IMPACT ASSESSMENT OF PROJECTS UNDERTAKEN BY ITC'S SOCIAL INVESTMENTS PROGRAMME IN TELANGANA (YEAR 2022-23)

SUBMITTED BY: INGRAIN TECHNOLOGIES

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Introduction

During the year 2022-23, ITC Limited implemented the following projects in Medak and Bhadradri Kothagudem districts of Telangana state under its Social Investments Programme (SIP).

- Natural Resource Management – Water Stewardship and Biodiversity
- Climate Smart Agriculture (CSA)
- On-farm Livelihood Diversification: Tree plantation - Social Forestry

Ingrain Technologies conducted the impact assessment of the above during February - March 2025. The purpose of the impact assessment is to evaluate the projects in specific and the programme as a whole, in terms of direct and indirect impacts resulting from each of the above mentioned projects and the impact on the communities.

Purview of the impact assessment study in Telangana state

Projects	District	Implementation partner (NGO)
Water Stewardship (WS)	Medak	MYRADA
Climate Smart Agriculture (CSA)	Medak	MYRADA
Social Forestry (SF)	Bhadradri Kothagudem	SSGS
Climate Smart Agriculture (WS)	Bhadradri Kothagudem	SSGS
Social Forestry (SF)	Bhadradri Kothagudem	Dhan Foundation
Water Stewardship (WS)	Bhadradri Kothagudem	Dhan Foundation
Climate Smart Agriculture (CSA)	Bhadradri Kothagudem	Dhan Foundation

The 'Projects Undertaken by ITC's Social Investments Programme in Telangana (year 2022-23)' was found to be 'inclusive' in its approach (based on the study sample size of 637). Among the overall beneficiaries of the projects of WS, CSA and SF, 38% were marginal farmers (land holding less than or up to 1 Ha.), 43% small farmers (land holding above 1 Ha. and up to 2 Ha.) and 19% medium farmers (land holding above 2 Ha. and up to 4 Ha.). Overall, 80% of the beneficiaries were men and 20% were women across all the projects covered in the study.

- The 'community-wise segmentation' of the overall beneficiaries of the three categories of the projects is given in the following table.

Projects	ST	SC	OBC	General
Water Stewardship (WS)	58%	7%	29%	6%
Climate Smart Agriculture (CSA)	80%	6%	8%	6%
Social Forestry (SF)	68%	3%	25%	4%

Approach and methodology of the study

The impact assessment focussed on measuring the impacts of the project population as compared to the baseline (pre-programme) and also compared with control population (who are not covered under the intervention and were chosen from non-intervention areas). The study analysed both

quantitative and qualitative data to provide a holistic understanding of the outcomes. Possible explanation of the variation was also included in the analysis of the data. The following were considered and included to conduct the impact assessment study

- Use of survey format / questionnaire to capture primary data from sample beneficiaries covered across multiple initiatives (paper questionnaire/CAPI)
- Focus Group Discussions (FGD)
- Interviews with key stakeholders was conducted to elicit overall information regarding the impact of the pojects/programme.
- Case studies

For impact evaluation, " before and after" and "with and without" methods were followed.

A) Selection of reference periods for the study for "before and after" method
- **Pre intervention period:** Collecting data regarding pre-intervention period through questionnaire during the survey or any baseline records if available
- **Post intervention period:** Collection of data pertaining to post intervention stage through survey

B) Selection of control sample size for the study for" with and without" method
- 20% of the project sample size was taken as control sample size and the project sample was compared with the control sample

C) Data collection and analysis
- For project samples – pre intervention and post intervention.
- Comparison of project samples with control samples.

Sampling design

"Random sampling design" was followed to select villages and farmer beneficiaries. The sampling methodology duly considered the number of respondents to make the observations statistically significant by considering "95% confidence level". The sample size of 10% of project beneficiaries is highly representative and the sample size considered for the impact assessment qualifies for a national level study.

Sample for the impact assessment study for Telangana state

Sample for field study in Telangana state

Projects	No. of Beneficiaries 2022-23	WS (10% of the project beneficiaries)	Control (20% of project sample)	Focus group discussions (FGD)	Case studies	Stake holders
Water stewardship	1,136	114	23	2	2	2
Climate Smart Agriculture	3,492	349	70	2	2	2
Social Forestry	715	72	14	1	1	1
Total	**5,343**	**535**	**107**	**5**	**5**	**5**

1.Water Stewardship

The interventions related to Water Stewardship were found to be meticulously planned based on context, characteristics and requirements of the targeted areas in Telangana state. Depleting ground water resources due to over exploitation, high soil erosion, undulating terrain and low ground water retention, rain-fed agriculture and lack of knowledge on water use efficiency among farmers were the challenges in the target geographies of the project.

Key interventions under Water Stewardship projects

S.no.	Initiatives in Water Stewardship	Structures in Medak district	Structures in Bhadradri Kothagudem district	Total	Catchment area / area covered (Ha.)
1	Farm ponds	26	173	199	106
2	Large tanks de-silting	3	15	18	557
3	Check dams desilting	-	11	11	48
4	Stone Gully Plugs	31	9	40	117
5	Loose Boulder Checks	92	886	978	1,536
6	Rock fill dams	26	32	58	278
7	Trench cum bunds	3	154	157	429
8	Open Well Recharge	10	0	10	7
9	Silt application in farms	0	15	15	466

1.1 Farm ponds

The total number of beneficiaries are 199 and the farm ponds effectively served for provision of critical irrigation for a total of 106 Ha. in Medak and Bhadradri Kothagudem districts. Farm ponds have served for last 2 irrigations in paddy, cotton crops in the rain-fed areas. Farmers could achieve significant difference in yield levels (as shown in the following table) where they could irrigate with the available water from the farm ponds.

The following table indicates the yield and income parameters for farmers in the rain-fed areas of Medak and Bhadradri Kothagudem districts.

Benefits of farm pond - paddy and cotton (average values)

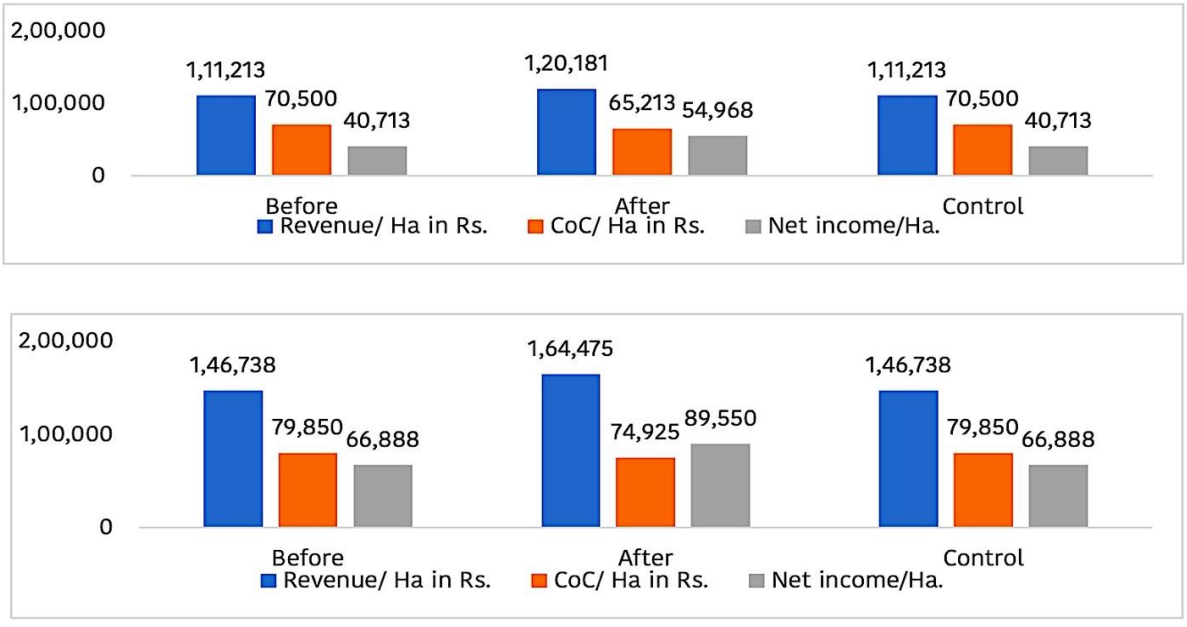
District	Crop	Beneficiaries -before vs. after					Beneficiaries vs. control			
		Yield/ Ha in Qt. (Before farm pond)	Yield/ Ha in Qt. (After farm pond)	Increase in yield/ Ha in Qt.	Increase in revenue in Rs./Ha	Increase in net income Rs./Ha	Control plots - Yield/Ha in Qt.	Difference Yield/Ha in Qt.	Difference in Revenue Rs./Ha	Difference in net income Rs./Ha
Bhadradri Kothagudem	Paddy	28.9	48.1	19.2	39,463	34,663	28.5	19.6	40,231	35,431
Medak	Paddy	32.7	48.1	15.4	31,570	26,770	32.5	15.6	32,031	27,231
Bhadradri Kothagudem	Cotton	17.5	23.8	6.3	40,313	35,313	17.5	6.3	27,813	22,813
Medak	Cotton	18.8	24.5	5.7	37,088	32,088	17.8	6.7	29,748	24,748

Fish culture in farm ponds: Approximately 20% of the beneficiaries of farm ponds have taken up fish culture by using the species like Rohu, Kalta, carps etc. The estimated average net income through fish culture from a 280 cum farm pond was Rs.7,904/- in a span of 6 months. Farmers harvested about 98 kg of fish on an average which has provided an additional income to the farmers. With an estimated average investment of Rs.3,570/- towards fish fingerlings, feed, labour etc., The average estimated ROI for fish culture is at 2.2 which farmers found as a lucrative opportunity.

The study conducted in Telangana revealed that access to irrigation resulted in increase in gross cropped area by up to 8% over baseline and improved yields because of application of tank silt in field. Due to increased availability of water, around 20% of programme farmers also engaged in fish cultivation, resulting in additional income by 15% (income from paddy annually: Rs. 25,000 + additional 15% income from fish)

1.2 Tanks and check dams desilting

- 18 large tanks (3 in Medak + 15 in Bhadradri Kothagudem district) were desilted and a total catchment area of 557 Ha. was catered. A total of 11 check dams in Bhadradri Kothagudem were desilted and a catchment area of 48 Ha. was catered. The total beneficiaries in the catchment area of desilted tanks are 299 (51 in Medak+ 248 in Bhadradri Kothagudem district).
- Tank silt application was effectively organised in 466 Ha. of farm fields in Bhadradri Kothagudem district. Bunds of the tanks were strengthened with the silt in Medak district as silt taken out from 3 tanks of Medak district was found to be unsuitable (because of alkalinity of silt) for farm fields application.
- Post application of tank silt, the one-time impact observed was an average increase in yield by 8.1% in paddy and 12.3% in cotton. The average estimated saving in cost of cultivation (CoC) / Ha. in paddy crop was 8.1% because of reduction in application of chemical fertilisers (Rs.5,287/- per Ha -after reducing quantities of urea, DAP and complex fertilisers to the tune of 40%). These observations are pertaining to tank silt application.
- The estimated average saving in CoC/ Ha. in cotton crop was 6.5% because of reduction in application of chemical fertilisers (Rs.4,925/- per Ha. - after reducing quantities of urea, DAP and complex fertilisers to the tune of 35% to 40%).



Tank silt application–paddy(top) and cotton(bottom) fields -revenue, CoC and net income (Rs.)

Influence of tank silt application on productivity of crops

District	Crop	Beneficiaries -before vs. after				Yield/Ha in Qt. in control plots
		Yield/ Ha in Qt. (Before)	Yield/ Ha in Qt. (After)	Increase in yield/Ha. in - Qt.	% improvement in yield/Ha in Qt.	
Bhadradri Kothagudem	Paddy	54.3	58.7	4.4	8.1%	54.3
Bhadradri Kothagudem	Cotton	22.7	25.5	2.8	12.3%	22.8

Influence of improved soil moisture content (because of silt application) on productivity of crops

District	Crop	Beneficiaries - before vs. after					Yield/Ha in Qt. in control plots
		Yield/ Ha in Qt. (Before)	Yield/ Ha in Qt. (After)	Increase in yield/ Ha in Qt.	% improvement in yield/Ha	Increase in net income Rs./ Ha	
Bhadradri Kothagudem	Paddy	54	61	7	12.9%	14,350	54
Bhadradri Kothagudem	Cotton	22.8	27.5	4.7	20.6%	30,673	22.8

The yield improvement captured for the intervention of tanks and check dam desilting are based on the attribution specifically made by farmers, either to tank silt or soil moisture improvement and respondent farmers did not mention the compounding effect of both as it was not perceived by them.

1.3 Soil and water conservation structures

Details soil and water conservation structures

Type of Structure	No. of units	No. of beneficiaries	Catchment area/area covered in Ha.
Open well recharge	10	10	7
LBS (Loose boulder structure)	978	377	1,536
RFD (Rock fill dam)	58	48	278
TCB (Trench cum bund)	157	141	429
SGP (Stone gully plug)	40	36	117
Gabian Structures	18	18	163
Total	**1,261**	**630**	**2,530**

- SGP and LBS were instrumental in reduced soil erosion and improved farm production in 1,653 Ha. covering 413 farmers.
- Rock-fill Dam and Gabion structures were found to instrumental in prevention of gully formation reduced soil erosion in 441 Ha. covering 66 farmers.

- TCBs were found to be instrumental in capturing rainwater, reducing runoff and thus improving soil moisture content in 429 Ha. covering 141 farmer beneficiaries. TCBs helped in improving soil productivity as well because of the enhanced soil water content and extended period of soil water availability.
- In total, 2,530 Ha. (526 Ha.in Medak +2004 Ha. in Bhadradri Kothagudem) of area was covered in 2022-23 covering a total of 630 (162 in Medak + 468 in Bhadradri Kothagudem) beneficiaries through soil and water harvesting structures and it was confirmed from farmers that the area of 2,530 Ha. was protected from soil erosion.
- About 280 farmers could take up vegetable/green leafy vegetables cultivation to the tune of 0.2 Ha. per farmer in summer months. The intervention of vegetables/ green leafy vegetables cultivation during summer resulted in a decent earning ranging from Rs.24,000 to Rs.28,000 as additional farm income.

Contribution of Water Stewardship interventions to crops and farmer economics

District	Crop	Beneficiaries - before vs. after					Yield/Ha in Qt. control plots
		Yield/ Ha in Qt. (Before)	Yield/ Ha in Qt. (After)	Increase in yield/ Ha in Qt.	% improvement in yield/Ha	Increase in net income Rs./Ha	
Bhadradri Kothagudem	Paddy	54	59	5	9.3%	10,250	54
Bhadradri Kothagudem	Cotton	22.8	26.3	3.5	15.4%	22,575	22.8
Bhadradri Kothagudem	Chillies (minor crop)	47.5	51	3.5	7.4%	77,000	47.4
Medak	Paddy	52.5	56.3	3.8	7.2%	7,687	53
Medak	Cotton	23	26.3	3.3	14.3%	20,962	22.8

- The villages in the project area witnessed increase in gross cropped area and cropping intensity after the water stewardship interventions.
- The study conducted in Telangana revealed that access to irrigation resulted in increase in gross cropped area by up to 8% over baseline and improved yields because of application of tank silt in field. Due to increased availability of water, around 20% of programme farmers also engaged in fish cultivation, resulting in additional income by 15% (income from paddy annually: Rs. 25,000 + additional 15% income from fish)

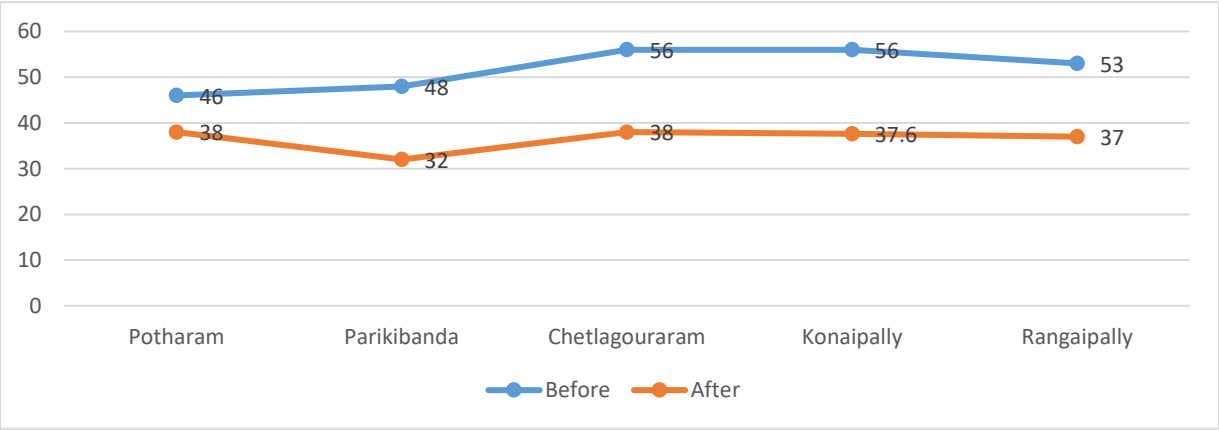
Net cropped area, gross cropped area and crop intensity in project areas

District	Details	Before Water stewardship	After Water stewardship	Difference
Medak	Net sown/cropped area in Ha. in project area villages	3,292	3,292	0
	Gross cropped area in Ha. project area villages	4,790	5,173	383
	Cropping intensity	**146%**	**157%**	**11%**
Bhadradri Kothagudem	Net sown/cropped area in Ha. in project area villages	15,566	15,566	0
	Gross cropped area in Ha. in project area villages	20,625	22,292	1,667
	Cropping intensity	**133%**	**143%**	**10%**

Increase in area under cultivation of second crop (which is totally dependent on residual soil moisture) was observed in the project area, which resulted increase in gross cropped area and cropping intensity.

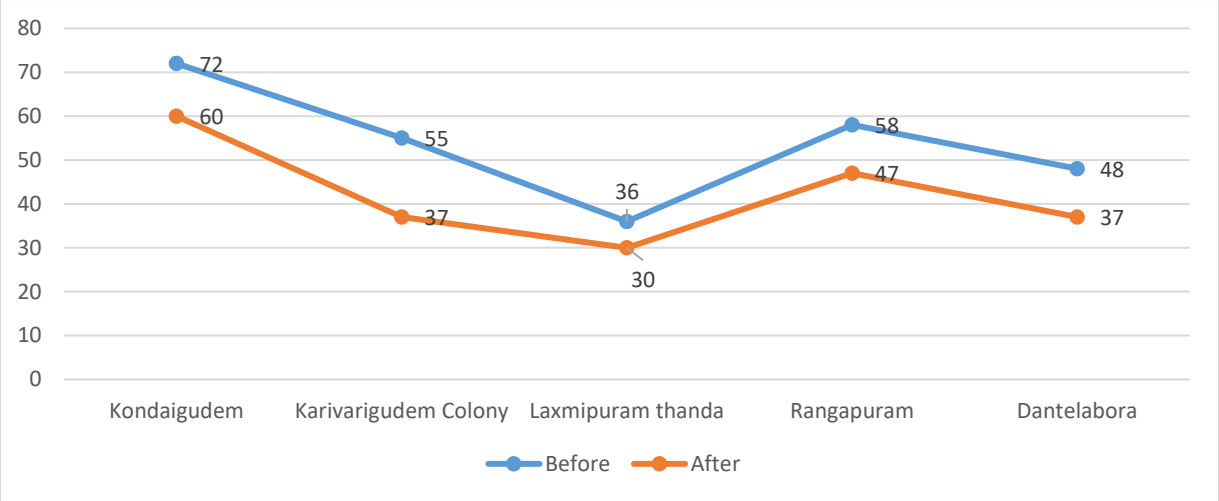
Depth of ground water in meters from surface:

It was observed that the depth of ground water from the surface level decreased in the areas where water stewardship measures were implemented by ITC. The following graphs depict the improvement in depth of ground water (Oct/Nov).



Depth of ground water in meters from surface – Medak district

(Source: Farmers and officials of Irrigation Department)



Depth of ground water in meters from surface – Bhadradri Kothagudem district

(Source: Farmers and officials of Irrigation Department)

1.4 Biodiversity

- During 2022-23, the Biodiversity Conservation Programme was adopted by ITC Ltd. in forest land near Sarapaka village in Burgampahad Mandal, Aswapuram Range, Manuguru Division, Bhadradri Kothagudem District, Telangana State. The programme successfully established Water Harvesting Structure (WHS), Mini Percolation tanks and Saucer Pit in 2022-23.
- The impact of the biodiversity programme could be observed in long term and the impact could emerge in the coming 3 to 5 years. The tree species and shrubs attained limited growth as on March 2025 and it may take some more years to attain their full-fledged growth potential. Team Ingrain visited the area of Biodiversity Conservation Programme in 2024-25 and found that the structures established in 2022-23 are functional and effective. Water was observed in significant volume even in the month of March (summer) in significant number of water-harvesting structures.

2. Climate Smart Agriculture

Direct Seeded Rice (DSR):

In the year 2022-23, 'Direct Seeded Rice' was promoted by ITC Limited in Medak and Bhadradri Kothagudem districts. In Medak district DSR was implemented in 345 Ha. covering 183 beneficiary farmers and in Bhadradri Kothagudem district it was implemented in 2,811 Ha. covering 1,004 beneficiaries. 100% of project beneficiaries were satisfied with the benefits of 'Direct Seeded Rice'.

Key benefits and outlook of DSR

1. In Telangana, study revealed that Direct Seeding of Rice (DSR) practice resulted in 21% reduction in cost of cultivation, 36% higher net income and 15% savings in water for programme farmers compared to control. 84% of programme farmers continued DSR in the subsequent years and 70% increased the area under DSR on their own.

2. The DSR farmers could witness an average estimated water saving of 3,000 CuM Ha, which was 15% saving compared to conventional method of paddy cultivation (approximately 20,000 CuM of water per Ha in conventional method vs.17,000 CuM in DSR method). It was estimated that In the year 2022-23, approximately 14.4 lakh CuM water was saved through DSR practice from 3,156 Ha.
3. About 54% of the DSR farmers reported increase in yield in DSR method at the average of 1.6 Qt/Ha in Medak district and 74% of DSR farmers reported increase in yield in DSR method at the average of 2.5 Qt/Ha in Bhadradri Kothagudem district, compared to control**,** while remaining DSR farmers witnessed no change in yield levels but none of the DSR farmers reported reduction in yield.
4. DSR was very effective from 'climate resilience' perspective and also in reducing cost of cultivation for farmers as they save in the cost of seed, seed sowing and irrigation application (to some extent).

• Agri Business Centers (**ABCs)**- The projects implemented in 2022-23 also established Agri Business Centers (ABCs) which are grassroot institutions to support Climate Smart Agriculture (CSA) based interventions and also to facilitate custom hiring of farm equipment to farmers. In 2022-23 a total of 35 drum seeders, 12 seed drillers and 20 cono weeders were facilitated to ABCs from ITC Ltd. The members of ABC expressed that they are satisfied with the benefits through ABCs (100%).
• **Linkages with Government schemes** - About 52 farmers were linked to PM Kisan scheme in Medak district and the beneficiary farmers expressed happiness and gratitude for this service in the year 2022-23. The beneficiary farmers received Rs.6,000/- each in this regard.
• **Farmer Field Schools(FFS)** - About 5 FFS (covering 25 beneficiaries) were conducted in Medak district and 29 FFS (covering 750 farmers) were conducted in Bhadradri Kothagudem district. FFS served as effective extension centers for imparting knowledge to farmers about Climate Smart Agriculture and other agronomic and sustainable crop cultivation methods.
• **Soil Health cards** - A total of 296 (87 in Medak district and 209 in Bhadradri Kothagudem district) soil health cards were organised through Government's soil testing labs for zero cost to the farmers. Majority of the farmers (82%) could save approximately 125 Kg. of DAP/complex fertilisers and 75 kg of urea per Ha. by following the recommendation about usage of chemical fertilisers and could save an average of Rs.2,412/Ha per season with reference to cost of the chemical fertilisers.

3. Social forestry:

3.1 Social forestry with intercrop:

About 773 Ha. was covered under social forestry in 2022-23 covering 715 beneficiary farmers. ITC Limited introduced a novel "social forestry with intercrop' method in Eucalyptus plantation by way of modifying crop geometry. In Telangana, small farmer friendly agro-forestry model plantations (both trees and crops cultivated together) led to up to 70% higher income for programme farmers (Rs. 68,500 per Ha. per annum) over control (Rs. 40,200 per Ha. per annum) who only grew trees. All the respondent farmers were very satisfied with their incomes from the alternative source of livelihood, 'social forestry with intercrop'. They also informed that they got into surplus status of money with the remunerative incomes from social forestry and intercrop.

The beneficiary farmers of social forestry informed that they could spend the surplus money obtained for purchase of farm bases assets or personal assets or a combination of both. The indicated average

spent at aggregate level (based on number of beneficiaries) on personal assets was 38%, on farm-based assets was 34% and on combination of both was about 28%.

Predominant part of the social forestry beneficiaries belongs to ST, SC communities. The beneficiary farmers have health care/health insurance schemes from Government and the education of their children is being taken care through Government support. Hence the beneficiary farmers did not spend their incomes from social forestry on health and education.

The following table indicates the avenues of spending for the farmers' incomes (percentage based on number of farmer beneficiaries**)** which were earned through social forestry with intercrop.

Details of spending farmers' income from social forestry and intercrop

S.no.	Avenues of income spending for farmers	Percentage of farmers
1	**Farming based assets**	**34**
A	Fencing the farms	12
B	Borewell	16
C	Tractor	6
2	**Personal assets/needs**	**38**
A	Gold/ jewellery	2
B	House extension	8
C	House repairs	10
D	Motor cycle	10
E	Cattle	6
F	Marriage of daughter	2
3	**Combination of farming based and personal assets**	**28**
A	Fencing the farms & Gold and jewellery	6
B	Borewell & Gold jewellery	4
C	Tractor & Gold jewellery	2
D	Fencing the farms & house repairs	8
E	Fencing the farms & motor cycle	6
F	Borewell & cattle	2
	Total	**100**

In Bhadradri Kothagudem, Cotton was the predominant intercrop opted by farmers of social forestry followed by green gram and cowpea. For the farmers who cultivated cotton as inter crop, ITC Ltd. also facilitated the "Better Cotton Initiative (BCI)" for imparting agronomic knowledge in cotton cultivation and even 'BCI certification' was organised.

BCI certification in cotton - About 1,104 farmer beneficiaries were given training in Good agricultural practices and sustainability measures in cotton cultivation. The cotton farmers were sensitised regarding environmental hazards of excess usage of agro-chemicals in cotton, water management in cotton for water conservation. Periodical inputs regarding agricultural extension were facilitated and even BCI certification was facilitated. Farmers were trained in integrated pest management (IPM) and they were facilitated with pheromone traps and sticky traps for pest monitoring so that the application of pesticides could be planned only when warranted.

The respondent farmers (78%) reported a decrease in average number of sprays of pesticide application in cotton from 10 to 7 per crop season. The corresponding average cost reduction pertaining to reduction in pesticide sprays was to the tune of Rs. Rs.7,500/- per Ha., which resulted in 12% reduction in cost of cultivation (Cost of cultivation (CoC) – Rs. 63,750/Ha. before BCI vs. Rs.56,250/Ha. after BCI).

It was learnt that BCI was discontinued in subsequent years in the project area after 2022-23. But it was observed that the beneficiary farmers could vividly recollect their learnings pertaining to Integrated Pest Management (IPM) practices like pest monitoring and need based spray of pesticides in cotton even in 2025.

3.2 Bund plantation:

- ITC Limited promoted bund plantations with Eucalyptus trees. Farmers planted 200 saplings of Eucalyptus with ITC's support to take up bund plantation. Farmers could get an average additional income of Rs.4,175 by opting for 200 plants in Bund plantation method. It was well appreciated by all the farmer beneficiaries.
- The estimated average income for the farmers who have taken up bund plantation (planted) in 2022-23 is Rs.10,325/- (based on prevailing prices)

Conclusion:

Approach, processes and outlook:

- The farmers (beneficiaries and non-beneficiaries) and stakeholders informed that *'Projects Undertaken By ITC's Social Investments Programme In Telangana (year 2022-23)'* were implemented with adherence to the principles of fairness, equity and transparency. No unintended side effects were observed because of 'Projects undertaken by ITC's Social Investments Programme in Telangana (year 2022-23)'.

Outcomes and benefits from the projects (2022-23):

The following points indicate the nature and range of benefits witnessed from the Projects implemented in 2022-23.

Improvement	Reduction
• Soil moisture content, soil fertility, crop productivity, net returns to farmer, water use efficiency -WS	• Soil erosion and runoff through WS • Cost of cultivation, volume of irrigated water - DSR
Elimination	**Creation**
• Risk from short term dry spells & inundation, high velocity water & runoff, crop loss etc.- WS	• Additional capacity for water storage, provision for irrigation in critical sages of crop growth, structures for soil and water conservation - WS • Additional avenue of incomes for farmers -SF

Collaborations and stakeholders:

ITC Limited actively worked with various stakeholders in the implementation of Projects under Social Investments Programme (SIP) in Telangana (year 2022-23). Non-profit organisations, MYRADA, Dhan Foundation and Society for Sampurna Grama Swaraj (SSGS) were the implementation partners of the above-mentioned projects. Collaborations were actively pursued with Government Departments, Agricultural Research and Development Institutes, Institutions dealing with agricultural extension and farmers groups for effective implementation of the projects. The model of working with stakeholders was proven to be effective for achieving results because of harnessing the synergy.

Purview of coverage by projects in 2022-23:

In the year 2022-23, 'Projects Undertaken by ITC's Social Investments Programme in Telangana' was conducted in total 56 villages in 2 districts covering 4,628 direct beneficiaries. The estimated indirect beneficiaries who got the awareness regarding the interventions and their benefits was about 18,512. For each direct beneficiary, the estimated indirect beneficiaries pertaining to awareness regarding the interventions are 4 in number. Among the themes, Social Forestry has a direct bearing on improvement of farmers' incomes at significant level. The water stewardship interventions effectively catered to 3,241 Ha, climate smart agriculture catered to 3,156 Ha and social forestry catered to 2,231 Ha.

Other notable points regarding the projects implemented in 2022-23:

- The projects have the inherent strengths like proven technical merits of the interventions selected for Water Stewardship, CSA and Social Forestry, relevance and timeliness of the selected interventions regarding soil and water conservation and simultaneous focus on conservation of natural resources and improving farmer economics. However, the challenges like Minimum Support Price (MSP) driven pricing system in paddy and availability of free power for irrigation water withdrawal existed in the context of the projects in 2022-23.

- The programme effectively covered the three themes of WS, CSA and SF in 2022-23 with the involvement of stakeholders. The project could focus on conservation and improvement of natural resources and improving farmers' incomes simultaneously. The design and operational models of the projects in Telangana in 2022-23 were found to be result oriented, inclusive and holistic.

- Soil and water conservation structures (LBS, RFD, TCB, SGP etc.) and social forestry with intercrop were found to be highly sought after interventions by the farmers from the projects implemented in 2022-23.

- The local Water User Groups (WUGs) were empowered and supported to take care of the structures pertaining to soil and water conservation (tanks, check dams, LBS, TCB etc.) for sustainability of the project initiatives.

100% of the respondent farmers appreciated the adequacy, timeliness of the services and commitment of the field staff involved in the implementation of the projects in 2022-23 and did not mention any discrepancy during the project implementation.

The following outcomes were observed in the in the geographic areas where projects were implemented in 2022-23:

- Reduction in soil erosion
- Increase in soil moisture content and soil fertility
- Rise in ground water levels
- Soil and water conservation structures helped in mitigation of the effect of runoff in the event of heavy rainfall, proved to be instrumental in minimizing crop loss
- Increase in gross cropped area under agriculture
- Adoption of Direct Seeded Rice(DSR) by farmers and consequent water saving and improvement of farmers' incomes
- Training farmers though Farmer Field Schools (FFS) regarding DSR
- Development of biodiversity
- Enhancing productivity of crops
- Enhancing farmers' incomes

Project interventions and Matrix of Relevance, Effectiveness and Efficiency

S.no.	Themes/interventions	Relevance	Effectiveness	Efficiency	Scope for scale up in future
A	**WATER STEWARDSHIP**				
1	Check dam desilting	Highly relevant	Effective	Efficient	Yes
2	Large tanks desilting	Highly relevant	Effective	Efficient	Yes
3	Farm pond	Highly relevant	Effective	Efficient	Yes
4	Loose boulder structure (LBS)	Highly relevant	Very effective	Efficient	Yes
5	Rock Fill Dam (RFD)	Highly relevant	Effective	Efficient	Yes
6	Trench Cum Bund (TCB)	Highly relevant	Very effective	Efficient	Yes
7	Stone Gully Plug (SGP)	Highly relevant	Effective	Efficient	Yes
8	Gabian Structures	Highly relevant	Effective	Efficient	Yes
9	Biodiversity coverage	Relevant	Effective in long term	Efficient	Yes
B	**CLIMATE SMART AGRICULTURE**				
1	Direct Seeding of Rice (DSR)	Highly relevant	Effective	Efficient	Yes
2	Farmer Field School (FFS)	Relevant	Effective	Efficient	Yes
C	**SOCIAL FORESTRY**				
1	Social Forestry & intercrop	Relevant	very effective	Very efficient	Yes
2	Bund Plantation	Relevant	Effective	Efficient	Yes
3	Better Cotton Initiative & Certification	Relevant	Effective	Efficient	No
D	**Agri Business Centres (ABCs)**	Relevant	Effective	Efficient	Yes
E	**Linkages with Schemes**	Relevant	Effective	Efficient	Yes

Interventions liked by the farmers

S.no.	Themes/interventions	High	Medium	Low
A	**WATER STEWARDSHIP**			
1	Check dam desilting		■	
2	Large tanks desilting	■		
3	Farm pond	■		
4	Open well recharge			■
5	Loose boulder structure (LBS)	■		
6	Rock Fill Dam (RFD)	■		
7	Trench cum bund (TCB)	■		
8	Stone Gully Plug (SGP)	■		
9	Gabian Structures	■		
10	Biodiversity coverage	Organised in reserve forest area		
B	**CLIMATE SMART AGRICULTURE**			
1	Direct Seeding of Rice (DSR)		■	
2	Farmer Field School (FFS)		■	
C	**SOCIAL FORESTRY**			
1	Social Forestry & intercrop	■		
2	Bund plantation		■	
3	Better Cotton Initiative & Certification			■
D	**Agri Business Centres (ABCs)**		■	
E	**Linkages with Schemes**		■	

Considering the above achievements and other inferences of the impact assessment study, it can be concluded that 'Projects Undertaken by ITC's Social Investments Programme in Telangana (year 2022-23)' was highly relevant, effective and efficiently implemented.

Recommendations

Water Stewardship:

1. Clarity and pre-caution should be facilitated to farm pond owners and also farmers who are utilizing farm pond, regarding the safety of human beings and cattle when they increase the depth of the farm ponds.
2. A rural entrepreneurship-based model may be introduced in the villages to facilitate supply of fish fingerlings to farmers with farm ponds.

3. Open well recharge structures may be discontinued as the response from beneficiary farmers was not found to be encouraging. The beneficiaries in Medak district informed that they did not witness significant utility of 'open well recharge structures' because of the climatic (no flood) and crop cultivation (no scope for rainwater percolation) contexts.

Direct Seeded Rice:

1. To enhance the adoption of DSR by farmers, mechanised farm operations need to be enhanced, like using drum seeders, seed drills etc.
2. To use drum seeders for DSR, the farm field should be even without undulations. Facilitation of land levelling may be looked into as an option that paves the way for large scale adoption of DSR. Large scale land levelling may be considered in future to help farmers adopt DSR in technical way. Significant number of farm fields in Bhadradri Kothagudem have slight to significant undulated terrain.