

## EMPIRICAL EVIDENCE ON THE MACRO IMPACT OF WATERSHED DEVELOPMENT PROGRAMS

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### **Abstract**

NGOs play an important role in bringing sustainable development to the society because they manage various programs and activities to achieve various goals. NGOs are very active in interacting with the companies and bringing funds for the development of the society the lives of marginal communities have radically changed as a result of the introduction of watershed programs in the drought-prone areas. The broad objective of the paper is to discuss the macro impact created by watershed development programs taken up in the study areas. Towards the end of the said objective, 365 sample farmers are selected from twelve villages of four mandals namely Parigi, Doma, Tandur, and Kulkacherla mandals of Ranga Reddy district, Telangana state. 365 sample beneficiaries' watershed development programs are selected by using the method of stratified random sampling. The criteria of stratification are the size of the farmer, social status and place. The results of the study reveal that reduced runoff, improvement in irrigation facilities, improved water use efficiency through micro irrigation systems are the most and significant macro impacts of watershed development programs in the descending order of endorsement and the least significant impact is improvement in social capital.

### **Keywords**

NGOs, Farmers, Social Capital, Micro Irrigation Systems, Improvement.

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## Introduction

The policymakers in India and all over the World are showing an increasing preference for NGOs to implement various social welfare programs and people-centered development projects. NGOs play an important role in bringing sustainable development to the society because they manage various programs and activities to achieve various goals. NGOs are very active in interacting with companies and bringing funds for the development of society. The lives of marginal communities have radically changed as a result of the introduction of watershed programs in drought-prone areas. The implementation and effective management of watershed development projects are recognized as a strategy for rural development throughout the developing world. Several government and non-government agencies have launched watershed development projects to tackle the challenges of soil conservation, improving land productivity, and economic upliftment of the rural poor for efficient use of natural resources. Participatory community-driven institutions of integrated watershed management are considered vital for the sustainability of natural resources.

The broad objective of the paper is to discuss the macro impact created by watershed development programs taken up in the study areas. Towards the end of the said objective, 365 sample farmers are selected from twelve villages of four mandals namely Parigi, Doma, Tandur and Kulkacherla mandals of Ranga Reddy district, Telangana state. 365 sample beneficiaries watershed development programs are selected by using the method of stratified random sampling. The criteria of stratification are the size of the farmer, social status and place.

The required data are collected from the sample farmers directly with the help of a structured questionnaire/schedule. The data collected is processed, tabulated, and analyzed. The results are presented below.

## Results and Analysis

**Table-1 Macro impact development of degraded lands**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	204	55.9	55.9
Agree	131	35.9	91.8
Disagree	30	8.2	100.0
Total	365	100.0	

Source: Field study

Table 1 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely the development of degraded lands and found that 55.9 percent of the beneficiaries have strongly agreed that the ‘development of degraded lands’ is made possible due to the development of watershed in the study area and the same is just agreed by 35.9 percent and disagreed by 8.2 percent of the sample beneficiaries of watershed development programs.

**Table-2 Macro impact-Mitigation of drought conditions**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	218	59.7	59.7
Agree	122	33.4	93.2
Disagree	25	6.8	100.0
Total	365	100.0	

Source: Field study

Table 2 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely mitigation of drought conditions and found that 59.7 percent of the beneficiaries have strongly agreed that ‘mitigation of drought conditions’ is made possible due to the development of watershed in the study area and the same is just agreed by 33.4 percent and disagreed by 6.8 percent of the sample beneficiaries of watershed development programs.

**Table-3 Macro impact runoff**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	265	72.6	72.6
Agree	85	23.3	95.9
Disagree	15	4.1	100.0
Total	365	100.0	

Source: Field study

Table 3 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely reduced runoff and found that 72.6 percent of the beneficiaries have strongly agreed that ‘reduced runoff’ is made possible due to the development of watershed in the study area and the same is just agreed by 23.3 percent and disagreed by 4.1 percent of the sample beneficiaries of watershed development programs.

**Table-4 Macro impact reduction in soil loss**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	233	63.8	63.8
Agree	111	30.4	94.2
Disagree	21	5.8	100.0
Total	365	100.0	

Source: Field study

Table-4 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely a reduction in soil loss and found that 63.8 percent of the beneficiaries have strongly agreed that ‘reduction in soil loss’ is made possible due to the development of watershed in the study area and the same is just agreed by 30.4 percent and disagreed by 5.8 percent of the sample beneficiaries of watershed development programs.

**Table-5 Macro impact-Significant increase in greenery**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	202	55.3	55.3
Agree	132	36.2	91.5
Disagree	31	8.5	100.0
Total	365	100.0	

Source: Field study

Table 5 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely a significant increase in greenery and found that 55.3 percent of the beneficiaries have strongly agreed that a ‘significant increase in greenery’ is made possible due to the development of watershed in the study area and the same is just agreed by 36.2 percent and disagreed by 8.5 percent of the sample beneficiaries of watershed development programs.

**Table-6 Macro impact-Increased C- sequestration**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	223	61.1	61.1
Agree	116	31.8	92.9
Disagree	26	7.1	100.0
Total	365	100.0	

Source: Field study

Table 6 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely increased C-sequestration and found that 61.1 percent of the beneficiaries have strongly agreed that ‘increased C- sequestration’ is made possible due to the development of watershed in the study area and the same is just agreed by 31.8 percent and disagreed by 7.1 percent of the sample beneficiaries of watershed development programs.

**Table-7 Macro impact-Improvement in irrigation facilities**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	260	71.2	71.2
Agree	85	23.3	94.5
Disagree	20	5.5	100.0
Total	365	100.0	

Source: Field study

Table 7 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely improvement in irrigation facilities and found that 71.2 percent of the beneficiaries have strongly agreed that ‘improvement in irrigation facilities’ is made possible due to the development of watershed in the study area and the same is just agreed by 23.3 percent and disagreed by 5.5 percent of the sample beneficiaries of watershed development programs.

**Table-8 Macro impact-Increase in fisheries development**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	228	62.5	62.5
Agree	117	32.1	94.5
Disagree	20	5.5	100.0
Total	365	100.0	

Source: Field study

Table 8 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely the increase in fisheries development and found that 62.5 percent of the beneficiaries have strongly agreed that an ‘increase in fisheries development’ is made possible due to the development of watershed in the study area and the same is just agreed by 32.1 percent and disagreed by 5.5 percent of the sample beneficiaries of watershed development programs.

**Table-9 Macro impact improvement in drinking water facilities**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	199	54.5	54.5
Agree	136	37.3	91.8
Disagree	30	8.2	100.0
Total	365	100.0	

Source: Field study

Table 9 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely improvement in drinking water facilities and found that 54.5 percent of the beneficiaries have strongly agreed that ‘improvement in drinking water facilities’ is made possible due to the development of watershed in the study area and the same is just agreed by 37.3 percent and disagreed by 8.2 percent of the sample beneficiaries of watershed development programs.

**Table-10 Macro impact-Community based organizations are strengthened**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	113	31.0	31.0
Agree	231	63.3	94.2
Disagree	21	5.8	100.0
Total	365	100.0	

Source: Field study

Table 10 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely community-based organizations are strengthened and found that 31 percent of the beneficiaries have strongly agreed that ‘community-based organizations are strengthened’ is made possible due to the development of watershed in the study area and the same is just agreed by 63.3 percent and disagreed by 5.8 percent of the sample beneficiaries of watershed development programs.

**Table-11 Macro impact improvement in social capital**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	93	25.5	25.5
Agree	251	68.8	94.2
Disagree	21	5.8	100.0
Total	365	100.0	

Source: Field study

Table 11 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely improvement in social capital and found that 25.5 percent of the beneficiaries have strongly agreed that ‘improvement in social capital’ is made possible due to the development of watershed in the study area and the same is just agreed by 68.8 percent and disagreed by 5.8 percent of the sample beneficiaries of watershed development programs.

**Table-12 Macro impact-Significant rise of groundwater table**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	218	59.7	59.7
Agree	126	34.5	94.2
Disagree	21	5.8	100.0
Total	365	100.0	

Source: Field study

Table-12 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely significant rise in the ground water table and found that 59.7 percent of the beneficiaries have strongly agreed that a ‘significant rise in groundwater table’ is made possible due to the development of watershed in the study area and the same is just agreed by 34.5 percent and disagreed by 5.8 percent of the sample beneficiaries of watershed development programs.

**Table-13 Macro impact-Improved water use efficiency through micro irrigation systems**

Level of Agreement	Frequency	Percent	Cumulative Percent
Strongly agree	253	69.3	69.3
Agree	91	24.9	94.2
Disagree	21	5.8	100.0
Total	365	100.0	

Source: Field study

Table 13 shows the distribution of beneficiaries by their level of agreement on the macro impact of watershed development programs namely improved water use efficiency through micro irrigation systems and found that 69.3 percent of the beneficiaries have strongly agreed that ‘improved water use efficiency through micro irrigation systems’ is made possible due to the development of watershed in the

study area and the same is just agreed by 24.9 percent and disagreed by 5.8 percent of the sample beneficiaries of watershed development programs.

### **Conclusion**

The macro impact of watershed development programs is measured and arranged in the descending order of endorsement which include Reduced run off, Improvement in irrigation facilities, Improved water use efficiency through micro irrigation systems, Reduction in soil loss, Increase in fisheries development, Increased C- sequestration, Mitigation of drought conditions, Significant rise of groundwater table, Development of degraded lands, Significant increase in greenery, Improvement in drinking water facilities, Community-based organizations are strengthened, and Improvement in social capital.

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