



Climate Smart Agriculture towards Triple Win: Adaptation, Mitigation and Food Security

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Introduction: FAO coined the term Climate Smart Agriculture (CSA) in preparation for the 2010 Hague Conference on Food Security, Agriculture and Climate Change which is a priority for addressing the need for adequate, nutritionally balanced food for a growing and more demanding population in a situation of resource limitation, climate change and weather variability. The dissemination and uptake of climate smart technologies, tools and practices is still an ongoing and challenging process for all the stakeholders involved viz., public sectors, private sectors, research institutions, policy makers, etc. Continuous involvement of the country administration, local leaders, NGOs, and civil societies is necessary to foster local enrollment and to support CSA implementation. Policies are prepared on the basis of existing technologies and knowledge from top to middle level while vacuum at the bottom still remains unaddressed. So, to answer these questions, a research problem titled "Climate Smart Agriculture towards Triple Win: Adaptation, Mitigation, and Food Security" was undertaken with the following objectives:

1. A comprehensive assay of stakeholders involved in climate smart agriculture.
2. Determinants for the adoption of climate smart agriculture.

Methodology: The study was conducted in the districts of Bilaspur and Hamirpur of the state Himachal Pradesh as these two districts were found to be the most vulnerable ones as per the report on State Action Plan on Climate Change. Level of participation and involvement of different stakeholders will be determined by Stakeholder Analysis. The state department of agriculture was identified as the key stakeholder through review of literature and other stakeholders were identified through this key stakeholder.

Results and Discussions: Both national and state sponsored programmes functioning in the selected districts in the domain of climate change and its adaptation and mitigation are:

1. National Innovations in Climate Resilient Agriculture (NICRA)
2. National Mission on Sustainable Agriculture (NMSA)
3. Pradhan Mantri Fasal Bima Yojna (PMFBY)
4. H.P. Crop Diversification Project (JICA ODA Loan Project)

These programmes sustain the agricultural productivity through increase in the quality and availability of natural resources and increase the farmers' adaptive capacity.

Stakeholder Analysis of the Programmes

A. National Innovations in Climate Resilient Agriculture (NICRA)

Power-Interest Matrix (NICRA): Stakeholders' mapping have been done by this technique which led to know about the positions of the respective stakeholders. Fig. 1 clearly interpreted that KVK acted as a key-player as per the opinion of other stakeholders who were implementing and developing the plans, but state agriculture university tried to move to the key players' area as they needed to have high power to make the programme successful. The major finding was that the input dealers were not very active in the programme as they were having low power-low interest and had to be improved as per the opinion of other stakeholders.

Table 1: Stakeholders involved in NICRA

| Stakeholder | Specific Work |
|--|--|
| Krishi Vigyan Kendra (KVK) | Nodal agency to implement the programme |
| State Agriculture University (SAU) | Monitoring and evaluation agency |
| State Department of Agriculture (SDA) | Capacity building of the farmers |
| Input dealers | Provision of inputs to the beneficiaries |
| Village Panchayat | Convening the farmers for any meeting or camps |
| VCRMC (Village Climate Risk Management (Committee) | Management of resources at village level |
| Farmers | Beneficiaries |

B. National Mission on Sustainable Agriculture (NMSA), Pradhan Mantri Krishi Sinchai Yojana (PMKSY) and Pradhan Mantri Fasal Bima Yojana (PMFBY)

Table 2: Stakeholders involved in NMSA, PMKSY and PMFBY

| Stakeholder | Specific Work |
|--|--|
| Krishi Vigyan Kendra (KVK) | Capacity building of the farmers |
| State Agriculture University (SAU) | Monitoring and evaluation agency |
| State Department of Agriculture (SDA) | Nodal agency to implement the programmes |
| Input dealers | Provision of inputs to the beneficiaries |
| Krishak Vikas Associations (KVAs) | Execution of work plans in all schemes |
| Agriculture Insurance Companies (AICs) | Implementing agency of crop insurance scheme |
| Soil Testing Laboratories (STLs) | Identification of issues under NMSA |
| Soil Conservation Wings (SCWs) | Implementing agency of Krishi Sinchai Yojana |
| Farmers | Beneficiaries |

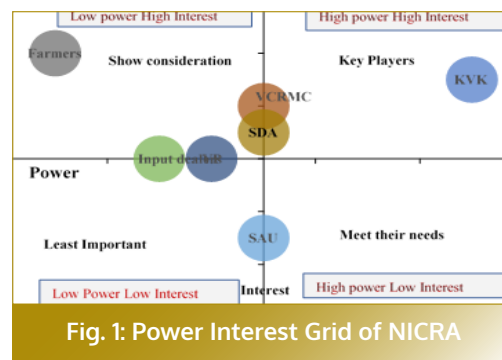


Fig. 1: Power Interest Grid of NICRA

Power-Interest Matrix (NMSA, PMKSY & PMFBY): The fig. 2, clearly interpreted that SDA&H have high power, but least interest which hindered the bottom up approach to make these schemes successful while farmers were not much involved with input dealers as they were not satisfied with the services of input dealers. So, with this view, under these schemes, input dealers should be provided with proper training regarding making successful linkages with other departments of state so, that they can easily access the farmers and other traders.

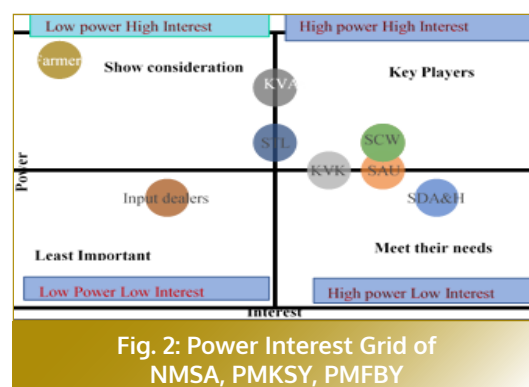


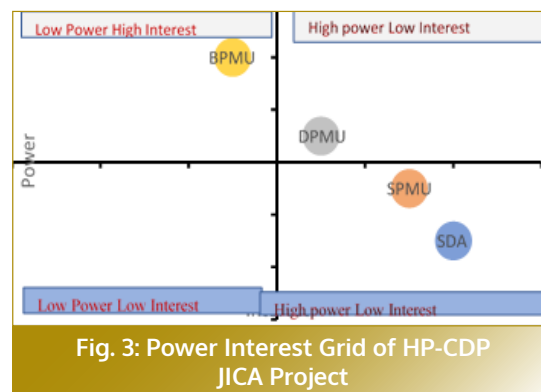
Fig. 2: Power Interest Grid of NMSA, PMKSY, PMFBY

C. Himachal Pradesh crop diversification project (HP-JICA): Table 3 depicts stakeholders who were identified under this programme, working in both the districts with their specific work.

Table 3 Stakeholders involved in HP-CDP JICA project

| Stakeholder | Specific Work |
|---|--|
| State Agriculture University (SAU) | Monitoring and evaluation agency |
| State Department of Agriculture (SDA) | Nodal agency to implement the programmes |
| State Project Management Unit (SPMU) | Development of state action plans |
| District Project Management Unit (DPMU) | Develop rapport build with SPMU and BPMU |
| Block Project Management Unit (BPMU) | Develop information network at village level |
| Input dealers | Provision of inputs to the beneficiaries |
| Farmers | Beneficiaries |

Power-Interest Matrix (HP JICA Project): This state run project with the collaboration of Japan has various stakeholders working from village level to state level who have specific position under this programme as shown in fig. 3 which revealed that SDA should move towards high power and high interest area so that farmers could get easy access to first-hand knowledge without any intermediaries and to improve bottom up planning, BPMU should have high power to run out the activities independently.



Information sharing and ICT platform in all CSA programmes

| Information and advisories | Communication channel/ICT |
|--|--|
| Availability of seeds, seedlings, pesticides, farm implements, tools etc. | - Personal Contact method by village level committees - Mobile - Opinion leaders |
| Sowing time, irrigation requirement, insect-pest management, weather forecasting messages etc. | - Mobile, m-Kisan portal, personal contact, internet, friends etc. |
| Trainings, demonstrations, Kisan Melas, exposure visits, field days etc. | - Newspaper, articles, village level extension workers etc. |

Barriers

- Small land holdings and lack of labour availability for installing water harvesting structures.
- Inaccessibility of good quality inputs, poor market facilities and lack of access to credit facilities for the farmers.
- As agriculture is secondary occupation for most of the farmers in both districts, lack of interest acts as a barrier in implementing the CSA practices in farmers' fields.
- Conflicts exist between farmers regarding the decision for taking out extension activities like demonstrations, training camps at village level, which led to social and political problems in that particular village.

Incentives

- Continious assistance from the project in terms of investment in construction, providing the resources, capacity building, demonstrations, exhibitions etc., on CSA practices on farmers' fields.
- The lower cost of initial investment to install the polyhouses and water harvesting structures under water and soil management programmes.

- Success stories and best farmer awards under various CSA programmes also act as the incentives for the farmers.

Recommendation

- Block level and village level extension functionaries should dedicate more time to the inception of the project.
- Input dealers/traders and agriculture sales centers should focus on quality and timeliness of inputs.
- Farmer to farmer dissemination of promising and improved CSA practices should be initiated.
- Strengthening of reward mechanism is required, so that non-participating farmers could be periodically allowed to visit model farms maintained by the participating farmers.

Complete report on 'Climate Smart Agriculture towards Triple Win: Adaptation, Mitigation and Food Security' is available at www.manage.gov.in

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The research report is based on the research conducted by Ms. Deepika Bhardwaj as MANAGE Intern under the MANAGE Internship Programme for Post Graduate students of Extension Education.

Correct citation: Deepika, B., Saravanan, R., and Suchiradipta, B. 2018. Climate Smart Agriculture towards Triple Win: Adaptation, Mitigation and Food Security. Research Report Brief 5, MANAGE-Centre for Agricultural Extension Innovations, Reforms, and Agripreneurship (CAEIRA), National Institute of Agricultural Extension Management, Hyderabad, India.

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