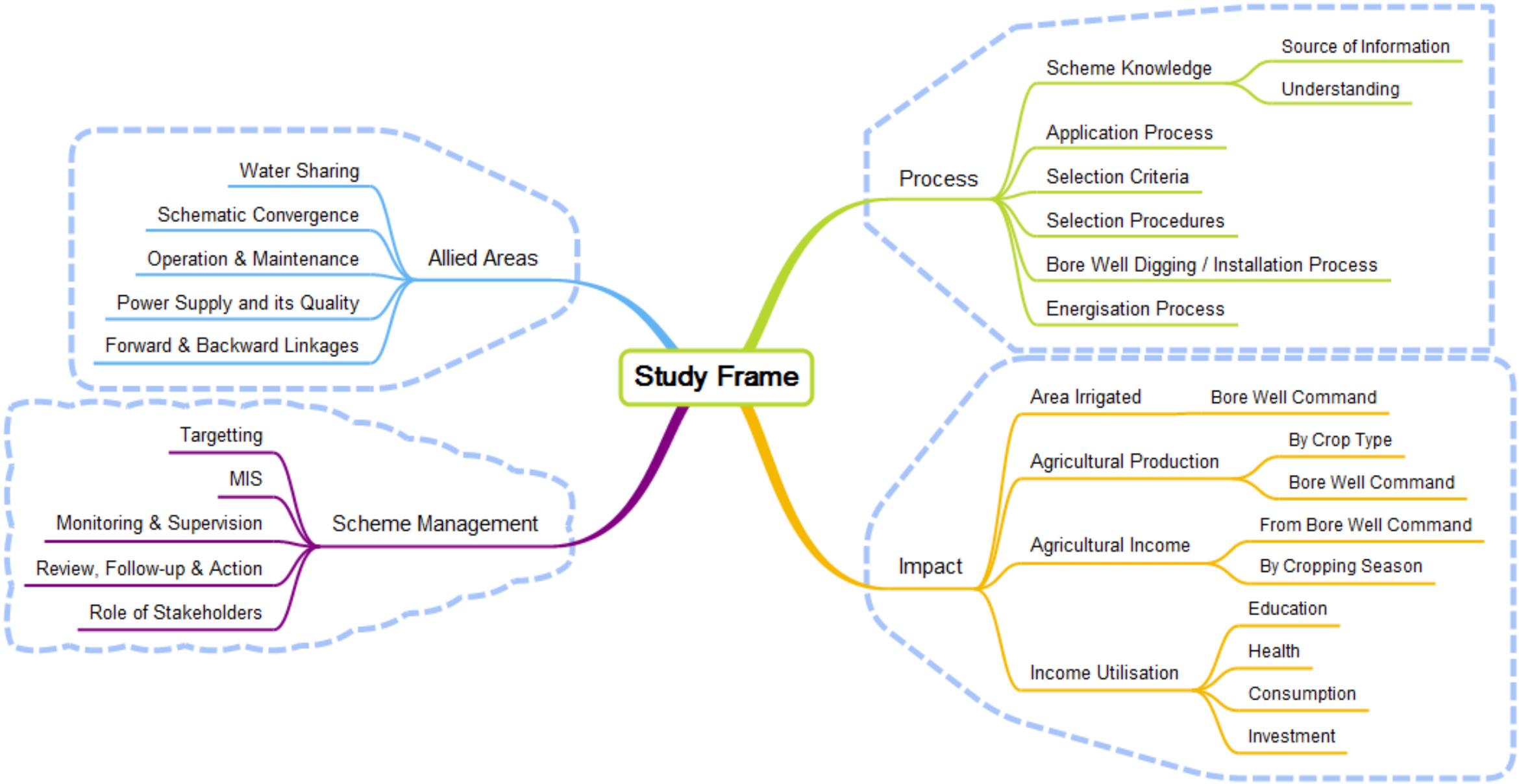
Sample Distribution

Sample Area Coverage

8 Districts
40 Blocks
92 GPs
108 Villages

Districts	Experiment		Control		Total	
	No. of Households	Percent	No. of Households	Percent	No. of Households	Percent
Bargarh	45	68.2	21	31.8	66	100.0
Dhenkanal	31	66.0	16	34.0	47	100.0
Jajpur	30	63.8	17	36.2	47	100.0
Kalahandi	37	67.3	18	32.7	55	100.0
Mayurbhanj	41	66.1	21	33.9	62	100.0
Rayagada	42	65.6	22	34.4	64	100.0
Sundargarh	43	66.2	22	33.8	65	100.0
Subarnapur	56	70.9	23	29.1	79	100.0
Total	**325**	**67.01**	**160**	**32.99**	**485**	**100.0**

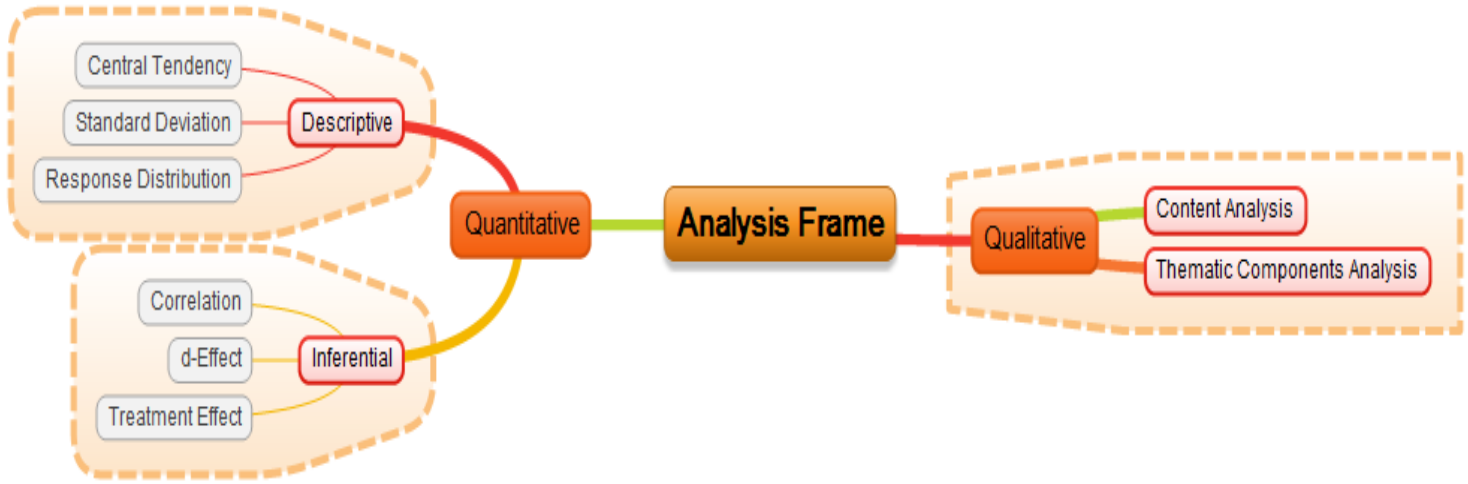



Study Frame
Process
Scheme Knowledge
Source of Information
Understanding
Application Process
Selection Criteria
Selection Procedures
Bore Well Digging / Installation Process
Energisation Process
Impact
Area Irrigated
Bore Well Command
Agricultural Production
By Crop Type
Bore Well Command
Agricultural Income
From Bore Well Command
By Cropping Season
Income Utilisation
Education
Health
Consumption
Investment
Allied Areas
Water Sharing
Schematic Convergence
Operation & Maintenance
Power Supply and its Quality
Forward & Backward Linkages
Scheme Management
Targetting
MIS
Monitoring & Supervision
Review, Follow-up & Action
Role of Stakeholders

Analysis Frame

Qualitative Analysis

Quantitative Analysis



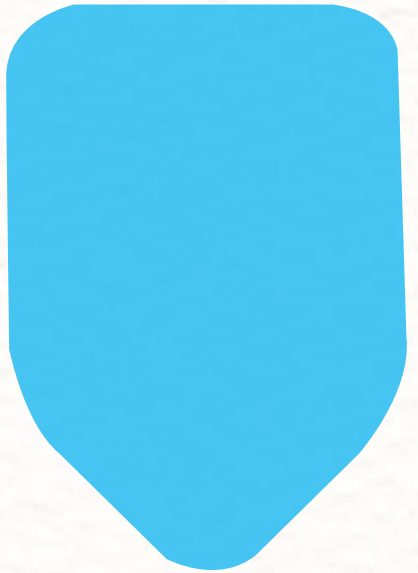
Section III

Overview of Findings

Scheme Overview

Optimising the Benefit the Available Ground Water for Agricultural Production

Irrigation facility to 2 ha. in hard rock areas & blocks having less than 35% irrigation coverage

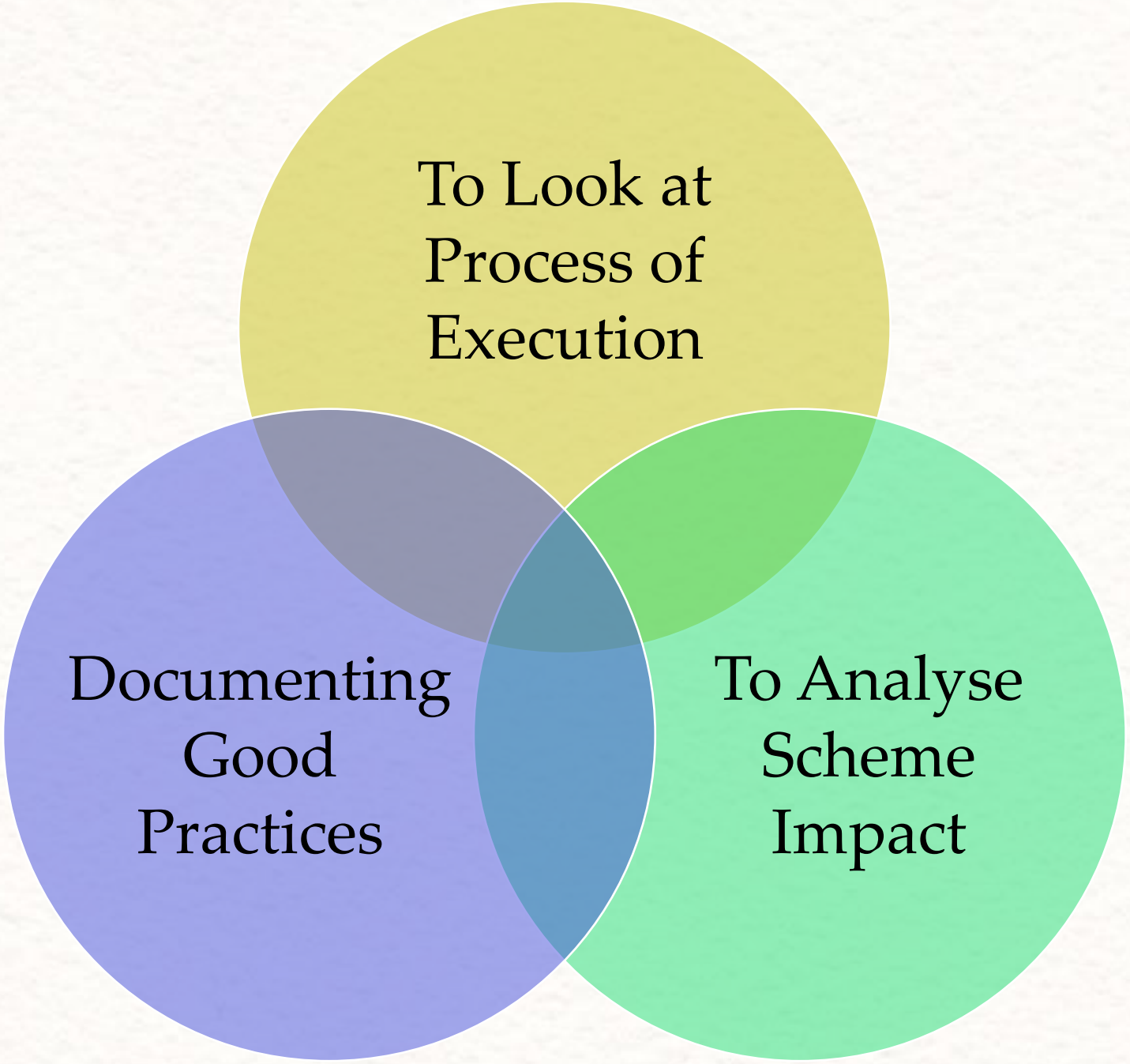


The scheme covers 26 districts and 256 blocks (Actually 25 districts & 249 blocks)

A Highly Subsidised Scheme with Beneficiary share of Rs. 20, 000/- (Rs. 10,000/- for SC/ST BPL farmer)

Study Objectives

Process Evaluation
Impact Assessment



Source of Information and Selection Process

One to One Communication in Informal Sources, Irrespective of Source of Information on Scheme

Source of Information on Scheme

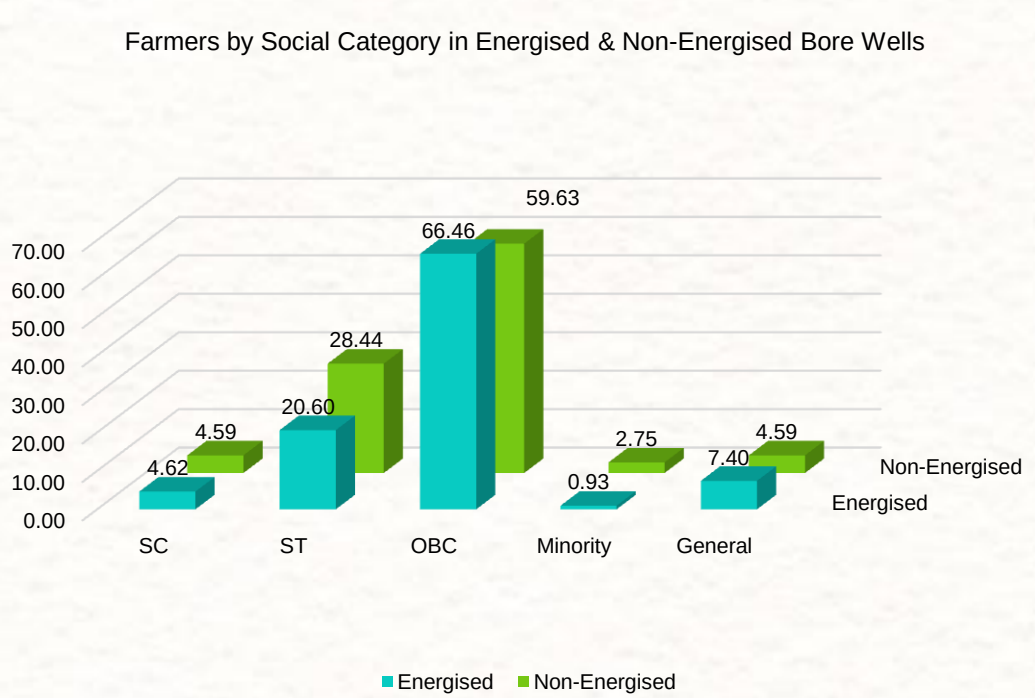
- Informal Sources (45.89 %)
- Media (32.42 %)
- Direct from OLIC (24.66 %)

Beneficiary Selection Process

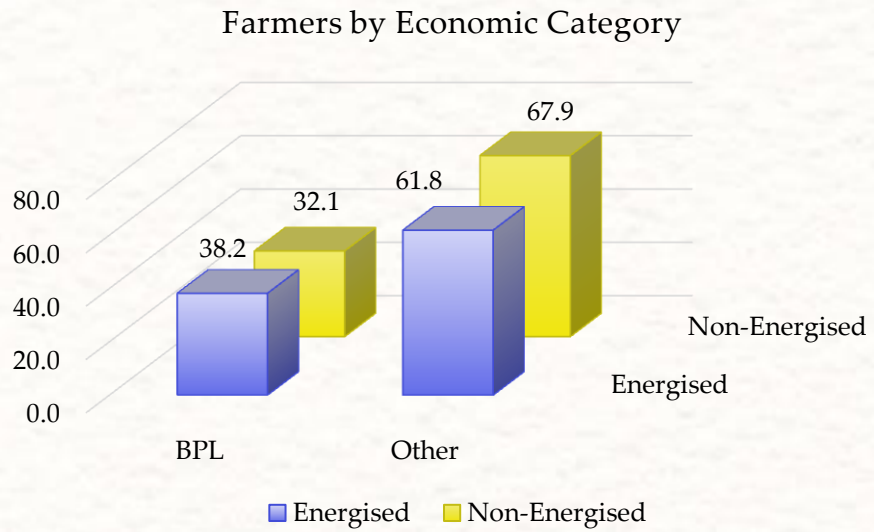
- Cluster Approach
- Land Holding of 1 Ac. Min.
- 200 Mt. Distance between 2 Units
- Nearer to 11 KV Power Supply

Scheme Coverage & Beneficiary Profile

- Of total Beneficiary
  - Scheduled Caste: 4.62 %
  - Scheduled Tribe: 22.40 %
  - OBC: 64.90 %
  - General: 6.70 %
  - Minority: 1.39 %
  - BPL: 36.64 %



- Specific Inclusion Strategy is Missing, apart from 50% subsidy to ST & SC BPL families



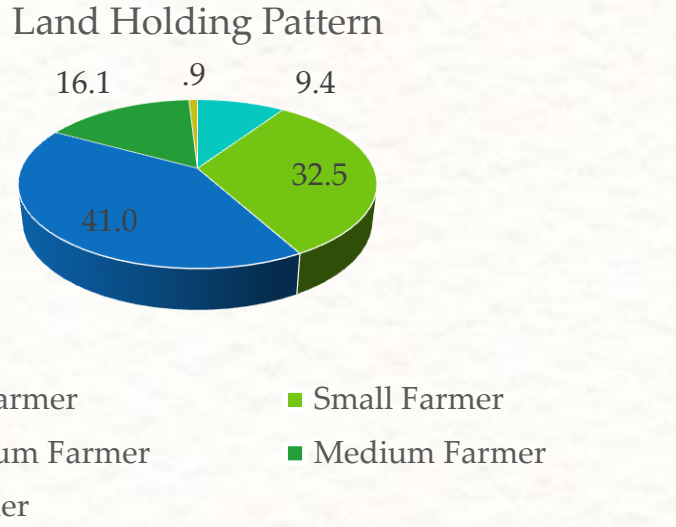
Profile (Cont.)

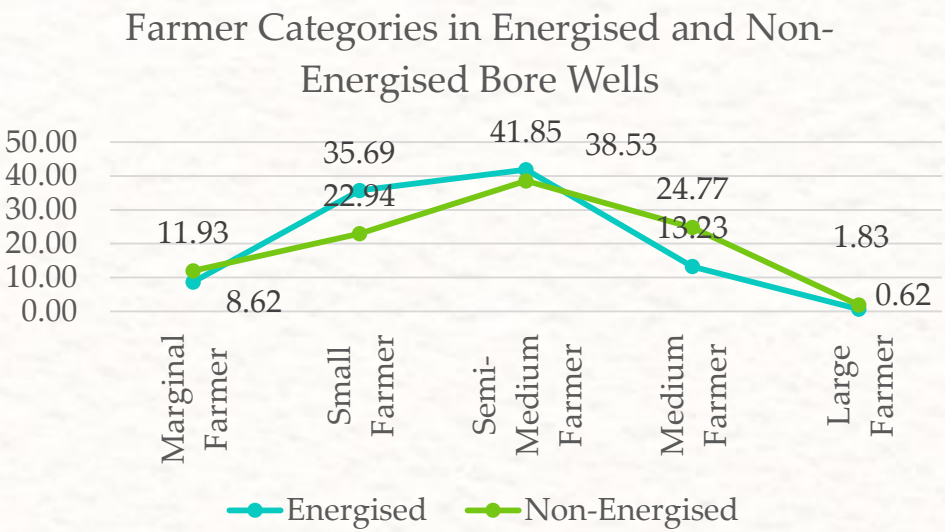
Farmer Focus (by Holding Size)
- Small (2.5 to 5.0 Acres)
- Semi-Medium (5-10 Acres)

Marginal Farmers
- *Energised: 8.62 %*
- *Non-Energised: 11.93 %*

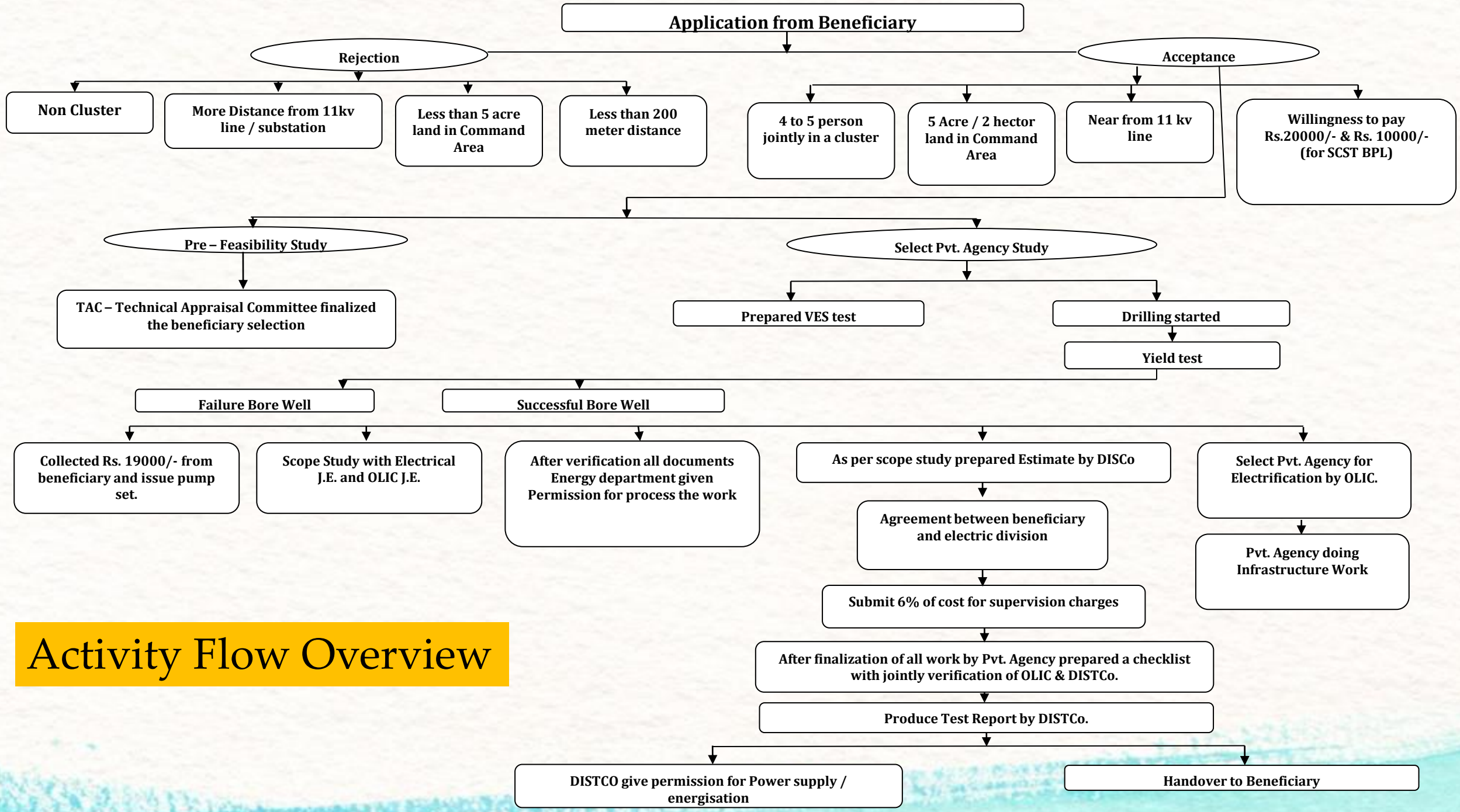
Small Farmers
- *Energised: 35.69 %*
- *Non-Energised: 22.94 %*

Semi-Medium Farmers
- *Energised: 41.85 %*
- *Non-Energised: 38.53 %*



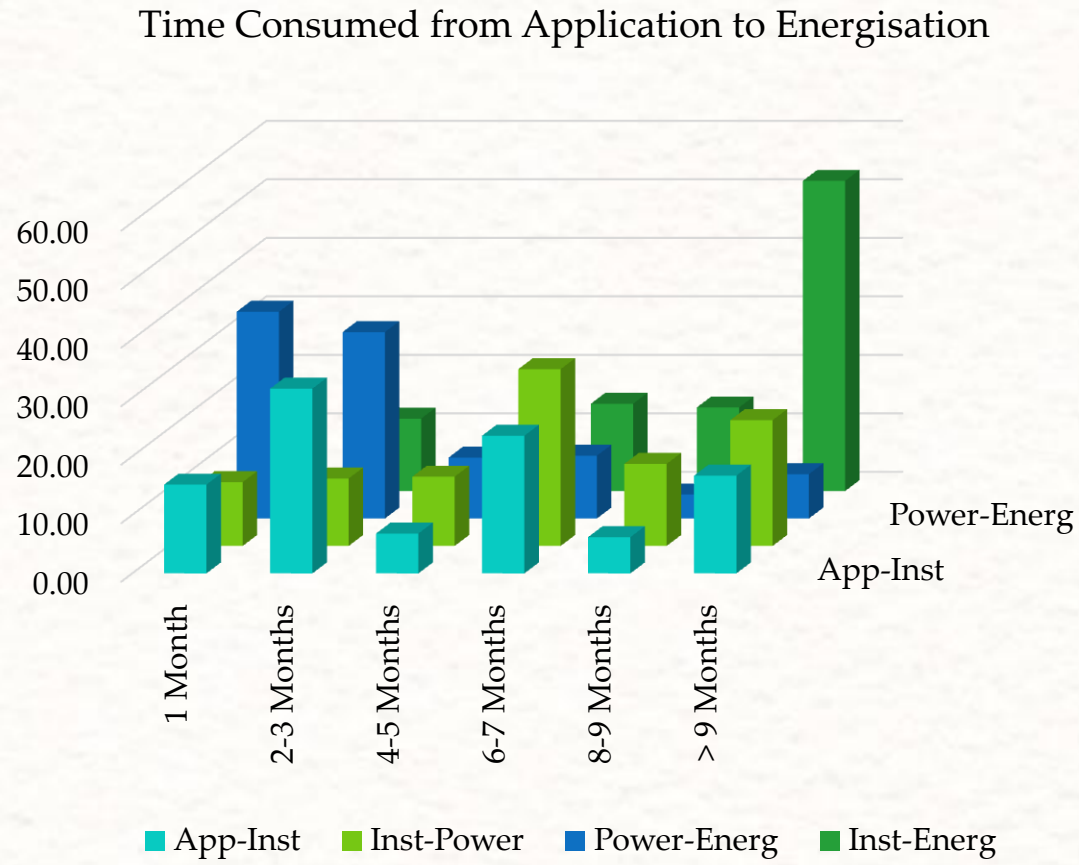


Activity Flow Overview



Installation Process

- Feasibility Assessment is Conducted which covers
- Pre-Instalment Survey
- Verification of Applicants Location
- Review of Documents
- Soil Suitability Test
- Land Suitability Test
- Ground Water Assessment



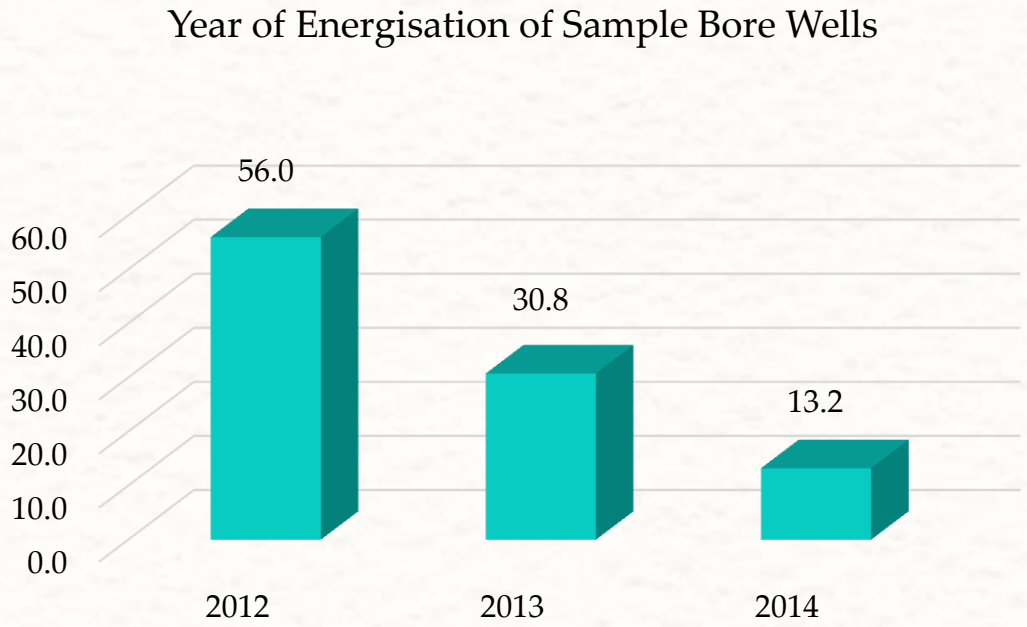
Installation Duration:

Application to Installation: 5 ½ Months

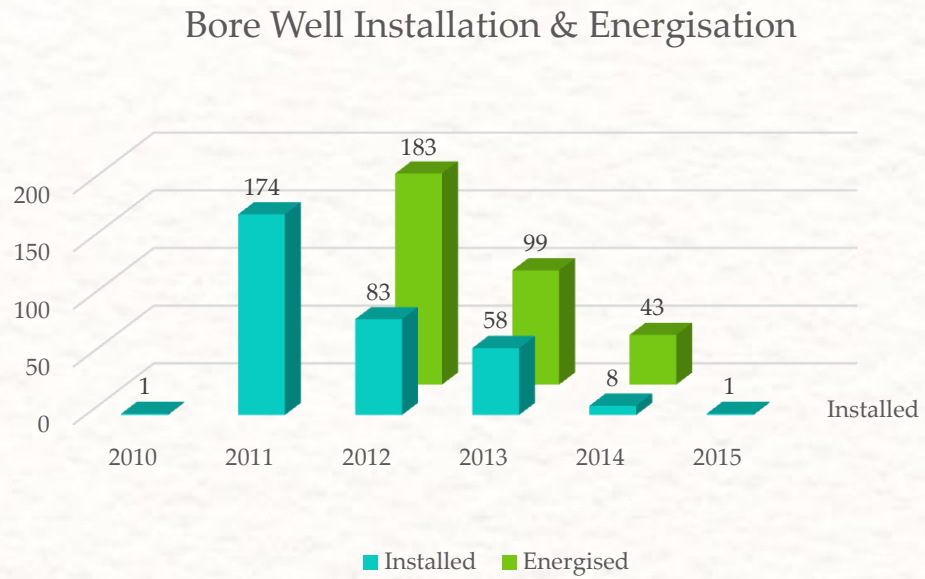
Installation to Service Line: 6 ½ Months

Energisation

- Installation to Energisation: 9 ½ Months



Year	Installed	Energised
2010	1	0
2011	174	0
2012	83	183
2013	58	99
2014	8	43
2015	1	
Total	325	325



Functionality of Installed Bore Wells

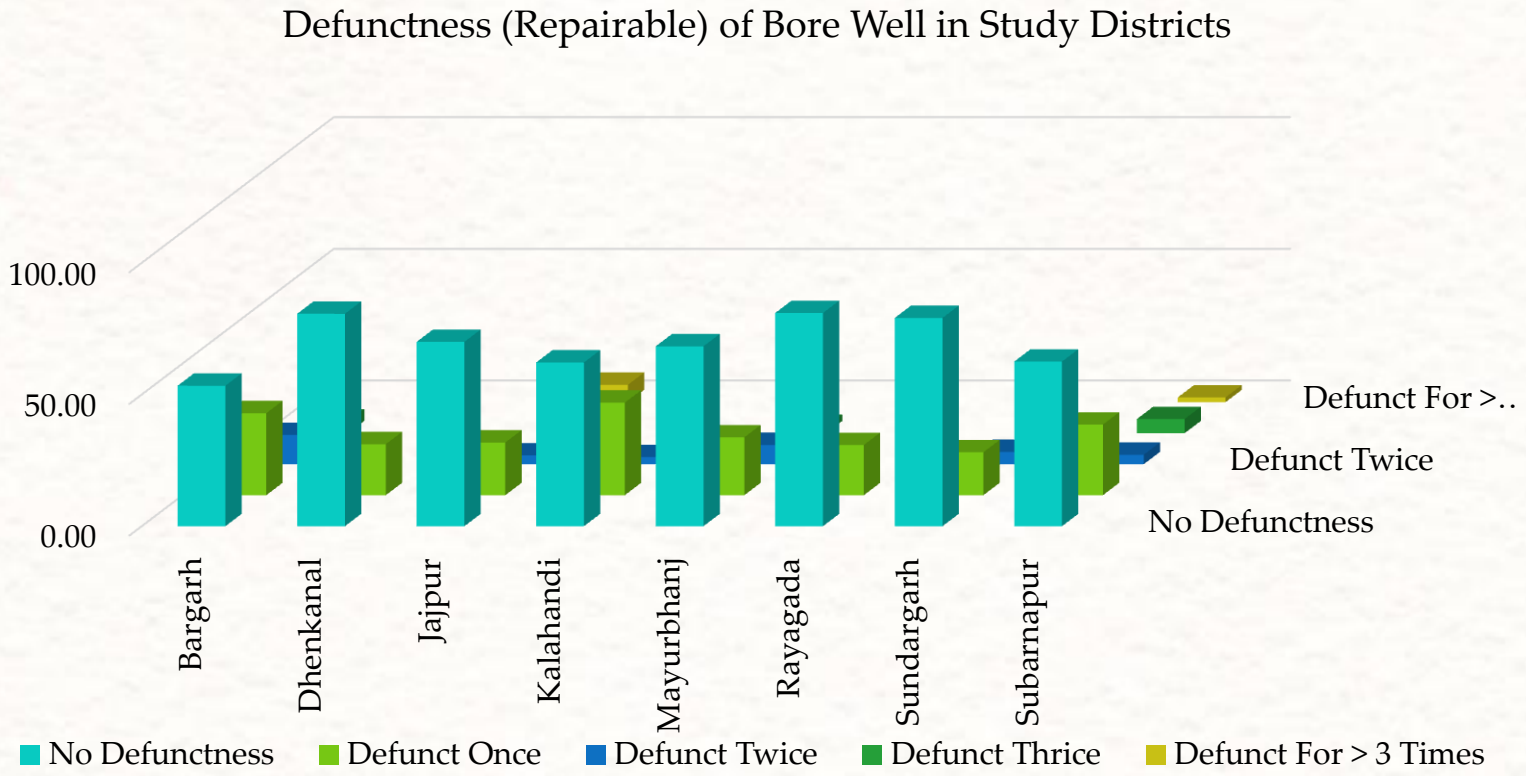
Parameters	2010	2011	2012	2013	2014	2015	Total
Installed	1	173	84	58	8	1	325
Energised	-	-	182	100	43	-	325
Defunct	0	30	10	11		-	51
Defunct % to Installation	0.00	17.34	11.90	18.97	0.00	0.00	15.69
Defunct % to Energised	-	-	5.49	11.00	0.00	-	15.69

- Water Sharing Not common as in 86.5 % cases farmers do not share
- Defunctness: 15.69 % bore wells observed defunct;
- Bore Wells also got defunct in the same year of installation
- Installation Issues (Technical Aspects)
- Poor Operation & Maintenance

Defunctness of Bore Wells

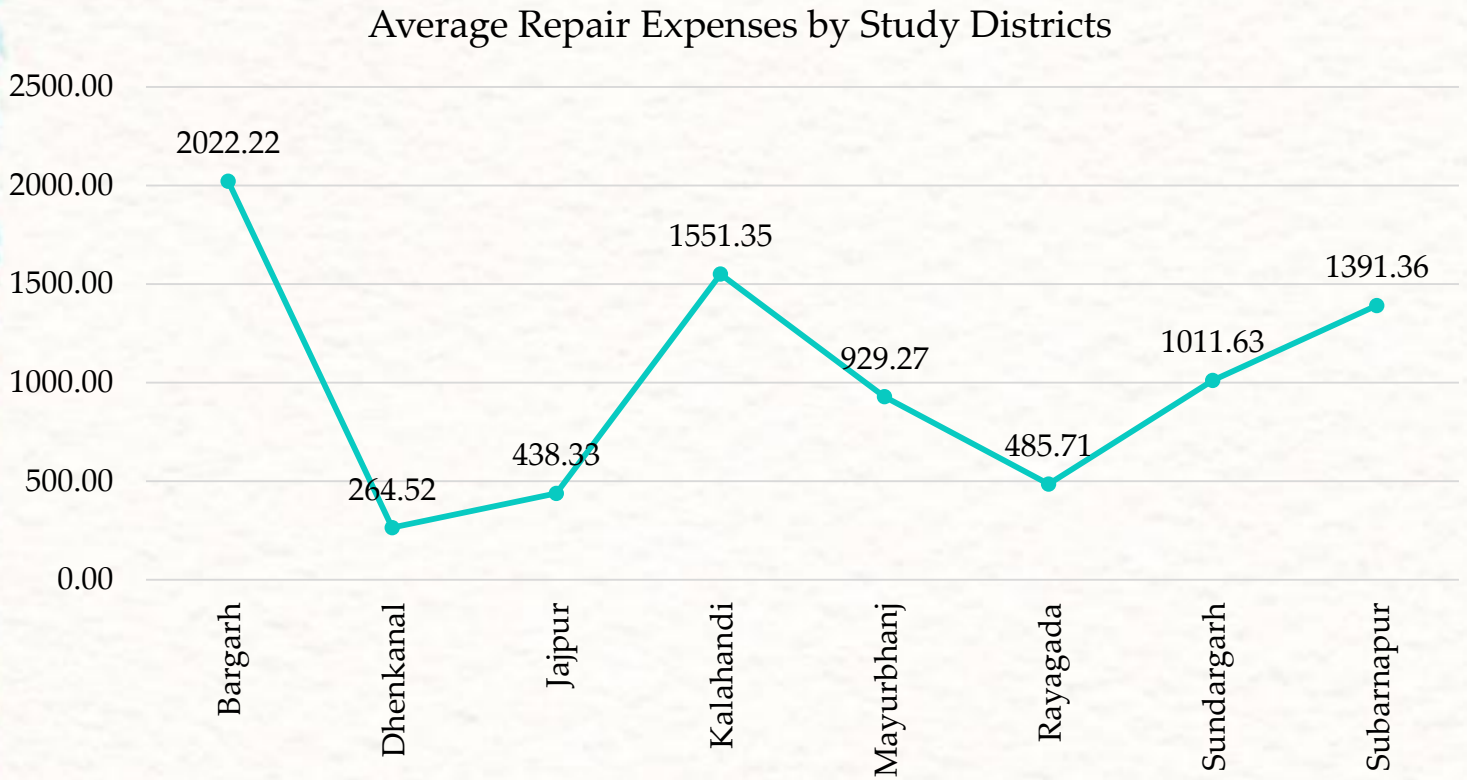
Highest Defunctness in Bargarh & Sonepur

Lowest in Dhenkanal & Rayagada



	No Defunctness	Defunct Once	Defunct Twice	Defunct Thrice	Defunct For > 3 Times	Defunct Total
Bargarh	53.33	31.11	11.11	4.44		20.79
Dhenkanal	80.65	19.35				5.94
Jajpur	70.00	20.00	3.33		6.60	8.91
Kalahandi	62.16	35.14	2.70			13.86
Mayurbhanj	68.29	21.95	7.32	2.44		12.87
Rayagada	80.95	19.05				7.92
Sundargarh	79.07	16.28	4.65			8.91
Subarnapur	62.50	26.79	3.57	5.36	1.80	20.79
Total	**68.92**	**24.00**	**4.31**	**1.85**	**0.92**	**100.00**

Operation and Maintenance



Average maintenance expenses: Rs. 1075.90

Maximum: Rs. 39, 900
Minimum: Rs. 300

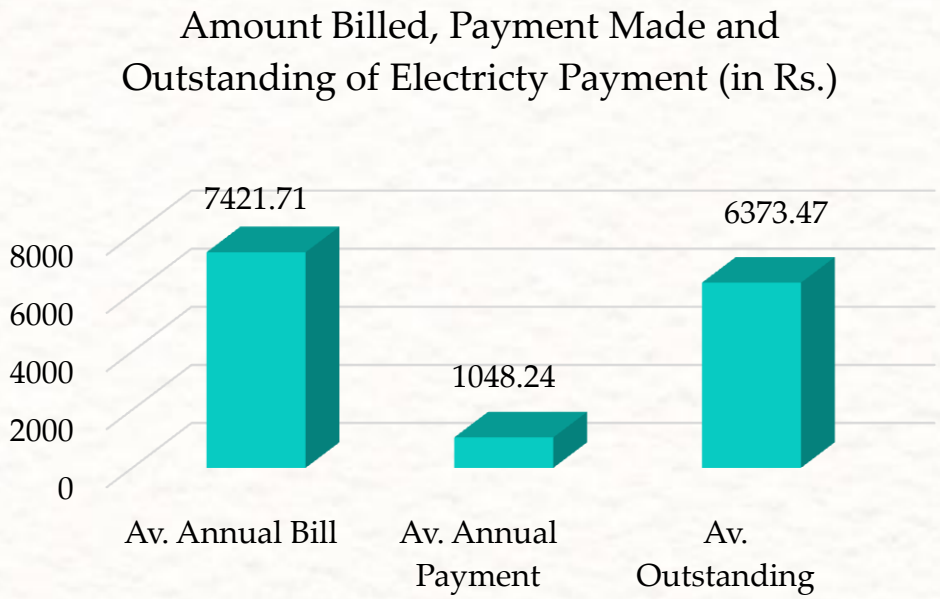
Average Repair expenses:

Highest in Bargarh
Lowest in Dhenkanal

Payment for Power Consumption

- Poor Recovery of Electricity Charges

- **Reasons:**
- No Bill Submitted
- No on-time Billing
- Billing on Average Basis
- No Plan for Overdue Collection



Convergence

- Seed support from Agriculture Department
- Crop Specific Demonstration by Agriculture Dept. (Sunflower etc.)
- Seed / Sapling support from Horticulture Department
- Sprinkler Irrigation System from Horticulture (91.1 % farmers)

- Scope of Strengthening Agri-extension services
- Farm Management Practices / Package of Practices are more traditional
- Emerging trend of Farm Mechanisation

Force Field Analysis

Hindering

- Less casing (20 Mt.) in the bore well leads to defunctness of bore well
- Difficulty in getting balance beneficiary share
- Longer Gestation Period Causes Seasonal Income Loss
- Non-Availability of O&M Agency / Persons at Local affect Crops
- Power fluctuation-Poor voltage affects operation
- Irregularity in electricity billing
- Billing without taking meter reading
- No plan for repayment of outstanding dues
- Deficient Agriculture Promotion Support

Driving

- Cluster approach for cost minimization
- Minimum 1 ac. norm for bore well create scope for Better Coverage
- Farmers awareness on eligibility criteria (who can apply)
- Selection of beneficiary, as per criteria
- Interest of the beneficiary for bore well
- Association of BPL families in the scheme
- Involvement of small and marginal farmers
- Micro irrigation system support-Horticulture. Seed Support by Agriculture Dept.
- Feasibility assessment & selection of suitable area
- Farmer's interest to clear the outstanding electricity bills

Impact of the Scheme (Irrigation)

Indicators	d-Effect		Treatment Effect
	Energised	Non-Energised	
Irrigation: Kharif	1.904	(-) 0.100	2.821
Irrigation: Rabi	2.186	(-) 0.259	3.012
Irrigation: Summer	1.385	(-) 0.371	3.370

- Increased Irrigation Coverage during Rabi Season
- Better Impact in Energised Bore Wells
- Bore Well also used for irrigation during Summer and Kharif
- Treatment Effect is Higher in Rabi and Summer

Impact of the Scheme (Production)

Indicators	d-Effect		Treatment Effect
	Energised	Non-Energised	
Production: Kharif	0.349	(-) 0.218	22.806
Production: Rabi	0.485	0.095	30.302
Production: Summer	0.429	(-) 0.102	8.731

Increased Production during Rabi Season

Better Impact in Energised Bore Wells

Treatment Effect is Higher in Rabi Crops Followed by Kharif

Economic Benefit

Indicators	d-Effect		Treatment Effect (Rs.)
	Energised	Non-Energised	
Income: Kharif	0.525	0.105	9925.71
Income: Rabi	0.987	0.167	24774.93
Income: Summer	0.371	0.055	7863.682
Av. Annual	0.788	0.290	34611.95

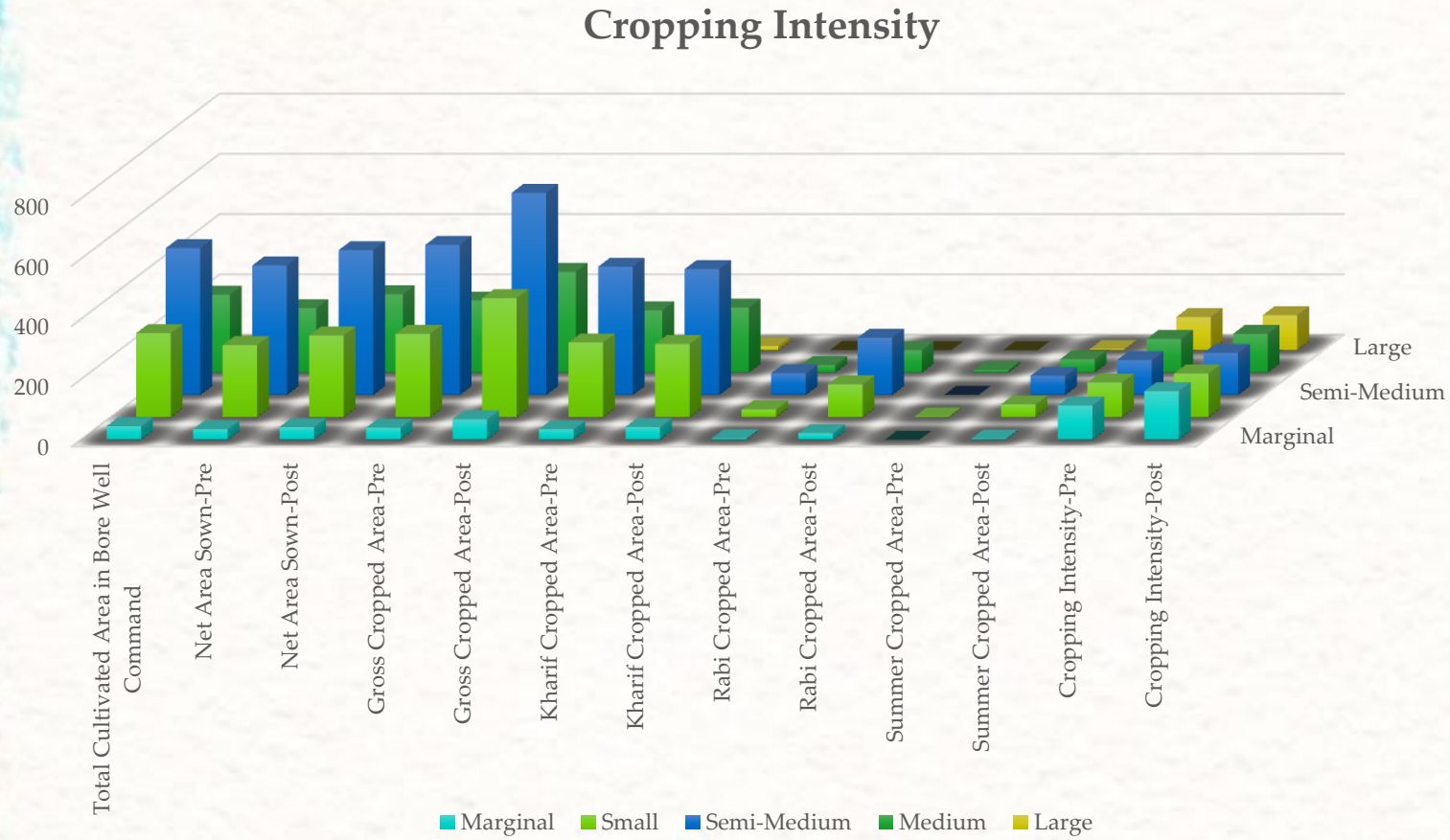
- Growth in Gross Agricultural Income in Both Intervention and Control
- Growth is comparatively high in Energised Bore Wells
- Treatment Effect is Higher in Rabi Followed by Kharif
- Net Income of Rs. 20, 767/- per annum by Farmers Having Energised Bore Wells (Estimated taking 40 % as inputs)

Cropping Intensity

Overall Growth in Cropping Intensity

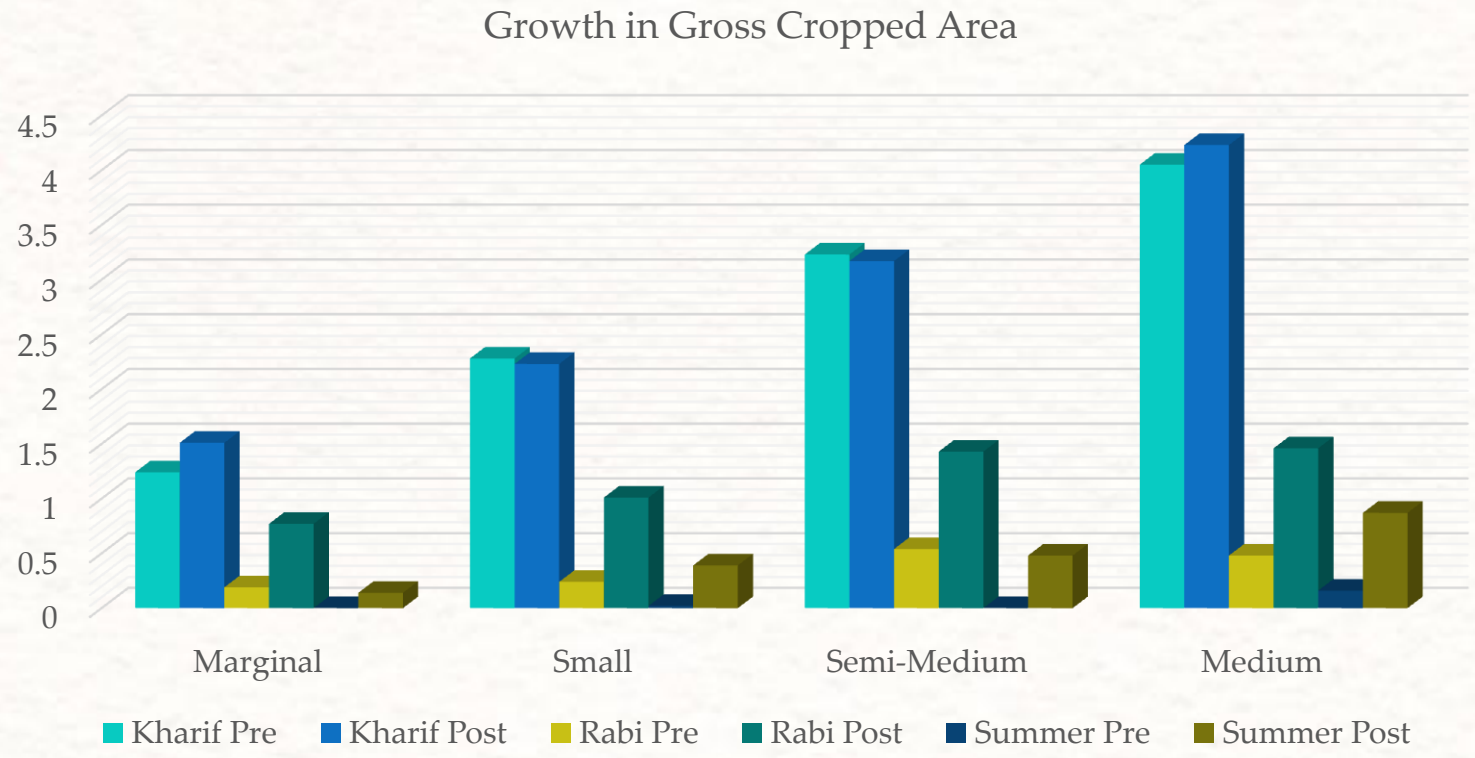
Highest Growth in Marginal Farmer

Lowest Growth in Large Farmer



Land Holding Category	Total Cultivated Area in Bore Well Command	Net Area Sown		Gross Cropped Area		Kharif Cropped Area		Rabi Cropped Area		Summer Cropped Area		Cropping Intensity	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Marginal	44.79	35	42	39.91	67.69	34.64	42.21	5.27	21.58	0.0	3.90	114.03	161.17
Small	279.68	240	272	277.46	396.10	248.73	243.54	26.18	109.71	2.55	42.85	115.61	145.63
Semi-Medium	487.67	430	481	498.03	671.41	425.93	417.90	72.10	190.19	0.0	63.32	115.82	139.59
Medium	258.89	214	260	239.23	334.35	206.73	215.97	24.50	74.24	8.0	44.14	111.79	128.60
Large	19.05	14	15	15.4	17.43	14.50	13.90	0.90	0.03	0.0	3.50	110.00	116.20
Total	1089.08	933	1070	1070.03	1486.98	930.53	933.52	128.95	395.75	10.55	157.71	114.69	138.97

Average Growth in Gross Cropped Area



	Kharif		Rabi		Summer		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Marginal	1.24	1.51	0.19	0.77	-	0.14	1.43	2.42
Small	2.28	2.23	0.24	1.01	0.02	0.39	2.55	3.63
Semi-Medium	3.23	3.17	0.54	1.43	-	0.48	3.74	5.05
Medium	4.05	4.23	0.48	1.46	0.16	0.87	4.69	6.56
Total	2.87	2.88	0.40	1.22	0.03	0.49	3.29	4.58

Note: The hyphen "-" indicates no land put to agriculture during the period of assessment

BC Ratio

Estimation for 5 Years

Positive BC Ratio in All Holding Segments

Less BC Ratio in Small Farmer Category due to Less Area put to farming during the Period

Particulars	Year I	Year II	Year III	Year IV	Year V
Marginal Farmer					
Benefit	49658.86	52132.31	54729.43	57456.41	60319.74
Cost (Amortised)	16055.61	16215.37	16397.59	16692.77	16901.50
Benefit – Cost	33603.25	35916.94	38331.84	40763.65	43418.24
Ratio (Benefit/Cost)	3.09	3.21	3.34	3.44	3.57
Small Farmer					
Benefit	35414.14	37167.74	39009.02	40942.36	42972.36
Cost (Amortised)	16055.61	16215.37	16397.59	16692.77	16901.50
Benefit – Cost	19358.53	20952.37	22611.43	24249.59	26070.87
Ratio (Benefit/Cost)	2.21	2.29	2.38	2.45	2.54
Semi-Medium Farmer					
Benefit	48294.44	50679.10	53182.99	55812.08	58572.62
Cost (Amortised)	16055.61	16215.37	16397.59	16692.77	16901.50
Benefit – Cost	32238.83	34463.73	36785.40	39119.31	41671.12
Ratio (Benefit/Cost)	3.01	3.13	3.24	3.34	3.47
Medium Farmer					
Benefit	56504.03	59275.73	62186.02	65241.82	68450.41
Cost (Amortised)	16055.61	16215.37	16397.59	16692.77	16901.50
Benefit – Cost	40448.42	43060.37	45788.43	48549.05	51548.91
Ratio (Benefit/Cost)	3.52	3.66	3.79	3.91	4.05
Large Farmer					
Benefit	125296.62	131409.09	137827.18	144566.18	151642.13
Cost (Amortised)	16055.61	16215.37	16397.59	16692.77	16901.50
Benefit – Cost	109241.01	115193.72	121429.59	127873.42	134740.63
Ratio (Benefit/Cost)	7.80	8.10	8.41	8.66	8.97
Average Holding					
Benefit	46547.85	48847.70	51262.54	53798.13	56460.49
Cost (Amortised)	16055.61	16215.37	16397.59	16692.77	16901.50
Benefit – Cost	30492.24	32632.33	34864.95	37105.36	39559.00
Ratio (Benefit/Cost)	2.90	3.01	3.13	3.22	3.34

Test of Hypothesis I

Two Tail Test

Irrigation Coverage (Rabi):

- H0: μ0 = μ1 (Null: No difference in Irrigation Coverage in Rabi)
- H1: μ0 ≠ μ1 (Alternate: Area irrigated in Rabi is not equal)

Findings:

- μ0 ≠ μ1
- There is significant difference in area irrigated during Rabi in intervention and Control (Test Outcome: 0.01; Sig. level: 0.05)
- Difference is because of Bore Well
- Difference in area irrigated during Rabi favours energised bore well

Test of Hypothesis II

Two Tail Test

Income from Agriculture in Rabi Season:

- H0: $\mu 0 = \mu 1$ (Null: No Difference in Income)
- H1: $\mu 0 \neq \mu 1$ (Alternate: Income not Equal, There is difference)

Findings:

- $\mu 0 \neq \mu 1$
- There is significant difference in Agricultural Income from Rabi in intervention and Control (Test Outcome: 0.002; Sig. level: 0.05)
- Difference is because of irrigation through Bore Well
- Difference in income favours energised bore well

Test of Hypothesis III

Two Tail Test

Average Annual Income from Agriculture :

- H0: μ0 = μ1 (Null: No Difference in Income)
- H1: μ0 ≠ μ1 (Alternate: Income not Equal, There is difference)

Findings:

- μ0 ≠ μ1
- There is significant difference in Annual Income from Agriculture in intervention and Control (Test Outcome: 0.0001; Sig. level: 0.05)
- Difference is because of irrigation through Bore Well
- Difference in income favours energised bore well

Recommendations / Way Forward

- Making Convergence a part of the Guidelines
- Re-examining the Technical Design of the Bore Well
- Strategy for Greater Inclusion
- Project Management Cell to support (State/District)
- Planning for recovery of outstanding electricity payments
- Minimising process time
- Devising Repair and Maintenance strategy, Localised Solution
- Revival of Permanently Defunct Bore Wells treating beneficiary at par with ST&SC BPL
- Facilitating market Linkage with the support of Agriculture Marketing Board
- Adopting Artificial Ground Water Recharging Method/s and Experimenting with Solar Pumps.

Project Management (M & E) Frame

Key Monitoring Indicators	Monitoring Unit	Monitoring Periodicity	Responsible Agency	Review and Decision Making (Policy Aspects)
Geographical Coverage				
Coverage of Underdeveloped Areas (like KBK)	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC (DPMU)	Quarterly Review by TAC
Area with poor agriculture / irrigation	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC (DPMU)	Quarterly Review by TAC
Area with high ST / SC Concentration	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC (DPMU)	Quarterly Review by TAC
Beneficiary Typology				
Small & Marginal Farmers	State	Quarterly	State Project Unit (M&E)	
	District	Monthly	OLIC (DPMU) / DDA / DDH	Quarterly Review by TAC
Women Farmers (eligibility based)	State	Quarterly	State Project Unit (M&E)	
	District	Monthly	OLIC / DDA / DDH	Quarterly Review by TAC
ST/SC BPL farmers	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC / DDA / DDH / ITDA	Quarterly Review by TAC
Target Vs Achievement				
No. of bore wells installed Vs Planned	State	Monthly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Weekly	OLIC (DPMU)	Quarterly Review by TAC
No. of bore wells installed Vs Energised	State	Monthly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Weekly	OLIC (DPMU)	Quarterly Review by TAC
Collection of Beneficiary Share (timely)	State	Quarterly	State Project Unit (M&E)	
	District	Monthly	OLIC (DPMU)	Quarterly Review by TAC
Timely completion of work (as per time frame)	State	Monthly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Weekly	OLIC (DPMU)	Quarterly Review by TAC
Physical / Financial Target Vs Achievements	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC (DPMU)	Quarterly Review by TAC

Project Management (M & E) Frame

Key Monitoring Indicators	Monitoring Unit	Monitoring Periodicity	Responsible Agency	Review and Decision Making (Policy Aspects)
Implementation Process				
No. of Feasibility Tests (adhering to norms)	State	-		
	District	Weekly	OLIC (DPMU)	Quarterly Review by TAC
Set-up period: VES to bore well installation	State			
	District	Monthly	OLIC (DPMU)	Quarterly Review by TAC
Time from installation to energization	State	-		
	District	Weekly	OLIC (DPMU)	Quarterly Review by TAC
Power Supply				
Scoping Study (as per phasing plan)	State	-		
	District	Monthly	OLIC / DISTCOM	Quarterly Review by TAC
Power supply quality	State	Half Yearly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC / DISTCOM	Quarterly Review by TAC
Energy consumption billing and payment	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Quarterly	OLIC / DISTCOM	Quarterly Review by TAC
Resolving Power Supply Issues	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC / DISTCOM	Quarterly Review by TAC
Maintenance System & Services				
Information System on Defunct bore wells	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC / DISTCOM	Quarterly Review by TAC
Maintenance support (no. of Bore Wells)	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC / DISTCOM	Quarterly Review by TAC
No. of bore wells activated	State	Quarterly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Monthly	OLIC / DISTCOM	Quarterly Review by TAC
No. of beneficiaries provided insurance benefit	State	Half Yearly	State Project Unit (M&E)	Half Yearly Review by SMC
	District	Quarterly	OLIC	Quarterly Review by TAC

Project Management (M & E) Frame

Key Monitoring Indicators	Monitoring Unit	Monitoring Periodicity	Responsible Agency	Review and Decision Making (Policy Aspects)
Impact Indicators:				
Growth in Irrigation Potential	State	Quarterly	DoWR	External Agency for Impact study
	District	Monthly	OLIC (DPMU)	
Growth in Net Irrigated Area (beneficiary)	State	Crop Season	DoWR	External Agency for Impact study
	District	Crop Season	OLIC (DPMU)	
Growth in Gross Irrigated Area (beneficiary)	State	Crop Season	DoWR	External Agency for Impact study
	District	Crop Season	OLIC (DPMU)	
Growth in Net Sown Area (beneficiary)	State	Crop Season	DOA/DOH	External Agency for Impact study
	District	Crop Season	DDA/DDH	
Growth in Gross Cropped Area (beneficiary)	State	Crop Season	DOA/DOH	External Agency for Impact study
	District	Crop Season	DDA/DDH	
Growth in Cropping Intensity (beneficiary)	State	Crop Season	DOA/DOH	External Agency for Impact study
	District	Crop Season	DDA/DDH	
Growth in Yield Rate (beneficiary)	State	Crop Season	DOA/DOH	External Agency for Impact study
	District	Crop Season	DDA/DDH	
Growth in Agricultural Income (beneficiary)	State	Crop Season	DOA/DOH	External Agency for Impact study
	District	Crop Season	DDA/DDH	
Growth in Social Spending (beneficiary)	State	Annual	External Agency	External Agency for Impact study
	District	Annual	External Agency	
Growth in Farm Mechanisation	State	Annual	DOA/DOH	External Agency for Impact study
	District	Half Yearly	DDA/DDH	
Growth in Climate Smart/Adaptive Agriculture	State	Crop Season	DOA/DOH	External Agency for Impact study
	District	Crop Season	DDA/DDH	

Incorporation of Suggestions Given in the Inception Workshop

All Suggestions made in the Inception Workshop (31.10.2014) are incorporated in the Study Frame

Sl. No.	Suggestions	Action Taken
1	Bargarh as Sample District in-stead of Koraput	Bargarh Included in the Sample
2	Document Practices that are Influenced by Deep Bore Well	Made a part of the Evaluation Frame
3	Secondary Data on Ground Water Level to be analysed	Secondary Data on Ground Water Level is analysed as per the Central Ground Water Board
4	Examining Emerging Market Opportunities due to expected growth in Agricultural Production	This aspect is explored during the study
5	Understanding Beneficiary Selection Criteria	Covered in the study
6	Farmer's attitude towards payment of Electricity Bill	Mapping done for beneficiaries having energised bore wells
7	Supply of standardised Equipment to farmers	Covered in the study with brand specification of the supplied equipment
8	Understanding water sharing mechanism	Water sharing mechanism is covered in the study
9	Supervision Mechanism by Dept. during Installation	Covered in the study
10	Mapping Beneficiary Satisfaction Level	Beneficiary Satisfaction Level Mapped
11	Examining Policy Issues, If any	Policy level issues covered in each component of the scheme
12	Exploring alternative mechanism of Energisation	Attempt made to explored such possibilities

Thank You