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Formulation of Group Dynamics Effectiveness Index and Steps to Mobilise Users Group for Participatory Water Management

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ABSTRACT

A tool Group Dynamics Effectiveness Index (GDEI) was formulated to measure group effectiveness of selected groups identifying different dimensions and their relative importance in it. The development of GDEI initiated with item analysis and indexing the items with respect to respective weightage delineated through scale product method. The GDEI included ten items viz. participation, decision making procedures, operation, maintenance & management functions, interpersonal trust, fund generation, social support, group atmosphere, membership feelings, group norms and empathy, which receive different weights for calculation of overall group dynamic effectiveness. Strategy for mobilization of effective user group for participatory irrigation management was developed for three distinct phases viz. group formation (0-3 months), group stabilization (4-15 months) and self-helping phase (16-36 months) in which Eight main steps and fourty five sub-steps were conceptualized.

Farmers are the first and main stakeholders in a water management programme. Being key persons they have been utilizing and managing land and water based resources for generations. They exactly know what is going on in their surroundings and determine the fate of their environment on which depend their future livelihoods; therefore they are the real decision-makers (Pramanick and Mallick, 1996). Participatory development and management of water resources can improve the fragile agricultural production system of waterlogged area. The experiences have showed that farmers' participation is essential for sustainable development (Ghosh *et al*, 2004). In this backdrop, Participatory Irrigation Management (PIM) Programme has been implemented by the government with the formation of water users group (WUG) / Water users association (WUA). The objectives are: to initiate participation of farmers in water management, irrigation scheduling, distribution and maintenance of a system at micro level; to develop a sense of economy in water use among the users; to allow the users a choice in selecting crops, cropping sequence and timing of water supply; to promote incentives to the farmers; to entrust collective and community responsibility on the farmers to collect water charges; to improve deliveries as per crop needs and; to create a healthy atmosphere between the managers and the users in the entire operation (Mishra, 1993). WUG / WUA ensures voluntary and active involvement of partners in all decisions related to objectives and activities as well as direct involvement in the execution of the activities themselves under water management programme (Samad and Vermillion, 1999). It develops a process and group dynamics in which affected populations collectively discuss and find out ways and means to tackle their own problems rather than waiting for others to do it for them.

The group dynamics plays pivotal role in the functioning of group in an efficient manner. There are certain factors, which influence on group functioning and group effectiveness. Formulation of a strategy for the mobilization of effective users group for participatory water management is of paramount importance. In this

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context, present study has been carried out with the objectives to develop Group Dynamics Effectiveness Index (GDEI) following appropriate procedure and to conceptualize the steps to mobilisation of users group for participatory water management.

METHODOLOGY

The procedure for formulation of conceptual model of Group Dynamics Effectiveness (GDE), development of GDEI, sampling plan, modalities of data collection followed by analyses and steps to mobilisation of water users group are discussed below:

Formulation of conceptual model of GDE: Based on the review of literature and objectives of the study firstly a conceptual model was developed.

Developing GDEI: GDEI has been formulated through following steps:

- An universe of items/parameters (25 for present study) was selected to include in a questionnaire to be judged by a sample of experts with respect to relevancy of each in group dynamics
- Questionnaire survey of 40 experts (associated directly or indirectly with PIM programme) was carried out to assess content validity of each item and importance with respect to group dynamics effectiveness
- Screening of items to include in GDEI was done on the basis of statistical analyses as per Likert's Summated Rating Technique of Scale Construction (1932).
- Weightage to each of the 10-12 screened items in GDEI was put following Scale-Product Methodology

Mobilisation of water users group for participatory water management: Based on the theoretical orientation and critical analyses of different relevant case studies, steps to mobilisation of users group for participatory water management have been conceptualized

RESULTS AND DISCUSSION

Conceptual model of GDE

Based on the review of literature and objectives of the study a conceptual model (Fig. 1) has been developed showing interrelationship between dependent variable, i.e. Group dynamics effectiveness of WUG / WUA and independent variables like nature and functioning of group, socio-personal, socio-economic, psychological/attitudinal and communicational variables of the group members. The "Group Dynamics Effectiveness" (GDE) has been operationally defined as the sum total of forces among the members of group based on certain sub-dimensions. WUG / WUA / *Pani Panchayat* has been considered for present study. It could be assessed with respect to it's different parameters *viz.* participation, decision making procedures, operation, maintenance & management functions, interpersonal trust, fund generation, social support, group atmosphere, membership feelings, group norms and empathy.

Formulation of GDEI

The development of GDEI initiated with selection of 25 items, which may influence group dynamics effectiveness followed by item analysis following Likert's summated ratings method and indexing the items with respect to respective weightage delineated through scale product method. For selection of items to be included in GDEI according to Likert's methodology, the respondents were divided into two groups *viz.* group of twenty respondents with higher scores referred as 'high group' and group of rest twenty respondents with lower scores referred as 'low group'. The 't' value for each selected item was calculated using following formula and items were screened by arranging in rank order according to 't' values in decreasing order.

$$t = (X_H - X_L) / (S_H^2 / n_H + S_L^2 / n_L)^{1/2}$$

Where,

X_H = the mean score on a given item for the high group

X_L = the mean score on same item for the low group

S_H^2 = the variance of the responses of high group

S_L^2 = the variance of the responses of low group

n_H = the no. of respondents of high group = 20

n_L = the no. of respondents of low group = 20

The GDEI included ten items, which were Participation, Decision making procedures, Operation, Maintenance & Management functions, Interpersonal trust, Fund generation, Social support, Group atmosphere, Membership Feelings, Group norms and Empathy. The 't' value, mean evaluatory score of each selected item and respective standard deviation value are presented in Table 1.

Thereafter, to identify cruciality of ten items of GDEI, respondents were asked to assign weightage for

each item in the range of 0 to 100, based on the importance it attached to measuring GDE in such a manner as to get a total of 100 for all the identified relevant items. The cruciality of each item referred to its importance in measuring GDE of WUA. The final framing of GDEI along with the selected items and respective weightage is given in Table 1. It is evident that the weightage of the items varied from 5 to 20 percent. Participation was perceived as most crucial item in GDEI with 20 per cent weightage followed by Decision making (15%), Operation, maintenance and management functions (12%) and rest of the items.

WUGs / WUAs, which have been successfully functioning and self-helping/group independency phase, unsuccessful and non-functional phase and somehow functioning / stabilisation phase, need to be selected to understand group dynamics, group effectiveness and to delineate significant factors, their relative importance, direct and indirect effect on GDE. The entire exercise could be accomplished with the help of above-mentioned GDEI developed as an instrument.

Strategy for Mobilization of Effective User Group for Participatory Water Management

Based on the theoretical orientation, experiences drawn from the studies of selected groups and focus group discussions with farmers and officials, various steps to mobilization of users group for PIM has been conceptualized. Strategy for mobilization of effective user group for PIM was formulated for 3 distinct phases viz. group formation (0-4 months), group stabilization (4-15 months) and self-helping phase (15-36 months).

Group formation phase (0-4 months)

To facilitate an organization among farmers is in reality a task of great challenge. It is even more so to organize a sustainable functional organisation like water users group (WUG) / water users association (WUA). In view of that a group promotor (also know as facilitator, community organizer, extension personnel, catalyst or development worker) should prepare himself and community before actually helping in WUG/WUA building. Three major steps and 18 different sub-steps have been identified under group initiation / formation stage.

A. Learning about the village / community / project area.

1. Acquiring initial information of the project area.
2. Entering the area, discussing with key persons/ influential people and introducing self.
3. Holding a public meeting for awareness creation about the programme/project.
4. Gathering more information.
5. Building people's confidence and community's trust.

The most important message for fulfilling this step is 'equipping oneself with as much local knowledge as possible on various aspects, such as political, social, cultural, traditional, religious, ecological, economical and traditional village organizations'. Support of local leaders is to be achieved first. So, discussion is mandatory with the influential people in the community. The local leaders may assist and facilitate to organize a meeting to introduce oneself and the project to all the villagers/farmers. Comments and suggestions from them should be invited in meeting. Some people, especially women, may be shy or afraid of discussing at the meeting. If one finds that women are too reluctant to participate in discussion, a separate meeting for them should be held to facilitate their confidence and convenience. A single meeting is never enough to gather sufficient and reliable information on the community; several meetings, informal as well as formal, need to be organized. Gaining the trust and confidence of farmers is a hard and time-consuming task. But, it plays a pivotal role in building users group. Generally, most farmers are from poor families and always face some troubles and problems. If one pays attention to them, listen to their complaints about hardship and problems with sympathy and try to help them whenever possible, their confidence and trust will grow.

B. Development of local understanding

1. Participatory awareness building of issues related to land and water resources
2. Conceptualization of local geographical features
3. Participatory need assessment with respect to water management for cultivation and prioritization of common needs
4. Analysis of causative problems and generating ideas of developing and managing water resources on a self-help basis
5. Highlighting advantages of working together in groups and encouraging for formation of WUG / WUA
6. Motivating the farmers by explaining that in a participatory water management, all members of group benefit from their combined skill and resources.
7. Arranging observation tour to witness success stories of other places

The purpose of this step is to make awareness among farmers of their own community issues related to land and water resources through participatory discussion. From such discussions and debates, they can be benefited by learning about their community's water resources, utilisation problems and needs; their misconceptions can also be eliminated. Farmers will notice how good or bad land and water resources are being utilized and be able to envision appropriate land and water use for areas of various condition based on their own local knowledge. The idea is to how to develop and manage their water resources on a self-help basis can evolve. Farmers are to be encouraged to tell most important needs with respect to water management for their cultivation. Although individual needs may differ, some needs may be common. If the listed common needs are numerous, one cannot deal with all at one time. So, prioritization of common needs will identify the need that requires top most priority. After getting the priority list, one has to start analyzing from the topmost need together with the farmers. It is imperative that the majority reaches a consensus on the selection of the problems that are to be solved urgently so that a commitment is made to remove their problems by them only. Hence, they have to bear in mind that the strengthening or formation of farmers' / users group can tackle their own problems by themselves as per their own interests as in a participatory water management, all members of users group benefit from their combined skill and resources. Success-stories of other places in this regard will also motivate them.

C. Developing self-reliance

After the completion of aforementioned steps, farmers can be reckoned to have been furnished with preparatory measures for formation of their WUG / WUA. The following is a process for group formation:

1. Holding formal meetings to establish group.
2. Setting specific objectives of group.
3. Determining group's size involving all water users in the area.
4. Structuring group through selection/election of office bearers of the group.
5. Establishing group norms/rules.
6. Determining functions and work plans though participatory discussion amongst group members.

This step completes the process of group formation that starts with a formal plenary meeting of the farmers/ irrigators in presence of village level government personnel. After the vision and mission of users group are well defined and understood, the group members describe in a clear way specific objectives and expectations in the context of participatory water management. There is no hard and fast rule defining the best size of a group since it varies from case to case. It is hard to say how many members should be included in a group. In practice the group size would depend on degree of participation and population of the community. Group structuring with facilitation of the group promoter elect the office bearers as desired by all members. It is also imperative for the group to lay down rules and regulations. The work plan should be prepared though participatory discussion amongst group members. What to do, when to do and who is responsible to do need be stipulated in the work plan so that group can monitor various activities, review progress and find ways and means to overcome problems and difficulties if encountered in the course of participatory water management.

Group stabilization phase (4-15 months)

Most of the cases project personnel are remained active up to the group formation (0-4 months) stage. However, to ensure the stability of the group, group promotor should become 'Enabler' in this stage. Three major steps and 15 sub-steps have been formulated for group stabilization phase.

A. Enabling WUG/WUA

1. Fulfilling legal aspects to establish the group as statutory body (Registration).
2. Developing habits of team-work and inculcate commitment among group members; expected outcomes should be.
   - People willing to go along.
   - Ready to share responsibility.
   - Plan of action emerges.
3. Inculcating a feel for the group dynamics i.e. remaining alert for the various indicators of avoidance is a must among the group members.
4. Training in all technical and management aspects inclusive of creation/rehabilitation, operation, maintenance and utilization of water resources, group's fund generation, accounting and record keeping.

5. Capacity building through awareness camps, exposure visits, participatory learning and action.

A. Empowering WUG/WUA

1. Vesting all decision making power to the WUG.
2. Giving responsibility of operation, maintenance and management of water resources to WUG in its jurisdiction.
3. Maintaining group fund for financial independency/ self sufficiency.
4. Formulation and implementation of action plan taken up by the group.
5. Encouraging monitoring and evaluation.

- Leader/office bearer of group monitor and evaluate.
- Members share assessment.
- Success satisfies and failures yield lessons.

B. Developing self-reliance

1. Establishing effective link with services for access .
2. Acquiring necessary skills and expertise for efficient operation, maintenance and management of resources.
3. Solving problems of own.
4. Being keen on next venture.
5. Playing proactive role - greater the initiative taken by member-farmer(s) better it is.

Self-helping phase (15-36 months)

Group promoting personnel gradually reduce their presence during this stage, as group of farmers can stand up on its own, without the help from outside. Two major steps and 12 sub-steps have been conceptualized for this stage.

A. Ensuring independent group / organisation

1. Developing action programme for performance enhancement of water resources/irrigation system and farming system of entire area.
2. Selection of master farmers in respect of irrigation management, technical, production, marketing and credit aspects to establish separate unit under each-master farmer's committee.
3. Skill development of selected master farmers through training in respective areas.
4. Imparting intensive technical knowledge to master farmers to carry out activities of each unit and equipping them to give training to improve knowledge, attitude and skill of other farmers.
5. Planning and execution of programmes of action plan as per schedule of different units.
6. Organising periodical meetings of group members for farmer to farmer technology transfer – farmer led extension.
7. Reducing and facilitating role of group promoters/ project personnel for the refinement, improvement and problem solving with respect to various activities through master farmers.
8. Development of new set of master farmers after one to one and half year paving the way for leadership development among the group members in due course.

B. Sustainability of group

1. Asssuring active participation of members in every activity of group.
2. Follow-up actions in post operational/post-project stage.
3. Setting appropriate mechanisms to resolve conflicts / problems within the group.
4. Establishing networking of farmers' organizations/ groups.

Most of the cases project personnel are concerned on the first two stages viz. group formation (0-4 months), group stabilization (4-15 months) and the last stage i.e. group-independency phase (15-36 months) remains largely unaddressed leading to the unsustainability of the group. While helping to build the farmers' groups their prolonged integrity and functionality should be always kept in mind. All the efforts and resources invested in forming groups will be meaningless if they do not sustain themselves for long. Therefore, it is of paramount importance to keep it functional and effective for a long time. In fact it should become a part of the tradition of the village over time, as is the case with the already existing traditional village organizations. Passive participation (for gaining subsidy or other monetary inputs or food for work or due to project pressure etc. only) will not keep it sustainable and functional for long. Soon after a project, such groups or organizations become defunct and get dismantled. In other words, only active participation for self-development

Table 1: Item analyses to develop Group Dynamics Effectiveness Index (GDEI)

Sl. No.	Items of GDEI	Mean evaluatory score (n=40)	Standard deviation (n=40)	't' value	Weigtage of item (%)
1.	Participation	4.83	0.38	7.13	20
2.	Decision making	4.26	0.72	6.64	15
3.	Operation, maintenance and management functions	4.18	0.84	6.56	12
4.	Interpersonal trust	4.15	0.71	6.22	10
5.	Fund generation	4.13	0.83	5.43	10
6.	Social support	4.03	0.83	5.24	8
7.	Group atmosphere	4.00	0.92	4.33	8
8.	Membership feeling	3.97	0.87	4.32	7
9.	Group norms	3.66	1.15	3.58	5
10.	Empathy	3.62	0.83	2.70	5

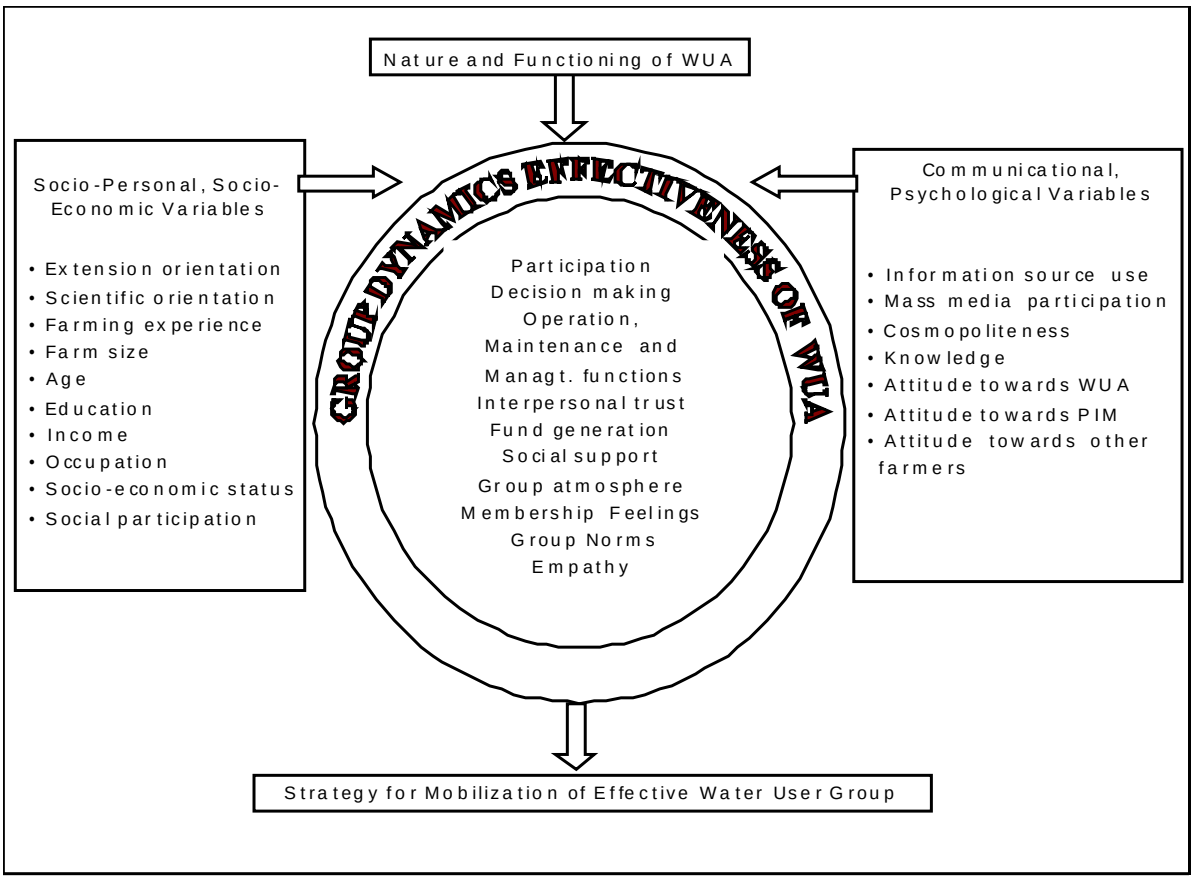

Fig.1 Conceptual model of GDE

of farmers and for their own motivation can help to create an effective and sustainable organization. There must be some higher motive for the farmers to participate in a program. *Pani Panchayats* / WUAs should act as a Farmer Field School and facilitate training on a range of topics based on the local demands.

During the discussion with officials, management committee members of WUA and farmers it was agreed by the majority that success and achievement of WUA depend on

- the extent to which nature and functioning of the programme/project address the problems and needs of the farmers in irrigation management,
- the extent to which the farmers have been organized in group with participation and empowerment culture for group action,
- the extent to which the improvements can be made in the strategies for effective group mobilization and sustainability.

CONCLUSION

Most of the irrigation systems in India, whether large or small, are reported to have serious problems relating to the management of irrigation system at grass-root level. Therefore, a solution that has been tried in various places is irrigation management transfer to water user groups. The efforts undertaken were based on the assumption that the things could be set right by the organization of irrigators / farmers at local level. There have been achievements as well as criticisms of these efforts, which are attributed to the differential functioning of the groups depending upon the circumstances at local level, management at higher level of the system and group dynamics. There are certain factors, which influence functioning and effectiveness of water user groups. GDEI developed during present study is a potential tool to measure and compare group effectiveness of different water user groups identifying different dimensions and their relative importance in it. Suggested strategy for mobilization of effective user group would be a precursor to formulate future plan for participatory irrigation management. Obtaining feedback from farmers through such tool serves a practical experience for organizing and managing groups for future group action and participation in irrigation management on a sustainable basis.

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