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Session notes of

**ICAR SHORT COURSE ON
GENDER PERSPECTIVE IN RESEARCH, EXTENSION
AND EDUCATION IN AGRICULTURAL
DEVELOPMENT
(21ST - 30TH OCTOBER 2002)**

Organised by



**Centre for Studies on Gender Concerns in Agriculture
College of Horticulture, Kerala Agricultural University,
Vellanikkara, Thrissur**

In technical collaboration with
M S Swaminathan Research Foundation, Chennai

PREFACE

In fact the necessity for building Gender Perspective in Agricultural Development is found on the simple basic need of providing human rights and social justice to all social actors in agriculture (men and women; farmers and labourers).

The ICAR sponsored Short Course on **“Gender Perspective in Research, Extension and Education in Agricultural Development”** organized by the Centre for Studies on Gender Concerns in Agriculture of Kerala Agricultural University was aimed to bring in the necessary change in the mindset of a group of scientists of SAUs and ICAR, who can in turn act as the catalysts for the intended change at the national level. It is expected that this compilation would enthuse and motivate not only the participants but also all who are involved in the developmental efforts in agriculture.

Due acknowledgment is also placed for the technical collaboration and support extended by the MS Swaminathan Research Foundation, Chennai to the organisers in this venture.

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SEEING THROUGH THE GENDER LENS

Mina Swaminathan

A look at the story of Indian agriculture is the best introduction to the theme of gender in agriculture. From our school days, we have been told and have grown up believing that India is an agricultural country, though even this is something we should question. In every Census we see that the degree of urbanisation is growing and Census 2001 may show more than 30% of India as urbanized. In 1947, 80% of the Indian population lived in the villages and depended on agriculture. Today that figure is slightly below 70%. In 50 years there has been a decline of 10%. But if we look in detail at the number of men and women engaged in agriculture, a different picture emerges. The number of men dependent on agriculture for livelihood has come down to about 60%, while the number of women in agriculture is still at the figure of 80%. Both the numbers of men and women in agriculture are declining, but the number of men in agriculture is declining much faster than that of women and this phenomenon is referred to as the "feminisation of agriculture". Men are rapidly finding other trades, professions, activities or job opportunities; women continue to remain in agriculture. Why? This is the beginning of gender analysis.

A similar phenomenon is what is known as "feminisation of poverty". If the figures for poverty are disaggregated by gender then the largest number of people in poverty are women and children, that is, more women are in poverty than men are. Feminisation of poverty is also a trend, which has been shaped by events over the last two decades and more particularly in the last decade. Putting these pictures one on top of the other, one can see three things coming together in a composite picture-women, agriculture and poverty. The challenge is to understand why it is happening, to look beyond statistics and to question, and pursue the questions till we get satisfactory answers. For example, what are the reasons for women's "backwardness"? Why do women get low wages? Because they are not educated. Why are they uneducated? Because they are ... and so on, in an analytic process.

Why women, for example, do not migrate out of agriculture is another question. One obvious explanation is because multiple roles have to be carried out by women. Women have three roles; productive roles, the homemaking roles, which are also called household maintenance or housekeeping and the child bearing, rearing and caring roles, all of which tie women down to the household. Women have to take care of the animals, the children, the elderly people, the sick

and are responsible for getting the water, the fuel and fodder much more than just the Western idea of home-making as the 3 C's - cooking, cleaning and child care. For Indian women there are many things to be done before even starting to cook! These roles reduce women's mobility and when there is a drought, the men migrate but women cannot because of these circumstances. So we get the "money order economy" as in Garhwal, where the entire agriculture is run by the women because men have all migrated to the plains, where they work in different types of jobs. The same phenomenon can be seen in other districts which are very drought-prone. In these areas, the sex ratio is very high and women are responsible for agriculture. This is the kind of deeper analysis that is required now.

Gender analysis is like looking at the world with two eyes. If you look with one eye only you may get something and with the other eye only, something else. Both pictures are incomplete. But if we look with both eyes then we get an integrated picture. If we realise that so far we have been looking at things from a purely male perspective, many things become clear. Even the institutional framework is male-oriented, such as the timings for work suiting the convenience of men but not the convenience of both men and women. Simple things like our transport, the time of work, the height of podiums, the absence or presence of toilet facilities all reflect a male perspective, and somehow the women have to fit themselves into it. In India, it is customary to "blame the victim" and this is reflected in the expectation that women must solve all the problems by themselves, as if it were somehow their fault. Girls always get told before marriage that they must "adjust", but nobody tells boys they have to adjust. If there is *eve-teasing* on campuses, we are told that girls have to learn how to protect themselves, not dress provocatively, learn karate and take up self defence, but there are no university counseling centres for boys, on how to handle their own sexual frustrations and not to attack girls. It is a one-sided approach-blame girls, educate girls, counsel girls. This is seeing with one eye.

If you open the other eye and see only from the female perspective, you will get a different viewpoint. That is the first step and it will offer a different vision. A fine example is the remarkable initiative taken by this Centre, the recently held seminar for women agricultural labourers. This is the first time any agriculture university in this country, or indeed any institution of higher learning, has called women agricultural labourers and asked them to talk about issues which they consider important. This outstanding event has been reported in detail and it is amazing to find that these women have provided us with an agenda for research, for extension and for teaching, an agenda for what students should know about the system. Here is a living example of how the curriculum of agricultural universities can come from the needs of people. This was an example of the women's perspective, of seeing with the "other" eye, and sometimes what we see may not be expected, or may be unpalatable.

So it is necessary to see with both eyes, to consult all segments of the people, or those who are in today's language called the stakeholders. The people are important and from the people will come the agenda. This process has already gone far in Kerala through the decentralisation process and sharing of powers with the panchayats. However, going beyond even the elected panchayats directly to the different communities and stakeholders will provide the broad agenda.

Gender analysis is sometimes referred to as seeing through the "gender lens". When you put on your "gender" spectacles you see every thing through the "gender lens" and get a differentiated and complex perspective on reality. Gender analysis is a powerful new analytical tool, which can be used to analyse contemporary problems. The earlier powerful tool of social analysis, which you all familiar with and which is more than a century old, is the tool of class analysis, the great legacy of Marx and Engels. The tool of class analysis enables us to analyse society from a deeper perspective and helps us to see that people do not act merely as individuals but also as members of groups. Another tool, equally powerful, is that of caste analysis the legacy of Ambedkar and many other great thinkers, which is yet another lens with which to view society. The legacy of the last 20 - 25 years, perhaps the product or gift to the intellectuals of the women's movements of the last 50 years, is gender analysis. This tool can be used to start the process in a university which has already shown its commitment and concerns for gender issues and taken the first steps. The objective is to integrate gender analysis into the curriculum, both at the level of extension and at the level of teaching.

The students of today will not be working in the present environment but in a new environment of the future, which will be very different from what we experience now. Hence students must learn to face the unexpected and to deal with new things, which cannot even be imagined now. Teaching is about preparing people to deal with the unexpected. Nobody could have foreseen the changes that we have experienced in the last 30 or 40 years and those who went to school then have had to learn much. What is important is to be trained to use our minds, not to be afraid of giving up worn-out concepts, to be humble, and to continue as students, to explore and innovate. We cannot give students the answers to every question that they are going to meet in the next 20 - 30 years of life. But we must help them to learn to be open to the voices of the stakeholders, the farmers, men and women, the tribal communities, the fishing people, the traders, all sectors of the people. Tools like gender analysis which opens up the space for thinking, will help us to break barriers, not only of "gender blindness" but other kinds of blindness too and learn to think about the relationship of our work to all kinds of people. This is a long journey it is going to take time and it needs resources both financial and human to meet the challenge. But it will be a new adventure on the path to the future of our dreams.

(Extracts from address of Ms.Mina Swaminathan, Hon. Director, Uttara Devi Resource Centre for Gender and Development, M.S. Swaminathan Research Foundation, Chennai)

The RAISON d'ETRE (WHY) and HOW ENGENDERING UG CURRICULUM In Agriculture

K.N. Shyamasundaran Nair

It was about five years ago, some time in 1996-97 that the Kerala Agricultural University revised the syllabi of the graduate and postgraduate courses of the Faculty of Agriculture last time. Recently the KAU has initiated steps to revise the syllabi. The Vice-Chancellor has sent out circulars to the Director of PG Studies and the Deans to start consultation with the Faculty on revising the syllabi for the graduate and postgraduate courses offered by the Agriculture Faculty. Various departments/disciplines (quite often both department and discipline are used interchangeably although in the academic parlance they are not one and the same) are in the process of revising the syllabi. It is therefore appropriate that we capture this opportunity to engender the curriculum through the introduction of gender studies in the graduate courses of Kerala Agricultural University. If we do not cash in on this opportunity now, we may have to wait for the next syllabi revision, which may occur perhaps five years hence.

The raison d'etre (why) engendering the UG Curriculum of farm courses?

The raison d'etre of engendering the farm courses Curriculum can be found only if we try to find answer to:

1. That can be answered only if we seek: what do we expect from our Farm Graduates? Or why are we producing Farm Graduates? (More explicitly the graduates in Agriculture, Veterinary Sciences, Agricultural Engineering, Fisheries, Dairy Sciences, Forestry, Co-operation, Banking and Management).
2. That can be answered only if we seek: what are the objectives of Farm Graduates? (Agriculture herein after refers to all those activities connected with land, water and natural vegetation including crop management, fisheries and related institutions).
3. That can be answered only if we seek: how agricultural development is sought to be brought about? So let us try to find answer to the last question to start with.

The paradigm shift in agricultural development. Hence the reorientation/restructuring of agricultural development?

Prime objective of agricultural development planning has been that of augmenting the production of food grains to meet the consumption needs of the population, raw materials for the industry and surplus for earning foreign exchange through exports. Policies, strategies and programmes were designed to increase the production of selected commodities which are tradable in the market for such as foodgrains, meat, milk, fish, cotton, tea coffee etc) for consumption, raw materials or export. Programmes were primarily center on increasing the productivity and production potential of the biophysical resources viz. land and water, supply of inputs, infrastructure and support services including technology generation, training and extension, for enhancing the production of these commodities.

Generally recognized as the commodity centered development, this approach paid dividends in terms of:

- Increase in the production and productivity per unit of land
- Enhanced availability of food grains
- Savings in land

Despite, at the same time

- Decline the proportion of GDP originating from agriculture
- Decline in the dependence of employment and livelihood only marginally
- Per capita capacity to sustain livelihoods decline
- Notwithstanding 50-60 million tons of foodgrains in go downs yet 1/4th to 1/3rd of the fellow citizens remain under-nourished and malnourished.

Thus the experience of the past half a century have shown that the commodity centered development which we have been pursuing hitherto— may appear/ or may have brought dividend in short run as food self sufficiency, grain mountains. But in the long run it will be unsustainable because of the social conflicts and alienation. Even physically unsustainable on account of the resource depletion (ground water in Punjab) and deterioration (water logging, saline lands in the major irrigated areas), soil erosion in rainfed areas, denudation of natural vegetation, loss of biodiversity, increasing quantities of inputs to generate additional production.

Redefining the objectives of agricultural development

Production is a necessary condition but not a sufficient condition for sustainable agricultural development.

The 10th Five Year Plan recognizes that commodity production alone is sufficient. Agriculture should provide livelihoods. That alone is capable of minimising poverty if not eradicate.

What development orientation we should bring about? For determining that let us try to answer the following questions.

- Is agricultural development means only commodity production or
- should it not be a human centered agricultural development, focusing the development of those who are engaged in farming at the centre-stage

It follows that a shift from commodity to resource development approach is called for. Resource approach calls for the development potential of biophysical (individual and community) and human resources to which the communities have access. Through integrated use and management of the resources, and value addition locally, create more livelihoods. Instead of activity to system approach to the development resources.

Can the physical dimensions can stand-alone? Taking apart human element, technology cannot stand. Sustainability of the technology push itself is contingent upon the satisfactory harmonization of the social concerns. But the very economic sustainability is contingent upon the latter.

Is there any need to be humane and human centered- value oriented in development (development with human face)?

If focus is only on commodity production and not human development- then many of the concerns we are exercised over are irrelevant.

What should a forward-looking visionary development in agriculture seek for?

It is in this context the relevance of a paradigm shift in agricultural development- relevance of social concerns and need for evolving a human centered development with sustainability and social equity an the centre stage of which gender equity is the centre-piece arises.

To those who are not convinced we have to bring in, the importance of women in agriculture: Gender roles are to be seen in terms of:

- Economic contribution of women
- Participation in agriculture
- Efficiency increase and skills
- Tools for increasing the productivity

Justification for gender concerns is sought not in terms of social concerns but in its own right as a contributor to the farm/agricultural economy. It is amply justified, in that by far

the most dominant significant input in agriculture is labour and nearly one half of it is a farmwoman.

What is the role of human element for those matter women in agriculture?

- 1. Physical involvement (skill upgradation, efficiency)
- 2. Decision making

Physical participation

Skill- qualitative- related gender roles- and technologies
 Efficiency-quantitative- technologies
 Resource use and management (conservation-preservation management- equitable sharing)

Decision-making – at various levels of farm operations

Human element in agriculture- this has to be taken as into different roles, and gender issues.

A few relevant Concepts and Terms on Gender

Gender: Gender means the socially constructed roles and responsibilities assigned to women and men in a given culture or location and the societal structures that support them. Gender is learned and changes over time.

Gender equality: Is about men and women being exactly the same in quantity, degree or value. Mostly it refers to equality of opportunity, which means that women and men should have equal rights and entitlements to human, social, economic, and cultural development, and an equal voice and political life.

Gender equity: Is a condition in which men and women participate as equals, have equal access to resources, and equal opportunities to exercise control? It is the outcome of gender equality. It is defined as what is just and fair and represents a value judgment.

Gender Analysis: Is the systematic effort to document and understand gender roles and relations within a given context? Gender Roles arise from socially perceived differences between men and women that define how women and men should think, act and feel. Gender roles are constantly changing and can vary within and between cultures.

In these contexts is there any need for agricultural extension officer to bother about the gender equity, economic issues, value basis etc?

Is there any need to incorporate all these dimensions in the course content?

To make the agricultural development worker feel that there should some value system in the development efforts of the society in other words value based development.

Expectations from Farm Graduates

What do we expect from our Farm Graduates? Or why are we producing Farm Graduates?

Traditionally hitherto the main purpose of farm graduates is to staff the advisory/regulatory services of the government (mainly the Agriculture and Allied Departments and Community Development) in organizing the development of agriculture.

They should provide- technical support to agricultural development through

- Extension & transfer of technology (TOT) advisory
- Provide support services (input supply) and infrastructure through development institutions of the government its agencies,
- Managerial support to agribusiness including farmers,
- Generation of technology through research and development

How of engendering the Curriculum of farm Courses - Points for thought

We can work out several models of gender integration

Possible Actions for Engendering

1. Introducing a 2-credit course (1+1) on Human Centered Agricultural Development wherein the introduction on gender perspective- its relevance, contexts, value systems- approaches gender issues, related field exposures etc can be imparted. (This should form the part of all UG courses.)
 2. In relation to technologies or crop/ animal management- introduce the related dimensions of gender issues - in different disciplines. (Agronomy, Animal management, Soil and water conservation, Plant/Animal Breeding, Extension, Economics, Processing, Farm Management, Farm Machines etc.)
 3. Introduce a separate module on Gender sensitization in the course on RAWE/Field Training.
 4. Introduce an elective course on "Gender Studies in Agriculture".
 5. Include activities on gender justice and development as part of the NSS.
 6. Develop the needed course content/ resource material.
 7. Train the scientists for gender responsive education in agriculture
 8. A series of lectures (one per semester on topics of relevance) Compulsory attendance but not test and quizzes.
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Gender Mainstreaming in Extension Programmes*

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"Women grow most of Africa's food and sustain rural life, but lack the critical support - land, fertilizers, credit, labour-saving implements - and political clout needed to maximize their pivotal role. Now, vibrant women's voices demand that policy-makers help strengthen these key producers."

Karen Gellen

Introduction

In the recent past, gender issues in agricultural development and women's role and contribution in agriculture have become the subject of considerable debate throughout the world. More recently, it has been recognised by the social scientists, policy makers, administrators and politicians that women contribute significantly in agricultural development and its allied activities. No longer farm woman is considered as farmer's wife but a responsible individual equal to her father or husband or brother. She also performs several management and decision-making roles in farming and home making practices together with her male counterpart and sometimes alone.

From 1975 onwards, researchers of women studies and of women and development published much evidence about the enormous workload women perform. That awareness eventually reached policy makers and whilst projects stuck to the goal of integrating women into the mainstream development, from then on it was based on the global empirical evidence about women's qualities. Women appear to be more bonafide when it comes to repaying credits, women take care of their children with more responsibility than men do in times of hardship, women work more hours per day, women do most of the heavy manual work and when women earn an income the chance that they spend it on the family in large as compared to men who are inclined to spend it on themselves. The World Bank, for example, changed its policy a few years

* Session conducted in short course on **Gender Perspective in Research, Extension and Education for Agricultural Development**, at KAU, Trissur on 29 October 2002.

ago because of these general findings: invest in girls and women, and the whole community will benefit, whilst the cost benefit ratio will turn out very profitably as well (World Bank, 1993). The interests of women and girls are not so much the issue. The improvement of their situation is surely acceptable, as long as men do not lose out and the assumed family harmony does not get disturbed by the emancipation of women. Women are the centres of the family, and as such of the community, women are willing to work even harder if they can earn some money, so women are a means to reach the higher aim of development, progress and economic growth, according to this approach (Muylwijk, 1995).

Extension Efforts and Autonomy of Women

Projects for men and women together which specifically aim at changing power relations: Examples can be found in Farming Systems Research and extension in which all the persons involved are trying to pay specific attention to the position of women and gender relations. When a group of researchers studies a rural area, and none of them has the image of farmers as being only men, the women and men will have an equal share in the participation. The resulting extension efforts then can be directed at both men and women, depending on the gender division labour. Extension directed at women and shaped by the participation of women has the capacity to increase the economic autonomy of women. The physical facet of autonomy can also improve when agricultural tasks are less tiresome as a result of new technology, which is not directed only at men. Tillage and weeding with bullocks, which women can use, as well as men is an example. That at the same time increases the cultural status of women in situations where earlier they were not allowed to work with animals. Politically such projects can make a difference as well. When, for the convenience of extension workers, women are organized in groups, to reach them and to collect feedback, women's say in public affairs may increase too. In this type of approach integration into mainstream activities appears to be compatible with autonomy.

Gender Issues in Agricultural Research, Extension and Development Efforts

Joke Muylwijk (1995) further asserted in her paper, "Gender issues in Agricultural Research and Extension", that special women projects appear to remain necessary in many places because:

- i) Other projects often fail to aim at gender equality or at research into gender inequalities.
- ii) In practice the ideal of integration leads to the neglect of gender relations. After all, mainstream projects were never obstructed to pay attention to gender relations, but they hardly did.
- iii) Perspectives do not change when aiming at integration. Integration has a direction, and entails that women have to adapt to so-called gender-neutral activities, to be allowed to take part in such activities. For the interests of women there usually is no place in general projects.

Nevertheless, in the practice of agricultural research and extension separate approaches for women and men can be very problematic and reduce validity. **Gender aspects of agriculture, of projects and research show large differences, depending on:**

- a) **the objectives of the agricultural intervention,**
- b) **the local gender division of labour,**
- c) **the gender differentiated access to resources, and**
- d) **the prevailing cultural gender ideology, both from the rural target groups as well as from the researchers and extension workers.**

Based on these many differences, a focused approach of women by women is sometimes, but not in all situations, necessary. Moreover, there is no reason for such a separate efforts all the same time. Integration of gender aspects in all research and extension is no luxurious extra for which women should be grateful, it is the recognition of the triple role of women by which they have been integrated in the agricultural work

all along (Shiva, 1991). Researchers and extension workers often live in a separate male world, where they do not realize the bias of their work, which halves the productivity of their efforts and by which inequalities are reproduced and often even induced, as in much technology development, (Whitehead, 1985).

Gender Mainstreaming in Extension Programmes

To make things happen like successful extension projects or programmes, aim at women, it is important first to see that complete mainstreaming of extension is done based on gender considerations. They are:

Extension topic

The problem to which the extension effort is a response should be based on gender awareness. The role of women in the farming system or in the specific task has to be considered. Information from women should be looked for and the problems women face in their agricultural work should be taken seriously. Extension messages must be based on applicable technologies, which can be adapted based on feedback. If extension efforts fail, the contents of the messages may be questioned, as well as the approach.

Composing an extension message

At first women should feel confident about changing their farming practices. They must be certain that the proposed change will be an improvement. When convinced, they are interested and willing to cooperate. Men often are more interested in the new technology as such. Women farmers want to discuss the topics and because of time constraints they prefer short messages during many visits over much information at once. The contents of agricultural extension has to be based on feedback of farmers, both female and male.

Extension material

Worldwide the literacy rates of women are lower than those of men. Therefore, pictorial extension aids are more applicable than written ones. Direct interaction about extension topics is particularly important for women, so video shows are less and slide

shows are more suitable. Drama, songs and (street) theatre in which women themselves can participate are suitable teaching aids.

Gender of Extensionist

Just as for the researcher and investigator an extensionist does not in all circumstances have to be a woman when approaching women. For useful feedback it must be realised that in general the replies of women are influenced by the presence of men, especially husbands. Furthermore, the male extensionist is inclined to talk to the men, and even if he realizes the subject concerns the work of women, he will find it impolite to talk to the women instead, bypassing the more important person-the man. Extension workers need some training in this, although in most cases it would be an advantage if extension workers were women themselves. When recruiting new staff more effort to employ women can be made.

Gender of farmer

Extensionists have to become aware of their own preconceived assumptions that farmers are men. They can be women also.

Extension Situation

It is important for the extensionist to be welcome and come at a convenient moment of the day and in the right location. The presence of small children or other persons can be a drawback.

Extension in other locations than the own farm

Not all women farmers will be allowed or inclined to come to research institutes or training centres. Still, those who can come should be encouraged, because they will be exposed to more than the training topics only.

Conclusions

The issues on gender mainstreaming in extension programmes have tremendous effect on women empowerment and agricultural development. The development of agriculture though not directly, helps empowering women as

agricultural development brings significant social, economic and physiological development of the farming family and community as a whole. Therefore, as suggested above, gender mainstreaming of extension programmes must be welcomed and done in every possible way in our agricultural and rural development endeavours.

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GENDER ANALYSIS FOR PARTICIPATORY TECHNOLOGY DEVELOPMENT- RELEVANCE AND METHODOLOGIES

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Agricultural technologies and livelihood opportunities

The needed human and social context perspectives in agricultural development necessitate the process of technology development to be a customizing process by integrating the users cultural-socio-economic and human requirements into research as its integrated components to focus on the ultimate users. This is possible only through identifying the faces of the users, their living environment, needs, the access they have on resources, the control they have on the benefits and their constraints. As the technology is a means to material self-improvement (Keller, 1992) and the purpose of technology development is to improve living conditions, the process should generate opportunities for 'all people' (both male and female) to make a livelihood and improve their standards of living. Yet the processes of technology development and transfer usually overlook the real social actors and their complex needs and livelihood realities. Many instances of the technologies indicate that the non-adoption of technologies is often not due to ignorance of the farmers but due to deficiencies in the technologies and the process that generated and the improper targeting, especially the inadequate participation in all stages of the process by those who are intended to be benefited (Padmaja and Bantilan, 2002). The needed shift in paradigm is to place the human component at the centre and to empower the people to be partners in developing their own technologies.

Technologies and increasing Gender divide

Both men and women perform substantial roles in the farming systems. But the roles and contributions of women remain largely invisible, and are rarely accounted, and valued. Planned efforts of agricultural development largely remain gender insensitive; as they are male oriented and male dominated. The process of technology development and transfer usually overlook the gender roles and create dismal gender impacts. The design of the farm machine, paddy transplanter as male operatable illustrates how the gender insensitivity will deny social justice to the traditional actors of the particular farm operation of manual transplanting, the women laborers. The technology here turned not to be gender neutral. This pinpoint the crucial fact that a sustainable technology development in agriculture cannot be done without its social context. In rural areas, households are both producers and consumers which within the context of available technology and resources, manage to find necessary inputs to ensure food security and welfare ends. Women do play roles in these households as farmers, co-farmers, laborers and entrepreneurs in addition to the primary role of household management. But the process of technology development and transfer in the farming sector often ignore women's resource management stress and physical hardship in these contexts. As scientists perceive farmers still as male alone, they are not fail to consider women's work as valuable and researchable. Hence rarely the women operated works and their workload are targeted in technology development process. Technological innovations have been made in the activities typically performed by the men whereas human labour and traditional techniques continue to be used in most day to day activities performed by women both outside and inside the home (Common Wealth Secretariat, 1996). The

Gender, Gender issues and Gender impact

Gender can be briefly defined as the socially constructed differences in the roles and power relationships between men and women in a given social context. Strictly speaking biological or sex difference between men and women are universal and unchangeable; while gender differences highly vary across cultures and regions and tend to change over time as a population goes for new knowledge and environmental conditions and progress. Men and women must have equal access to the benefits of development interventions and equity is an indispensable precondition for broad-based sustainable development. Gender impact of development efforts are the differences they impart between men and women of a social system due to unbalanced participation and benefits received by both sexes, which may lead to gender discriminations and gender issues.

Gender Role Analysis

Gender analysis is the systematic effort to document and understand the roles of both women and men within a given social context. This is a tool of social system analysis which seeks answers to the fundamental questions of who does or uses what, how and why and who benefits and how much. The areas of questions in a gender analysis are -the activities and the division of labour, the resources utilized by women and men to carry out these activities, the benefits they derive from such activities, and the social, economic, environmental and institutional factors that constrain development

The gender analysis can help to predict how the different members of the community will be affected by developmental efforts, to what degree women and men farmers will be benefited or denied of benefit by the technologies, and how far the

value women add to family welfare is taken for granted and drudgery of women's work is considered as routine. This misperception leads to the technologist's blindness to women's technology needs.

The gender differences often get overlooked. Rarely technologists recognize that women and men have different interests, skills, consumption and production and they use resources differently. These gender differences really demand diverse technology needs. Kolli and Bantilan(1997) of ICRISAT have observed that the achievement of men's and women's effective involvement in agriculture calls for a more serious consideration of the views and perceptions of male and female members of the farming community. User oriented perspectives are important feedback for the design and development of technology options.

The sphere of women's work is more complex and diverse than is perceived by technology development professionals. Studies on time utilization among women and men in the farming systems along with observations on off farm, farm production and their unpaid and underpaid agricultural labour contribution can reveal the extent of contribution of women towards the sustainability of rural production units.. Along with farm based food production, the domestic activities women usually perform also contribute to household security. Hence the poor understanding and limited recognition of rural women's multiple roles in production by the technologists and the resultant neglect widen the gender divide. An integrated approach should be there to understand the different segments of household production- farm production, home production, off farm production and community production and the gender roles involved in order to evolve appropriate technologies that can ease, support and benefit the rural users.

Reproductive tasks, water and fuel collection, food processing and food preparation, are particularly time-consuming and are often carried out with traditional tools and processes.

Through activity profile analysis, technologists can realize (a) the agricultural activities of both women and men in the region; (b) the inclusion of non-agricultural productive and reproductive activities of both women and men in the profile will help the scientists to identify labour bottlenecks, highlighting areas where the introduction of improved methods or appropriate technologies would be most beneficial to overall productivity; (c) time constraints related to the activities of women and men; and (d) areas in need of technology generation, technology appropriation, drudgery reduction etc.

Resource profile analysis

The resource profile analysis is used to delineate the resources that women and men use to carry out their activities and the benefits they derive from them. Resources include such things as land, labour, water, technology, time, capital, skills, information, market and training. Benefits derived from the utilization of the resources include such things as income, food, skills and status. Both access to and control over resources and benefits are often gender-biased. In many regions, females are by law or tradition not allowed to own land, cattle or housing. Women, may therefore, have no 'control' or decision-making power concerning these resources though they have access and use them in their daily lives. Similarly, in some socio-cultural contexts, access to extension and farm skills are seen as a male prerogative and women are largely excluded, regardless of who actually perform the agricultural tasks concerned.

The resource profile analysis can help scientists to understand (a) the resource base of both female and male farmers, especially with respect to land, credit, equipment

benefits will be equitable. Through the participation of the stakeholders- both men and women, the information on the local community can be integrated in technology developing process. The gender analysis methodology has three interrelated components - the activity profile, the resource profile and the constraint analysis.

Activity profile analysis

Understanding the division of labour in agricultural activities form the starting point for determining who should be involved and targeted in extension programmes. While roles vary between and within cultures, it is generally found that women and men are responsible for different, though often complementary, productive activities. Their roles may differ by type of activity, such as crop, forestry, livestock and fishery production, as well as by stage of production, such as land preparation, planting, weeding, harvesting, crop processing, marketing and so on. Sometimes the tasks of women and men overlap, while sometimes they are distinctly different. The aim of activity profile analysis is to produce a clear picture on who does what? Agriculture calendars are one simple way of documenting the roles of both women and men for different crops and other productive activities, highlighting seasonal patterns as well.

As women and men are not only farmers, but have the roles of wives/husbands mothers/fathers and citizens with responsibilities, their reproductive, domestic and community activities also need to be taken into account by extension planners. Estimates vary from region to region, but it is found through 24 hour clock analysis that on an average rural women work up to 15-16 hours daily while men work only for 11-12 hrs. Because women perform more of the reproductive and domestic tasks in addition to their agricultural and other productive activities, women work more hours per day than men.

and inputs; (b) the relative benefits derived by women and men from their work and their utilization of resources, such as income and food; and therefore, (c) the technology package best suited to the resource needs and constraints of both women and men. Scientists can also utilize these revelations for identifying the right partners in technology development and suggesting models of better delivery of technology, resources, skill, credits etc. through development departments and financial institutions and to train the field extension functionaries.

Constraint and need analysis

The differential impacts by gender with respect to the economic, social, environmental and institutional constraints can be identified from the information gained in the activity and resource profiles discussed. Constraint and need analysis can reveal gender specific needs and constraints, region or culture specific barriers between farmers and development interventions etc. in gender disaggregated manner. The farmers' constraints may include illiteracy, low technology, limited resources, lack of free time, limited mobility and the socio - cultural norms pertaining to male - female interactions. Identification of training needs, technology gaps, factors related to natural resource management, related gender issues, etc. of the locality that are revealed through the analysis can form foundation on which the objectives and approaches of technology development can be reset. Through the constraints analysis also it can be decided how to bring the female farmers also as major actors in the PTD process.

Summary

As the contribution of both women and men are substantial and essential for sustainable agricultural development the predominant practice of identifying men alone

as the users hinders development per se. Women should be identified as major partners along with men and their needs and problems to be accounted. Sufficient research information on the activities of male and female farmers gained through the gender analysis can form base to keep the technology development programmes as gender friendly by focusing on technologies relevant to men's and women's work. The problem of biased attitudes of scientists and workers in reaching women can be solved with the conviction they are able to derive through gender analysis i.e., there are different roles and responsibilities of men and women in agricultural related activities and it is essential to take these into account in appropriating technologies with the partnership of the real actors. The gender analysis would also guide the participants of PTD to identify which basic information on gender is critical in developing PTD strategies and also to integrate gender issues in their efforts towards sustainable development.

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GLOSSARY OF GENDER AND DEVELOPMENT TERMS

1. Sex / Gender	<u>Sex</u> means the biological differences between women and men, which are universal, obvious and generally permanent. <u>Gender</u> means the socially constructed differences in roles and responsibilities assigned to women and men in a given culture or location and the societal structures that support them. Gender is learned and changes over time and reflects in the power relations between men and women.
2. Gender Roles	Arise from socially perceived differences between men and women that define how men and women should think, act and feel. Gender roles are constantly changing and can vary within and between cultures.
3. Triple roles	Are roles (tasks and responsibilities) men and women may have related to : Production (producing money value), Reproduction (reproducing the daily labour force), Community management/community politics (producing community goods and well being)
4. Access to / Control over resources	<u>Access</u> refers to the rights and opportunity to use the resources one needs to carry out one's activities. <u>Control</u> means the rights and power to decide on the use and destination of the resources.
5. Gender analysis	Is the systematic effort to document and understand gender roles and relations within a given context.
6. Practical gender needs	Are short term concerns arising from gender roles. They are immediate and material needs and can be met in the short term by practical solutions. Projects that focus on practical gender needs do not attempt to change existing relations
7. Strategic gender interests	Are long term concerns arising from gender roles. They are related to the changing position of women and men in society. Regarding women's interests, they include legislation for equal rights and opportunities, reproductive choice and increased participation in decision making.
8. Gender Equality	Is about men and women being exactly the same in quantity degree or value. Mostly it refers to equality of opportunity, which means that women and men should have equal rights and entitlements to human, social, economic and cultural development, and an equal voice in civil and political life.
9. Gender Equity	Is a condition in which men and women participate as equals, have equal access to resources, and equal opportunities to exercise control. It is the outcome of gender equality. It is defined as what is just and fair and represents a value judgment.
10. Empowerment	Is a bottom – up process of generating and building capacities to exercise control over one's life. It means individuals gaining the ability and space to undertake

	activities and to set their own agenda.
11. Gender mainstreaming	Involves ensuring that all general measures and operations openly and actively take into account – during planning, implementation, monitoring and evaluation – their effects on the respective situations of women and men. It also involves the complementary design, implementation, monitoring and evaluation of specific measures and operations to promote equality and assist women to participate and benefit equally. It relates to projects, programmes and organizations.(EC, mainstreaming Equal Opportunities for women and men in structural programmes and projects, Technical paper 3, March 2000)
12. Women in Development (WID)	Is an approach to development that focuses on women and their specific situation as a separate group. WID projects frequently involved only women as participants and beneficiaries and failed to have a policy impact.
13. Gender and Development (GAD)	Is an approach to development which shifts the focus from women as a group to the socially determined relations between women and men. GAD focuses on social, economic, political and cultural forces that determine how men and women can participate in, benefit from, and control project resources and activities.
14. Diversity	Relates to different and unequal positioning in society, based on differences between people, resulting from social status, gender, race, ethnicity, age, religion, sexual preference and physical ability, confronted with the various manifestations of discrimination.
15. Gender Impact	Gender impact of development efforts are the differences they impart between men and women of a social system due to unbalanced participation and benefits received by both sexes, which may lead to gender discrimination and gender issues.

HARVARD ANALYTICAL FRAMEWORK*

This framework was developed in the 1980s in the institute for international relations to facilitate the integration of women into project analysis. It is outlined in *Gender Roles in Development Projects: A Case Book*, edited by Catherine Overholt, Mary B. Anderson, Kathleen Cloud, and James E. Austin. It is a useful tool for gathering data, understanding women's and men's roles in a society, and taking account of external forces which affect development planning. It is a flexible instrument which can be used at many different levels of planning and analysis, and can be expanded to disaggregate data according to cultural, ethnic and economic factors as well as gender and age. The framework can also be used as a planning and implementation tool for programmes and projects. There are four inter-related components.

- **The Activity Profile**, which is based on the gender division of labour and delineates the economic activities of the population in the project area. It provides for disaggregation by sex, age, and other factors, and for recording the amount of time spent on activities, and the location of the activities.
- **The Access and Control Profile**, which identifies the resource individuals, can command to carry out their activities and the benefits they derive from them. By distinguishing between access to resources and benefits, and control over them it is possible to assess the relative power of members of a society or economy.
- **Factors Influencing Activities, Access and Control**: factors (such as gender division of labour, cultural beliefs) which create different opportunities and constraints on women and men's participation in development. The impact of changes over time in the broader cultural and economic environment must be incorporated into this analysis.
- **Project Cycle Analysis** is the final component, which consists of examining a project proposal or area of intervention in the light of gender-disaggregated data and social change.

* Source: *Gender Roles in Development Projects: A Case Book* ed. Overholt, Anderson, Cloud and Austin
Kumarian Press 1985

ACTIVITY PROFILE

Gender/Age¹

Socio-economic Activity	FA	MA	FC	MC	FE	ME	TIME	LOCUS ³
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1. Production of Goods and Services

a. Product/Services

1. Functional Activity
2. Functional Activity
3. Functional Activity

b. Product/Services

1. Functional Activity
2. Functional Activity
3. Functional Activity

2. Reproduction and Maintenance
of Human Resources

a. Product/Services

1. Functional Activity
2. Functional Activity
3. Functional Activity

b. Product/Services

1. Functional Activity
2. Functional Activity
3. Functional Activity
4. Functional Activity
5. Functional Activity

Code:¹ FA=Female Adult MA=Male Adult FC=Female Child
 MC=Male Child FE=Female Elder ME=Male Elder

Code Percentage of time allocated to each activity;seasonal;daily

Code:³ Within home; family, field or shop; local community; beyond community

ACCESS AND CONTROL PROFILE

Resources	Access <i>(M/F)</i>	Control <i>(M/F)</i>
Land		
Equipment		
Labour		
Production		
Reproduction		
Capital		
Education/Training		

Benefits	Access <i>(M/F)</i>	Control <i>(M/F)</i>
Outside Income		
Assets Ownership		
In-Kind goods		
(Food, clothing, shelter, etc)		
Education		
Political Power/Prestige		
Other		

DETERMINANTS ANALYSIS

A final stage in the analytical framework is to look at determinants. These are the factors both within the community and in the receiving country which determine or influence the roles and responsibilities- and the resource use- of women and men and which, therefore, can affect the outcome of your planned activities. They are broad and interrelated and include such factors as:

General economic conditions, such as poverty levels, inflation rates, income distribution, international terms of trade, infrastructure;

Institutional structures, including the nature of government bureaucracies and arrangements for the generation and dissemination of knowledge, technology, and skills;

Demographic factors;

Community norms and social hierarchy, such as family/ community power structure and religious beliefs. These can be particularly important among refugee groups where men's and women's roles are changing;

legal parameters

training and education

political events both internal and external

national attitude to refugees; and

attitude of refugees to development/assistance workers

We do not provide a table for this analysis because the purpose of identifying these determinants is to consider which ones affect activities or resources and how they affect them. This helps you to identify external constraints and opportunities that you should consider in planning your programmes. It will help you to anticipate and predict the inputs of your programme.

TIME CLOCK - HOUR-WISE ACTIVITY

TIME

WOMEN

MEN

0-1 am		
1-2 am		
2-3 am		
3-4 am		
4-5 am		
5-6 am		
6-7 am		
7-8 am		
8-9 am		
9-10 am		
10-11 am		
11-12 am		
12-1 pm		
1-2 pm		
2-3 pm		
3-4 pm		
4-5 pm		
5-6 pm		
6-7 pm		
7-8 pm		
8-9 pm		
9-10 pm		
10-11 pm		
11-12 pm		

Source: Suzanne Williams, Janet Seed, Adelina Mwan (1994) OXFAM Gender Training Manual, OXFAM Publications.

PRACTICAL AND STRATEGIC GENDER NEEDS

Practical Gender Needs	Strategic Gender interests
<p>Pertain to day to day living conditions of women</p> <p>Do not question existing division of labor, but are a result of it</p> <p>Incremental</p> <p>Short term</p> <p>Vary with economic condition</p>	<p>Pertain to the position of women versus men</p> <p>Seek to transform the existing division of labor</p> <p>Transformative</p> <p>Long term</p> <p>Common for most women</p>
<p><u>Examples</u></p> <p>Access to water</p> <p>Access to fuel</p> <p>Access to fodder</p> <p>Access to sanitation facilities</p> <p>Access to child care facilities</p>	<p><u>Examples</u></p> <p>Sharing of housework</p> <p>Women in non-traditional tasks</p> <p>Equal wages for work of equal value</p> <p>Equal rights to private property and common property resources</p> <p>Equal representation and participation of poor women in decision-making forums.</p>

Contributed by Ranjani K. Murthy

Mainstreaming Gender Equity in Water Management: Institutions, Policy and Practice in Gujarat

Dr. Sara Ahmed¹

Abstract

Drawing upon insights from recent water policy processes and practices in the drought-prone state of Gujarat, this paper outlines the location of gender concerns in the broader arena of decentralised water management initiatives and sector reforms calling for a demand-responsive approach to water management. More specifically, it looks at how two non-governmental organisations (NGOs), the Self Employed Women's Association (SEWA) and the Aga Khan Rural Support Programme, India (AKRSP(I)), have negotiated space, both formal and informal, for rural poor women's participation in community water management. While SEWA as a membership-based organisation has been able to facilitate a campaign or social movement approach around access to water as a basic right, AKRSP(I) has tried to involve women farmers in new participatory irrigation management institutions. Both organisations have sought to transform cultural norms about women's seclusion and mobility in the public domain, as well as assumptions about male/female roles and capabilities in water management. However, there is a need for sustained and substantive commitment from men and women at all levels for gender-sensitive policy advocacy and institutional practice. Only then can water policy move beyond essentialising women as *natural* water managers or encapsulating their participation as merely incremental and instrumental, to a process which addresses their strategic interests, priorities and rights to water.

Introduction

The universal symbolism of water as the primal fluid – purifying, regenerating, creating and destroying – is closely intertwined in different cultures with women's roles as bearers and nurturers of life and collectors and managers of household water (Beekman and Costin 2000). In India, water is not only sacred, but rivers are considered goddesses, each with her own unique story and virtues. Old stepwells in the western state of Gujarat also carry the title mother or *mata* as part of their name, for it is commonly believed that the sacred places of female power (*shakti*) are always combined with sacred ponds. Numerous stories, myths, rituals and customs abound about the relationship between water and the 'feminine principle' recounting both the life bestowing power of water and the 'sacrifices' that women have made during times of hardship by drowning themselves in wells and tanks.

Recognising women's multiple roles as providers of domestic water, as guardians of family health and as managers of water at the community level, water resource planners have increasingly sought to integrate women in water development initiatives (Green, Joekes and Leach 1998: 263). However, despite the allocation of resources and the growing multiplicity of well-intentioned statements, the rhetoric of women's role as *naturally privileged* water managers overlooks the divergent needs that women (and men) have in relation to water. On the one hand, there is sufficient understanding of the impact of water scarcity on women's health and on the drudgery of water collection, with cascading impacts on the education of girls, on the time available for productive work and on coping strategies at the household and community level (van Wijk-Sijbesma 1998, Coates 1999).² While on the other hand, policy reform in the irrigation sector has

been limited – even the new participatory irrigation management initiatives continue to focus on men as farmers, as owners and therefore managers of land, and as major decision-makers regarding irrigation needs (Zwarteveen 1998).

This paper looks at water policy and institutional reform in Gujarat, currently confronting its third successive year of drought. It outlines successful attempts by some non-governmental organizations (NGOs) to negotiate spaces for greater participation by marginalised women in decision-making on the equitable and sustainable use of water for both domestic and productive requirements in rural areas. Although the draft National Water Policy (1998) addresses the conjunctive use of water, the differentiation and fragmentation of institutions who manage water, even to a large extent the NGOs who advocate decentralized approaches, necessitates looking at the drinking water and irrigation sector separately. The paper is limited to Gujarat, partly stemming from the diversity in India which makes generalization difficult, and partly because Gujarat has recently witnessed emerging and encouraging partnerships between the state and civil society on alternative institutional arrangements for managing scarce water resources.³

Managing Water for Domestic Needs: Constraints in Institutionalising Gender Concerns

Traditionally, wells and tanks were the principal means of water harvesting in Gujarat providing water for both domestic and agricultural purposes. Sites were chosen with great care and the construction of a stepwell was an important community event supported by the patronage of the dominant caste for who it was seen as one of the seven meritorious tasks that they must complete in their lifetime. Although communities were responsible for the day-to-day maintenance of their water assets, there is little documentation about the social organization of drinking water as compared to irrigation. While 'there is a broad social understanding that water cannot be denied to anyone....upper castes can claim rights to wells and to the privilege of extracting water, *but not to the water itself*,' (Moench 1998: A-49). Although individuals have a 'right' to drinking water, even during periods of water scarcity, the concept of ritual purity often determines who can draw water from where, causing social conflict from time to time.

Today about 77.4% of the total drinking water requirement for Gujarat continues to be met from groundwater sources (Kumar and Talati 2000: 44). Unfortunately, these sources have been extensively exploited since the early 1900s with the mechanization of water extraction and, after Independence, the emergence of a strong farmers' lobby supported by the Green Revolution strategy to encourage agriculture in areas where farmers were enterprising. Consequently, groundwater levels have become dangerously low and the quality of available groundwater is deteriorating because of leaching from agricultural run-off. In addition, waterlogging and saline intrusion in several low lying and coastal regions of the state have affected agricultural potential and the potability of water. Although markets for groundwater have developed in recent years, they remain highly inequitable and attempts to develop legal mechanisms for controlling groundwater withdrawal have been limited because of the difficulty in determining water rights (Dubash 2000). Not surprisingly, 'What was once everybody's business (managing community water resources) has now become nobody's business,' (a villager from the drought prone region of Saurashtra, Gujarat, cited in Agarwal and Narain 1997: 149).

efforts have sought to 'equip and empower' women so that they can participate more effectively and efficiently in water management, they have often been based on a win-win rationale: 'Women who are trained to manage and maintain community water systems often perform better than men because they are less likely to migrate, more accustomed to voluntary work, and better entrusted to administer funds honestly,' (World Bank Water Resources Management Policy, 1993 cited in Green, Joekes and Leach 1998: 264).

In this context, the next section looks at how the Self-Employed Women's Association (SEWA) in Ahmedabad has been involving rural women in water management and the emerging lessons for decentralized water governance.⁵

SEWA: Campaigning on Water, Women and Work

Established in 1972, SEWA is the largest trade union in Gujarat with more than 200,000 women members who are part of the informal sector. Recognising that poor women's lack of access to water has a direct impact on their livelihoods (time, income, health), SEWA launched its Water Campaign in 1995. SEWA has been involved in natural resource, particularly water, management issues in Gujarat since the mid-1980s when it was invited by the GWSSB to form pani samitis under the Dutch-funded Santalpur water supply project in Banaskantha District.⁶

The objectives of the Campaign are:

- To raise women's and the community's awareness of water problems.
- Establish and maintain community water sources through local water user groups with women as leaders.
- Enhance capacity building for women through leadership and technical training so that they can be more efficient resource managers.
- Facilitate women's 'ownership' of water resources, such as the registration of household rainwater collection tanks in women's names.
- To forge links with other organizations, both nationally and internationally, to promote gender-responsive water policies.

The Campaign is both a movement and a development alternative, based on the promise of decentralized water management that captures the specific cultural and environmental contexts of the 11 districts where it is currently active. It reflects the different water related needs of more than 35,000 members from a range of socio-economic backgrounds. The organizational structure of the Campaign (Figure 1) illustrates a well-coordinated, decentralized approach to water management, involving a range of stakeholders at three levels of action and interaction: the state, district and village.

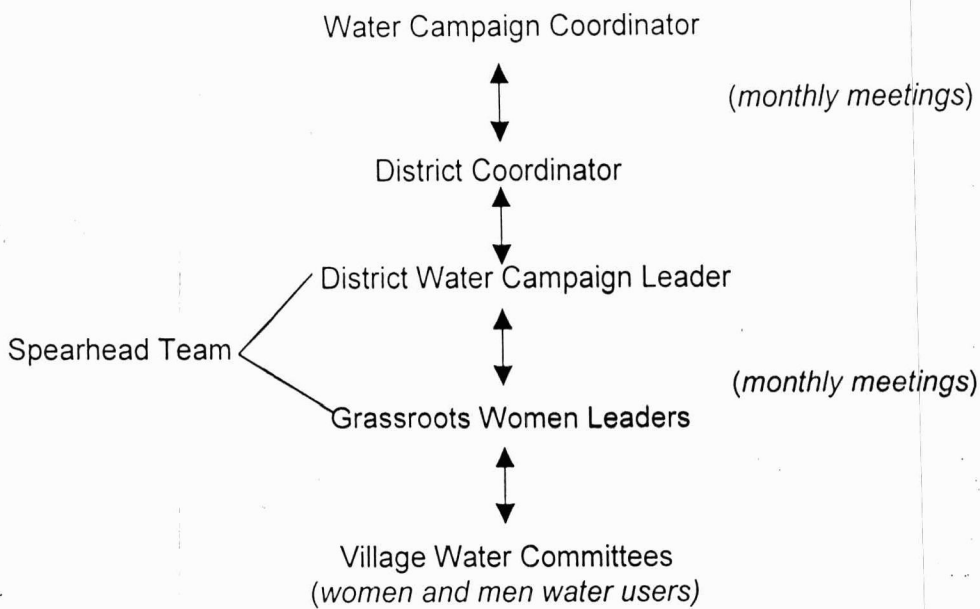
The Gujarat Water Supply and Sewerage Board (GWSSB), an autonomous body established in 1979, holds the primary responsibility for providing drinking water in the state, either through the development of local water sources in villages with a population of 500 or less, or through the implementation of regional water supply schemes. The subject of much conflict and criticism, more than 340 of such water supply schemes transfer water from water rich areas to water poor or scarce areas through pipelines traversing considerable distances. Not only are such pipelines often breached by villagers along the route who are not direct beneficiaries, thus limiting the availability of water for downstream users, the erratic electricity supply which powers the water transfer, particularly in the summer months, affects the frequency, timing and quantity of water available. In addition, water distribution is governed by social and power relations, such as caste and class, which determine such crucial questions as where water should be stored, how much water different groups should receive and when they should receive it.

In the year 2000, the Supreme Court, the highest judiciary body in India, declared that access to clean water is the fundamental right of every citizen and the state is duty bound to provide it. While the principle of human rights cannot in itself guarantee the delivery of potable water, it does provide a legal obligation and a framework for action. By what means the state decides to do this and in whose interests are of course separate questions. The draft National Water Policy of India (1998) and the draft Gujarat Water Policy (2000) articulate the global paradigm shift from the perception of water as a social good to be provided 'free' by the government, to acknowledging that water is a scarce economic resource and that the state should only be a 'facilitator, providing drinking water according to the standard of service that users are willing to maintain, operate and finance.'⁴ While the drinking water needs of human beings and animals are seen as the 'first charge' for any available water, rural users are expected to provide 10% of capital costs and to be fully responsible for operations and maintenance (O&M) through local government, namely *panchayati raj* institutions (PRIs) or, more specifically, *pani samitis* (water committees). However, since grants to the PRIs are still largely controlled by state government, it continues to be the main provider of a minimum supply of water to rural areas. In addition, the responsibilities assigned to these local bodies require considerable managerial and financial skills which they lack, nor do they have adequate power to set water tariffs or generate resources through other sources (UNICEF 1997).

Given the institutional constraints confronting effective community participation, gender concerns have little priority despite the 73rd and 74th constitutional amendments (1993) calling for one-third representation of women on elected PRIs. According to a recent review of the Report of the First National Commission on Water in India (1999) by one of its members, women have 'little voice in water resource planning in this country' yet they are always depicted as the providers and managers of water at the household level (Iyer 2001: 1117). The Gujarat Water Policy maintains that outreach to women should not be overlooked because they are 'the most interested and involved users in rural water supply, domestic urban water consumption, health and sanitation issues and are at least equally concerned as men in agricultural production,' (GoG 2000: 24).

Gender-differentiated needs are subsumed within the general category of 'stakeholder participation' where 'consultation with communities' signifies consultation with men as heads of households and/or community leaders. Women's participation is often reduced to simply labour utilization, particularly for drought relief work. Where capacity building

Figure 1: Organisational Structure of the Water Campaign



Each district has a Water Campaign Leader who heads the Spearhead Team (SHT) at the district level and is responsible for coordinating Campaign activities, liaising with district level authorities and the SEWA District Coordinator (Ahmed 2002). The Leader is supported in her work by a group of 5-8 grassroots women leaders (*ageyvens*) from villages across the district who meet once a month to review activities, discuss strategies and plan for the next month. The SHT's main task is to identify problems at the village level, mobilize rural women through meetings and group discussions, and organize user-based committees to manage water resources. At the State level, monthly meetings for all district coordinators and SHTs are held where experiences and problems are shared and collective solutions sought in consultation with the Campaign Coordinator and other SEWA officers.

In addition, monthly exposure meetings are held in a selected village where the Campaign has been active and successful to share strategies which have worked ('best practices') with other members. This is essentially a lateral learning process between members, providing them with an opportunity to learn from each other, as well as to visit parts of the state they would not otherwise be able to. It aims to give them a visual understanding of how water problems have been resolved by their co-members. For the women in the host village, this gives them an opportunity to 'show off' their work and efforts, and raises their self-confidence and identity. Thus, this is not only an exercise in capacity building but also an empowering experience. Each district takes it in turn to host this meeting which becomes an educational and social outing for the women involved.

SEWA is able to work on all three levels because it is primarily a membership organization, devoting a considerable amount of time and resources to collective activities (meetings, training programmes, etc). More importantly, SEWA has been able to link access to water to other gender-based rights (land) as well as to its work on social

security concerns (health, education and credit). The strength of the Campaign is based on the interconnections between action at the community level, at the district level and at the macro (national) level. Information about the Campaign and related activities is disseminated through SEWA's quarterly newsletter, 'Ansuya' as well as short video films and other visual material developed by the SEWA Research Academy in Ahmedabad.

One of the major achievements for SEWA was a training programme on handpump maintenance, organized by the Gujarat Jalseva Training Institute for Campaign members in different districts in the latter half of the year 2000.⁷ For the first time the Institute organized a programme for women in a language which they could understand, including technical and practical insights, and at timings which suited them.⁸ Despite the inherent difficulties in communicating with an all male, engineering bureaucracy at the GWSSB, SEWA is trying to facilitate a recognition in principle, if not yet in practice, of the role of women water users in water management and the gender differentiated needs that arise when one considers water holistically. For example, SEWA's campaign brochure highlights the different types of water that women workers need – from brackish water for aquaculture, to soft water for block printing and sweet water for drinking – in areas where women are involved in salt production. But for engineers, water is just another resource which needs to be made available to the largest number of users through the most cost-effective means, and SEWA is typically viewed as a social work organization.

At the community level, a number of questions re-emerge for SEWA. For example, in meeting after meeting, women have pointed to the difficulty in re-building community institutions based on collective action. Indeed, the lowest link in the Campaign structure remains one of the most difficult and challenging. Resistance to women's decision-making roles is strong, especially when questions of water-linked land rights surface in social contexts where men are the predominant landowners. Conflict with vested interests, particularly the *panchayats*, persists in many villages, while women activists and leaders also confront personal struggles at the household level. SEWA is aware that rebuilding local capacity for decentralized water management is a painfully slow process, requiring the support not just of women but also of other stakeholders, including men, community organizations and the state. While it would be difficult to enumerate what the Campaign has achieved in this respect, it may be useful to summarise emerging 'best practices', derived from the Campaign, for guiding gender-sensitive water governance (Capoor 2000):

- A bottom-up organisational approach that reflects the diverse priorities of grassroots women through an expanding membership base, spearhead teams, lateral learning opportunities and the sharing of information.
- An integrated approach to water issues which takes into account multiple uses, users and livelihood concerns in the context of equity and judicious water use.
- Flexible, non-hierarchical operations which support women's participation and is not threatening to men.
- Innovative and continuous capacity building efforts, complemented by the use of folk and traditional media for communication and information dissemination.

- Constructive and constant interaction with mainstream water institutions at all levels of governance, rather than adopting a confrontational or antagonistic stance.

Moving from addressing gender in drinking water interventions, the rest of this paper looks at efforts in mainstreaming gender in community irrigation initiatives in Gujarat

Participatory Irrigation Management in Gujarat

Despite massive expenditure on the development of canal irrigation by both the colonial and post-colonial state in India, water distribution remains inequitable and inefficient, irrigation potential is largely underutilized and the recovery of water user fees is poor. Recognising the organizational need for decentralized irrigation management, coupled with the technological concern over wastage of scarce water resources, the First National Water Policy (1987) called for farmer's participation in irrigation management.

Involving farmers in irrigation management is not a new concept: water cooperatives in south India have managed community tanks as way back as the 10th century. The Northern India Canal Act of 1873 obliges farmers to maintain field channels and, in the event of failure to do so, empowers the state to recover O&M costs from them. However, it is only in the last three decades, following the global shift towards irrigation management transfer (IMT) that the state has systematically sought to devolve management responsibility to water user associations (WUAs) at the tertiary level of major irrigation systems.⁹

In 1995 the Gujarat government declared a policy on participatory irrigation management (PIM), calling for the participation of farmers in the planning, implementation and management of medium and minor irrigation projects and seeking the cooperation of NGOs as catalysts in this respect. A legal framework for involving NGOs and farmers was established, and ambitious targets for bringing in 50% of the total irrigable command area under PIM by the year 2003 were defined.

However, except for the limited efforts of a handful of NGOs in the state, little has been achieved in terms of handing over responsibility for water distribution at the tertiary level to farmers. The chief reason for this is the sheer reluctance of the bureaucracy to share decision-making power with the farmers or to give up the rent-seeking practices that are now endemic to public management systems. Some efforts were made in 1996-97 to initiate participatory training for the irrigation bureaucracy to try to change their attitudes and behaviour but their stubborn resistance to attend such trainings meant that even this initiative was eventually abandoned

In October 2001, the state government appointed a high level Task Force to accelerate the process of PIM through legislative action. Part of the political compulsion for this Task Force arises from the need to find appropriate management systems for the delivery of irrigation water under the extensive command area of the controversial Sardar Sarovar project.¹⁰ With representation from academics, NGOs active in the field of PIM and various senior water resource secretaries, as well as key inputs from international stalwarts in the field of IMT, there is tremendous pressure on the Task Force to not only meet its objectives but to convince politicians of the immediate need to

effectively implement PIM. It is in this rather difficult institutional context that we need to look at emerging lessons from NGO efforts at involving rural women in PIM initiatives.

Mainstreaming Gender in PIM: the role of AKRSP(I)

Established in 1983, the Aga Khan Rural Support Programme (India) (AKRSP(I)) is a non-profit organization working towards organizing and empowering rural communities and marginalized groups, particularly women, through natural resource management interventions in three districts of Gujarat. Central to these capacity building efforts is the organization of a variety of formal and informal village level institutions where AKRSP(I) facilitates participatory planning and mechanisms for conflict resolution, as well as mainstream gender concerns.¹¹ In addition, since the early 1990s AKRSP(I) has been systematically involved in both policy advocacy on PIM as well as organizing farmers to manage their own canal irrigation systems through water user associations and irrigation cooperatives. Involving women in such efforts is a more recent development, partly arising from AKRSP(I)'s own re-thinking about the need to address gender equity concerns in PIM right from the beginning, and partly from ongoing efforts at gender-sensitive organizational transformation. In this process, AKRSP(I) has been consistently trying to demystify commonly held perceptions which view farmers and hence, irrigators, as largely male, by illustrating rural women's predominant role in the larger agriculture system within which irrigation is nested.¹²

Drawing on insights from participatory exercises with a range of canal irrigation societies in AKRSP(I)'s *adivasi* (tribal) programme area in south Gujarat, Shilpa Vasavada (2000) argues that women are involved in a number of irrigation activities such as maintenance of the canals, bunding of fields, watering and/or supervising watering during the daytime, supervising field watering during the night, and conflict management on fields and along canals.¹³ Yet despite these roles, women often have little say in decision-making as they are not full members of the canal societies.¹⁴

The non-involvement of women in irrigation management has numerous well-cited impacts, including questions of food insecurity as societies tend to give water for cash crops, such as wheat, rather than food crops which are normally women's responsibility (Groverman and Walsum 1994). Decisions on the water schedule (timing and timeliness) also affect women, particularly those who are on their own, as they have to balance multiple responsibilities and need to plan their time well in advance. Social norms make it difficult for women from female-headed households to manage night watering or to claim and receive the amount of water they are entitled to, especially when water is scarce (Zwarteveen 1995). In contrast, studies have also shown that excluding women farmers from irrigation societies can also lead to 'free-riding' as it is not easy to impose rules on non-members (Zwarteveen and Neupane 1996).

In the mid-1990s when discussions were initiated in AKRSP(I) about the need to integrate gender in irrigation, several staff found it difficult to integrate such concerns as an 'add on' in already existing projects, despite acknowledging the principles of gender equity. Not only was the task of organizing (male) farmers itself massive, the reluctance from the state government to any sort of power sharing, let alone addressing gender, was considerable. It was not till 1997-98 that opportunities emerged for AKRSP(I) to look at gender in new canal projects, making efforts to involve women right from the project inception stage.

Support for AKRSP(I)'s efforts at enhancing women's membership in PIM societies came, not surprisingly, from *adivasi* men.¹⁵ Interviews with *adivasi* men in a cross section of PIM societies, revealed that they felt strongly about women's inherent capabilities in handling conflicts better than men and in exhibiting more self-discipline when it comes to framing and enforcing rules (Vasavada 2000). Men claimed that women are more sincere, both in terms of collecting irrigation dues and saving money, at the household level, to pay for the same. In cases where women have been trained as canal supervisors they have also been more effective than men in ensuring that water is not wasted and that irrigators do not take water out of turn.

In addition to these direct impacts of involving women in irrigation decision-making, the AKRSP(I) case illustrates that canal water has multiple and diverse uses for women from bathing to washing clothes and utensils, as well as water for livestock. That these gendered needs ought to be addressed in the design of irrigation systems and the adoption of rules governing access to water by PIM societies is increasingly recognized by some senior bureaucrats (Shah 2001). However, such efforts will not be sustainable unless gender concerns in PIM are placed in the larger context of equity where water needs of the landless, and other stakeholders, also need to be addressed.

To summarise some of the key learning from AKRSP(I)'s strategy (Vasavada 2000):

- As an important starting point, AKRSP(I) has been systematically undertaking gender sensitization training of its staff at all levels to challenge perceptions and attitudes on women's roles and capabilities in natural resource management.
- Beginning in a small way to achieve and demonstrate success is essential. For example, women in other project villages had been managing group-well irrigation schemes successfully before AKRSP(I) thought of involving women in PIM.
- Capacity building, including exposure visits to other development organizations where women are managing irrigation interventions effectively, is important.
- Women need to be involved from the beginning so that they can also get exposed to the negotiation process with the irrigation bureaucracy rather than wait, according to the dominant (male) viewpoint, for irrigation societies to start functioning efficiently before addressing equity.
- To facilitate and encourage women's participation in PIM it is necessary to convince women and to involve them in other development interventions which address their practical gender needs, such as savings and credit groups. Strong group formation, both mixed and women only groups, are integral to AKRSP(I)'s success in its efforts to involve women in PIM.

AKRSP(I)'s success illustrates that NGOs can and should demonstrate models that challenge legal criteria for membership which link water rights to landownership. Models which illustrate that involving women is not only a question of empowering them but also of managing community irrigation more efficiently, effectively and equitably, have a strong role in influencing policy and legislation.¹⁶

Conclusion: Towards a new paradigm on involving women in water management

The key starting point for the cases cited above is the ability of both organizations, SEWA and AKRSP(I), to link water to other critical livelihood concerns for women (health, social security, income-generation) and to place women's organizations for water management in the larger framework of women's participation in community institutions, such as self-help groups and PRIs. Another important aspect drawn from the cases is the need to make women's contribution to water conservation efforts more visible. Since women's relationship to water is often non-monetary (Bhatt 1995), even in productive activities her contributions will be seen as secondary compared to men. NGOs should therefore use tools which 'quantify' or at least show the additional value of women's efforts in water use and management. This is essential first at the micro-level in terms of strengthening support from both men and women and, secondly, as a policy advocacy tool so that the discourse on involving women can move from a merely instrumentalist perspective, based on assumed natural gender roles, to one which addresses the complexities of gender dynamics underlying rural livelihoods and women's participation (Cleaver 2000).¹⁷ In addition, both cases illustrate the need for a critical mass of gender-sensitive women and men at various institutional levels – the household, the community, facilitating organizations and water bureaucracies. Each institutional arena embodies contested relations of gender and social stratification (Kabeer 1994) which not only determine struggles over rights to water resources but also construct processes of power and exclusion over access/control of resources as struggles over 'meaning'. As Jackson maintains, 'Resources are not only material assets, they are effective arguments, symbolic constructs, labels, text and information; and these are as significant to gendered water rights as titles and tenures,' (1998: 32). In the final analysis, mainstreaming gender in water policy and institutional practice is both a technical and political process which requires shifts in organizational culture, goals and strategies (Coates 1999) as well as in processes of learning and 'unlearning' underlying perceptions about men and women's role in water management.

Endnotes

¹ Independent gender and development consultant, c/o IRMA, P.O. Box 60, Anand 388 001, Gujarat, e-mail: sarahmedin@yahoo.co.in. Paper already accepted for publication by the Royal Tropical Institute, Amsterdam.

² This paper draws on insights from the CIDA-Shastri collaborative research project, 'Rural Change, Gender Relations and Development Organisations', (1998-2001) which I worked on during my tenure at IRMA. There are a number of people who contributed directly to the research and indirectly through their questions and comments at various national and international forums where research insights have been shared over the past two years. While grateful to them, I assume responsibility for any errors that may appear in this paper.

³ These include collaboration for the Gujarat Water Vision 2010 and the White Paper on Water (IRMA/UNICEF 2000).

⁴ A further draft of the National Water Policy was circulated in 2001 and the NWP was finally approved by the National Water Council in April 2002.

⁵ Earlier drafts of the section on SEWA's Water Campaign appeared in the White Paper on Water (IRMA/UNICEF 2000) and also Ahmed (2000, 2001).

⁶ Significantly, the larger purpose of initiating the Campaign was strategic – to expand SEWA's membership base to qualify for recognition as a national trade union. To date SEWA has only met two of the three qualifying requirements – it represents five trades and is active in five states in the country. However, SEWA is still striving to meet the third requirement of 500,000 members.

⁷ Established in 1990 with the help of a loan from the World Bank, the Institute supports capacity building efforts in the water supply sector to strengthen the efforts of local institutions involved in water management.

⁸ One of the requirements for the training programmes is a minimum 12th grade pass for participants which typically means that most rural women would not ordinarily be eligible for participation. SEWA spent many months negotiating with the GWSSB to overcome this technical constraint.

⁹ Also known as turnover or devolution, IMT involves the transfer of responsibility and authority for the management of irrigation systems from government agencies to water user associations (IndiaNPIM 2001).

¹⁰ Popularly known as the Narmada River project, this large dam project has a long and controversial history where questions have been raised about its environmental impact, the rights of displaced persons, particularly the *adivasis* or indigenous people, and its sustainability (see Dreze et al. 1997).

¹¹ Women's participation is promoted in separate groups, such as Self-Help Groups and Mahila Vikas Mandals (women's development societies) and also through mixed village-level groups on a range of issues.

¹² Participatory exercises based on the Harvard Analytical Framework and the Moser Method are used by AKRSP(I) with women and men involved in agriculture, to illustrate the gender division of labour and sensitise men on women's roles and responsibilities in agriculture.

¹³ I would like to thank Shilpa Vasavada, Programme Specialist, Human Resource Unit, AKRSP(I) for allowing me to share these insights from her work, see Vasavada (2000).

¹⁴ According to current legislation, membership in irrigation societies is based on landownership only, and this is invariably, predominantly male. Some NGOs such as the NM Sadguru Water and Development Foundation have co-opted three women on the management committees of the Lift-Irrigation Co-operatives they have facilitated (Ahmed 1999).

¹⁵ AKRSP(I) is also working towards changing the bye-laws wherein only landowners can become members of PIM societies, so that instead of simply being nominal members, women have full membership rights.

¹⁶ For example, at a recent meeting of the Task Force on PIM in Gujarat of which I am a member, it was mooted that women should not simply be co-opted on to water user associations at various levels, but that they should have joint membership rights.

¹⁷ At the micro-level, Jackson (1998: 32) points out that the issue of women's visibility is complex – women may choose to be 'invisible' as this may have strategic advantages, arouse less male resistance and enable women to use subtle forms of influence and power in decision-making on water.

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ICAR Short Course on Gender Perspective in Research, Extension and Education for Agricultural Development.

Topic: Biodiversity and Gender Concerns

Date: 24 October, 2002

Speaker: S. Bala Ravi, Former Assistant Director General (IPR), ICAR and Advisor (TRIPs and Biodiversity), MSSRF, Chennai; email sbala2001in@yahoo.com

Dwelling on the topic, I would like to deal separately the aspects of biodiversity and gender concerns and then examine the significance of their inter-linkages.

Biodiversity

When we conjure about biodiversity, we seem to think that biodiversity is an entity excluding man. And that man seems to boast that all biodiversity on the earth is his preserve, which he can plunder to satisfy his greed and destroy as he wishes. But a reconciliation that he is merely one of the multitudes of living entities constituting the biosphere in land and water, it may possibly dawn unto him, that the extent of damage he had been committing to rest of the biodiversity and the delicate dynamics of the life supporting system on this planet.

The term biodiversity means the totality of the types and kinds living forms and the differences within each kind inhabiting the earth. The global biodiversity is now estimated to have 1.75 million described species with another eight fold un-described number of species. On numerical basis of species, plants excluding fungi constitute only 15% of the biodiversity. However, green plants as the primary synthesizers of food through photosynthesis play the most critical role for the sustenance of more than 70% of other species including man. Biodiversity on the earth is not uniformly distributed. About 90% of species constituting the biodiversity are native to the 10% of the area around the equator. Even within this equatorial belt, there is variation in the distribution of biodiversity. Certain regions are concentrated with inter and intra-species wealth. Such regions are called megabiodiversity regions. There are twelve such regions on the earth. About 70 % of the global biodiversity is confined to these twelve megabiodiversity regions. Two of these regions are within India. They are the Himalayan region stretching up to North Eastern India and the Western Ghat region together with Andaman & Nicobar Islands. Although India has only 2.5% of the worlds land area, it is endowed with 8% of the global biodiversity.

Agriculture originated in regions, which are centers of biodiversity with the domestication of animals and crop plants. India is considered to be the primary or secondary centers of diversity for several species of agriculturally important crops, such as rice, pigeonpea, bengal gram, other grams, pepper, jute, brinjal, cucurbits, and many tropical fruit trees like mango, etc. Indian agriculture, which is 4500 to 5000 years old is considered to have domesticated at least 46 indigenous crop species. Although agricultural crop species constitute only less than 1% of the total biodiversity in terms of species number, the intra-species genetic diversity created and conserved in these crops is one of the largest. For example, the Asian rice has about 1,00,000 varieties. Agriculture also essentially requires indirect service from rest of the biodiversity in respect of influencing the hydrological cycle, regeneration of atmospheric gaseous composition, regulating the climate, conserving and enriching soil fertility, mediating absorption of pollutants

and breakdown of wastes, and facilitating pollination of many crops. The agriculture, thus directly and indirectly depends on the total biodiversity.

This interactive dynamics between biodiversity and agriculture had been shifting against biodiversity with the increasing human population. Population increase and conspicuous consumption by the rich are exercising unprecedented pressure on agriculture, bioresources and environment. Need for more food and feed and raw material for agro-industry is forcing increasing land conversion, natural habitat loss, genetic erosion in crops, climate change, land degradation, biosphere pollution, introduction alien invasive species, and unsustainable exploitation of natural bioresources from land and sea. Land conversion is most intense in the tropical forest regions. Environment pollution from nitrogen deposition and green house gas emissions is highest in the northern temperate region. While the natural resources are being eroded at rapid pace, human deprivation from poverty, malnutrition and pestilence are increasing in absolute terms. Livelihood of indigenous and rural people in developing countries, who are largely sustained on bioresources is getting threatened.

Establishment of World Trade Organization (WTO), binding of international and national trade with intellectual property rights (IPR) and universalisation of IPR on living entities like gene, bacteria, plants and animals are exercising another pressure for appropriating biodiversity by stealth and stealing. Social ethics and value systems traditionally built around use of bioresources and knowledge system for public good, renouncing private profit, are collapsing under the pressure of globalisation of IPR. The evolving change is being exploited to privatise innovative heritage of many traditional communities, which had been placed in the public domain for public good. While there is no limit to the immoral greed of the wealthy in appropriating bioresources and knowledge systems from the public domain, the space being left for the livelihood of the poor is increasingly shrinking.

Caught in a vicious cycle of population pressure, globalisation, shrinking natural resources, increasing genetic erosion of agro-biodiversity, privatisation of bioresources and knowledge system and increasing poverty, the developing bioresource-rich countries have no option but to the sustainable use, sustainable development and safeguarding our natural resources and intellectual heritage. Agriculture in are expansion and increase in intensity leads to loss of biodiversity including agro-biodiversity. For example, an estimate from China reveals that out of the 10,000 wheat varieties which existed during 1949, only about 1000 retained during the 1970s. Similarly, out of about 7100 fruit varieties existed during 1800, only about 1000 are existing today. The situation in India and each region is no brighter. In this context, conservation and sustainable use of our biodiversity, conservation of landraces and traditional varieties of crop plants, value added IPR protection to our traditional knowledge and safeguarding them against piracy and appropriation become important national and societal responsibility. The people and the institutions, governmental and non-governmental, of Kerala have to take lead role in this respect, in view of their wealthy biodiversity and traditional knowledge heritage and high literacy and awareness to contemporary issues.

Gender Concerns

There are many denominators dividing human beings across the world. These dividing factors fragment the human society while the world is shrinking into a global village and these fragments are discriminated on the basis of gender, skin colour, religion, denominations within

religion, economic strength and even physical and mental handicaps. All these dividing factors other than gender evolved much later in human history. Gender is as old as man. There is no evidence to show that pre-historic human society was socially discriminated on gender basis. So gender discrimination like all other discriminations is a device to the modern society. This discrimination, at any period of time, varied among societies. For example, there was stronger engendering among the early society in Kerala. The main concern on gender discrimination today is on its enlargement rather than a decrease expected with political freedom, growth of economy and democratic institutions. Alternatively the discrimination appears more conspicuous and larger seen with the contemporary economic and social prism.

The dividing line between the gender has two fundamental elements. The first is the natural element, which is biologically enforced as an essential feature of life along with all the biological fascinations associated with it. The second is artificially imposed and discriminately loaded with multiple factors across time by the social carpenters. As emphasis or consequence of any discrimination is deprivation and hegemonic domination, gender discrimination also created a class people to subserve another class. By this process women were deprived of education, health care, economic entitlement, human right, right in governance, social opportunity and equal justice. According to the latest UNDP report, while the average global per capita income per day is about 14 US \$, 86% of Indians live with less than 2 US \$ per day. A disproportionately high number of Indian women live in much deeper economic deprivation. Denial of opportunities and disadvantage are forced up on women right from the pre-natal stage with increased female foeticide. It continues with increased mortality of girl child, lower female literacy, poor access to normal and maternity health service, lower female literacy, reduced employment opportunity, restricted social and political opportunity, marginalisation in social and national decision making, target of increased right violations and low access to legal protection.

Like all discriminations, gender based discrimination can be totally remedied only with socio-political actions driven by a changed mind set. Fundamental to counter the discrimination is increased literacy, better reproductive and family health services, empowerment to make informed choices on child birth and equality in socio-politico-economic domains and increased role in decision making and governance. Much of the commitment made, in this respect, by several countries, particularly the developing countries, at the United Nations Millennium Summit on gender equality and empowerment of women in 1995 remain unfulfilled.

Biodiversity and Gender

Biodiversity including agriculture, animal husbandry and fisheries contributes to about 40% of the global economy. While the developing countries are rich in biodiversity, their market share from biodiversity is much meager. Communities traditionally cohabitating in natural ecosystems use the biodiversity for their livelihood in a mutually beneficial manner without overexploitation and with concern to conservation. Women, in particular play an important role in such conservation and sustained use. The stakes of women to the immediate environment and biodiversity are much higher because of their higher economic insecurity. The predominant role of women several biodiversity protection movement such the '*chipko* movement' illustrates this fact. It is estimated that 14-23% of the nutritional needs of rural population living in poverty is met by wild products accessed from the native ecosystem and often this dependence rises to 42-57% at times of drought.

The women traditionally had been contributing a major role in the conservation of agrobiodiversity. Women are active participants in various agricultural operations and specifically in seed selection and conservation. There are several agricultural operations where either men or women alone are skilled. Women also own a knowledge system on the choice of crops, varieties, safe storage and processing produces for various uses. The role of women in mixed farming is much more deeper with innovative skills in the integrated use of household resources including domestic waste for optimizing production efficiency. These skills are to be sharpened and strengthened with technological backstop under increasing fragmentation of farm holdings and increasing compulsion to move to integrated mixed farming to optimise sustainable livelihood from shrinking land resources. The women specialists in agriculture, who appreciate this constituency better have a challenging role in dismantling discrimination and to bring equity in the role of women in advancing sustainable agriculture and conservation of biodiversity and access to improved economic benefits and livelihood.

Engendering Development – Science and Technology as a Tool

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India can justly lay claim to be proud of a place among the developing countries in providing equal rights to all its people and giving voting rights and equal legal status to women from Independence. Also, in the field of science and technology from early days of Independence, the Government of India has been fully cognizant of the indispensability of S&T in the economic and social development of India and this is adequately reflected in the various five-year plans drawn. However, the impact of S&T on society has not been uniformly beneficial as witnessed through the disparity between the impacts at the rural and urban levels and between men and women in particular. This is in spite of the rich innovations, in the last century especially in the fields of biotechnology, information technology, renewable energy and space technology.

Between development, diffusion and use of modern science based technologies there are many links in the chain. From the S&T institutions that generate the technologies, to the mediating institutions that transfer it, to the societal institutions that use it unless there is a participatory mode from end to end the needs of the people are not met. However, there continues to be missing links in this chain. Engendering this chain is also crucial for an equitable development.

Cultural attitudes and gender stereotyping have also been impediments to education leading to more men than women in scientific and technical careers and in decision-making positions thus increasing gender inequity. Equal access to science is not only a social and ethical requirement for human development, but also essential for realizing the full potential of scientific communities and for orienting scientific programs towards meeting the needs of humankind. There is thus a growing need in understanding that development should be gender-specific and that S&T policy or any developmental programmes should recognize the gender-specific nature of development and respond to the needs and aspirations of both men and women equitably.

To make science and technology responsive to the needs of the society especially women, the decision – making mechanisms within the science and technology system needs to ensure clear articulation of the gender – specific needs and goals by incorporating end – user opinions. Governments should establish a focal point of expertise in gender, science

and technology to be available to advise government departments, facilitate training sessions, and monitor and report on the implementation of government strategies in gender, science and technology. This should also be the case in all R&D institutions and Universities. Equality of access to and attainment of educational qualifications is necessary if more women are to become agents of change. Literacy of women and technical empowerment, in the fast changing scenario, is an important key to improving health, nutrition and education in the family and to empowering women to participate in decision making in society. Investing in formal and non-formal education, especially in frontier technologies, training for girls and women, with its exceptionally high social and economic return, has proved to be one of the best means of achieving sustainable development and economic growth.

Most studies of women's needs and aspirations identify income generation as a basic need. This has led to increased interest in the role of women as entrepreneurs in small and medium sized enterprises in the formal sector and in micro enterprises in the informal sector. Many efforts are underway to encourage and facilitate women's participation in such enterprises. Most factors that facilitate women's participation are not science and technology based. They have more to do with access to credit and other necessary resources. However, technical and managerial training, access to both local and new technologies – including information and technology management and marketing training are important factors that influence the success of these enterprises.

Local knowledge is one area in which women's science and technology knowledge and practices are critical for ecologically sustainable development. Like other scientific systems, local knowledge systems develop technology and management practices to improve the quality for life of people. A better statistical understanding of women's economic contributions will improve policy making at the national level. Knowledge of women's economic contributions can be useful for human resources planning, agricultural policies, policy on the informal sector, and adjustment and stabilization policies in time of economic crisis. More generally, better sex-gender-desegregated economic data will improve policy on employment, income distribution, social security, access to credit and training and other related areas.

Efforts in the field of science and technology for women during the decade have remained confined more to the identification of issues and means to achieve the policy goals. Women have remained virtually invisible in the national plans at the sectoral and inter sectoral levels both for the generation, and transfer of scientific and technological know-how. This brings us back to the question as to how the various stakeholders and partnership programmes can help in operationalizing the policy objectives of S&T for women?

Also, S&T efforts for women are not linked to other development programmes in rural or urban areas. The former lack an infrastructure, to communicate, implement or monitor. The latter do not take any responsibility because it is not their programme. Yet all grass-root workers clamour for an integrated package – of income generation, technical training, education health and child care services – if women are to participate actively and benefit from these programmes, Government's efforts to coordinate such at intra-departmental and inter-department levels will have to be enhanced greatly.

The Ministry of Science and Technology through the Department of Science and Technology and the Department of Biotechnology have initiated a number of programmes to improve access to technical education for women in S&T and also access to developments in S&T to women especially in rural areas. However, the science and technology generating centers are not normally equipped to carry out extension-based activities. Lead role in these spheres is expected to be taken by the state councils for science and technology, social voluntary organizations and the rural development and extension infrastructure. But are these organizations adequately geared or motivated to play such a role in women's cases? Has the science and technology component been included in the job responsibilities of the rural extension agency and are they adequately trained for that? Is there a need for non-governmental action in this area? Cannot teachers and students of science join hands with voluntary organizations in playing an active role in this field? There is a need to shift the role of these Government agencies to a facilitator of the project and help in developing the institutional mechanisms for promoting such partnerships. A consultative culture will have to be inculcated to ensure that local community needs are addressed. There should also be a capacity building for NGOs and private sector personnel including untrained government personnel and extension workers for better implementation of such initiatives. There needs to be innovative communication tools to end-users too.

Given the different approaches of governments and bureaucracy and the enormous heterogeneity of the NGOs, there is a definite need to look closely into the nature of relations between government and NGOs to promote partnership efforts. Partnership has advantages that are essential for promoting an integrated approach to development. Contemporary development challenges are complicated and require innovative and strategic interventions.

The overlap of science and technology, sustainable human development and gender is thus an area of human activity that has not been deeply explored and to admit that

inequality exists, to search for its causes, to measure the socio-economic impacts of such inequality and to take the necessary political measures means adopting a new understanding of society and of science and creating conditions that addresses the above mentioned issues which is necessary in order to achieve sustainable human development.

The M.S. Swaminathan Research Foundation has conscientiously tried to engender all its activities be it at the policy level, advocacy, formulating programmes and implementing them through partnerships. The author will present her experience in working at the Regional, National and the State level in the area of Gender, Science and Technology.

Engendering organisational practice in NGOs: the case of Utthan

Sara Ahmed

In the late 1970s, feminist social scientists began to challenge some of the assumptions underlying the dominant paradigms on organisations, arguing that they reflect and are structured by the values articulated within the larger institutional arenas in which they are embedded, thus reproducing gender-discriminatory outcomes. This paper unpacks the 'deep structure' of one NGO, Utthan, based in Gujarat, India, to understand the extent to which it is an engendering organisation. It suggests that, while gender-sensitive leadership, training, and resources play a critical role in addressing gender equity in development practice, organisational transformation is a much harder and longer process requiring sustained commitment from the leadership, staff, and funding partners.

Introduction

Although gender issues have been on the development agenda since the early 1970s, it is only in the last decade that development organisations, including NGOs, which have traditionally been other-centred, have begun to address the question of gender within their organisational boundaries. The concern for organisations as 'engendering mechanisms' grew out of the debate on mainstreaming women/gender in development and the need to look critically at gender-inequitable structures, procedures, and policy outcomes, which both determine and are the result of gendered organisational practice.¹ 'Mainstreaming' is the term used to describe strategies aimed at integrating a gender perspective into all decision-making aspects of an organisation, i.e. policies, strategies, programmes, and administrative and financial activities, thereby contributing to organisational transformation.

This paper begins with a conceptual overview of the gendered hierarchy of organisations before looking at how Utthan, as a development organisation, is 'gendered'. With its headquarters in Ahmedabad, in the Indian state of Gujarat, Utthan is a registered NGO working on natural resource management through community participation in three districts of the state. Underlying its participatory approach to development, Utthan seeks to strengthen gender equity in natural resource management by facilitating rural women's participation in decision making at the household and community levels. Drawing on in-depth interviews with one district team and with Utthan's senior management in Ahmedabad, this paper examines Utthan's willingness and capacity *as an organisation* to address gender equity in development practice. The research for this paper was undertaken as part of a larger study on rural change, gender relations, and development organisations which looks at the role of NGOs in negotiating spaces for addressing gender equity in water management policies and practice.²

Understanding the gendered hierarchy of development organisations

To say that an organisation, or any other analytical unit, is gendered means that advantage and disadvantage, exploitation and control, action and emotion, meaning and identity are patterned through and in terms of a distinction between male and female, masculine and feminine. Gender is not an addition to ongoing processes, conceived as gender neutral. Rather, it is an integral part of those processes, which cannot be properly understood without an analysis of gender. (Acker 1990:146)

Feminist concern about gendered organisational practice originated from bringing ideas about sexuality, authority, and power out of the private sphere of 'intimate relations' into the 'domain of the public organisation of control' (Acker 1992:249). Drawing on economics, sociology, and organisational theory, social scientists have looked at gender, work, and the division of labour in organisations as well as the relationship between organisational structures, authority, and power. They have analysed how the different positions of men and women within organisational hierarchies affect the nature and valuation of their work (tasks, segmented opportunity structure) and their access to resources and decision making. In addition, the growing debate on sexual harassment in the workplace has highlighted how reproduction and sexuality, particularly in relation to women's bodies, are often objects of, and resources for, control. If the feminist vision is to make organisations more democratic and supportive of humane goals, then it is important to understand the social construction of gender by organisations in order to challenge gender inequalities.

It is in this context that development practitioners have begun to look at the 'archaeology of gender' (Goetz 1995) within development organisations, including donor agencies, bureaucracies, and NGOs (Plowman 2000). Not only do these organisations reflect and are structured by the values articulated within the larger institutional arenas in which they are embedded, they produce gendered outcomes and personnel who, whatever their sex, reproduce gender discriminatory outcomes (Goetz 1995:3). However, since NGOs have some degree of autonomy from patriarchal structures and play an important role in renegotiating gender relations through struggles for social justice and gender equity, they can also be seen as 'engendering' organisations (Murthy 1998:204).

Organisations can be gendered in a number of ways, and recently organisational change-agents have developed several tools for analysing gender and organisational practice (Lingen et al. 1997). One such analytical framework is constructed around three interdependent levels or elements within an organisation (Sweetman 1997:3) namely: the substantive (organisational mission, ideology, and policies); the structural (procedures and mechanisms for enforcing its goals and objectives, its strategy); and the cultural (shared beliefs, values, and attitudes). While we look at these levels separately in the context of Utthan, it is important to understand the linkages between them. Before doing so, the next section sketches out a brief organisational profile of Utthan.

Utthan: a background note

Utthan, which means 'upliftment' in Hindi, was founded in 1981 with the purpose of facilitating development action in Dhandhuka *taluka* (block), part of the coastal, semi-arid Bhal region of Gujarat. Under its aegis the grassroots project 'Mahiti' (literally meaning 'information') was initiated to develop information linkages between communities and the state. According to Utthan's founders, knowledge leads to awareness, which in turn leads to self-sustained development action. Utthan provided the support structure and was the 'outsider group', consisting mainly of dedicated development professionals, while Mahiti, the primary

'insider group', comprised local individuals, especially women, who had actively participated in earlier development initiatives. In 1994, as part of Utthan's withdrawal strategy, Mahiti became an independent community-based organisation (CBO) continuing to maintain strong links with Utthan.

One of the critical problems in the Bhal region was the availability of potable water, particularly during the dry season. Conflicts over water were common and women became the major victims, largely because of the gender division of labour whereby women and girls are mostly responsible for domestic water collection. Utthan-Mahiti did not begin with a specific focus on women only, as they did not want to isolate other members of the community, nor did they want to have a 'compartmentalised' approach to meeting developmental needs. However, as the mobilisation process proceeded, they realised that they needed to create spaces for people with different needs and that there were different views emerging from men and women:

Men were saying—look at all this unproductive land, we need to generate employment through reinvesting in the land, while women were saying—there is a drinking water problem in the village which leads to migration. Men saw it as a seasonal problem but not the women, who were able to link it to other aspects of development. (Interview with Nafisa Barot, Utthan Executive Trustee, January 1999)

Another problem mentioned by the women was the exploitative money-lending system, run by the *Darbars*, the most powerful upper castes in the area, and so Utthan-Mahiti began working on both these issues simultaneously. Through interaction with local communities, alternatives were sought for making saline land productive, for providing women with income-earning opportunities through the formation of self-help groups, and, most importantly, for finding sustainable solutions for the water crisis. Building on traditional knowledge and community management systems, Utthan-Mahiti facilitated the construction of lined village ponds in 20 'no-source' villages to store water, primarily for drinking purposes.³ These ponds were lined with polyethylene sheets to prevent seepage of saline water and the water was tapped through a hand pump after passing through a slow sand filter.

Although community institutions, with both women and men as members, were formed to manage and maintain these ponds, the degree to which they are sustainable varies from village to village for a number of contextual reasons, which cannot be elaborated here (Barot 1997). However, two aspects or outcomes of Utthan-Mahiti's efforts need to be highlighted. The first concerns the participation of women in the management of community assets in an area where traditionally women's participation in the public domain was limited. The second concerns the growing recognition by the state, policy makers, and donor agencies of the need for decentralised water management with community participation. Utthan continues to work on both these aspects while Mahiti extends its development work in Dhandhuka *taluka*, strengthening local networking and capacity building.

Utthan: organisational structure

Since 1995–96, Utthan has been working in three districts of Gujarat, namely, Dahod, Bhavnagar, and Amreli. Each district has its own field office and there are currently 31 projects spread over 81 villages broadly covering natural resources management, community organisation and mobilisation, and women's participation and empowerment. Utthan's annual budget is about Rs25 million (approximately US\$600,000) and it receives funding from a number of sources including central- and state-level government agencies and donors such as HIVOS, Swiss Aid, the Royal Netherlands Embassy, and the Ford Foundation (Utthan 2000a).

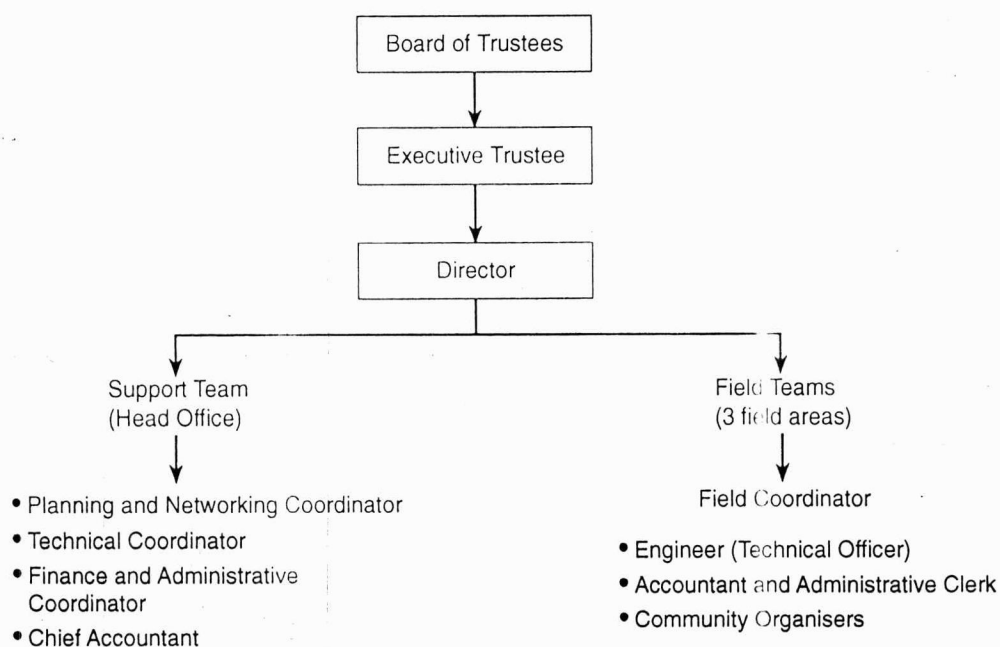


Figure 1: Utthan's organisational structure

As Figure 1 illustrates, Utthan has three field teams and one programme support core unit based in Ahmedabad which plans and monitors programme activities with the field teams and provides them with training, technical, administrative, and financial guidance. In addition, the core team is also involved in networking with a number of development organisations as well as policy advocacy on drinking water initiatives and the legitimisation of women's role as community natural resource managers.

The Board of Trustees consists of seven members, including Barot, prominent NGO leaders, academics, and development practitioners. Earlier, the Board used to meet annually, but now it meets two or three times a year, partly to enable members to come for at least one of these meetings. Although the Board does not intervene in Utthan's day-to-day activities, the recent expansion in Utthan's work and staff means that it needs more specific guidance in certain areas (e.g. strategic planning). Sometimes this is provided by Board members who are based in Ahmedabad or by Utthan's funding partners.

The remainder of this paper looks at how Utthan is gendered at three interdependent levels—the substantive, the structural, and the cultural. The discussion is based on in-depth interviews with all pre-expansion phase staff at Ahmedabad (core team) and the Bhavnagar field team (Centre for Drinking Water Resources Management). For reasons of confidentiality, all individuals quoted are referred to by their sex and broad designation within the organisation and not by name.

The substantive level: reaching a shared vision for gender equity

The substantive level of an NGO, as defined in its vision or mission statement, reflects its perspective on gender relations and social change. In this respect, Naila Kabeer's typology of gender policies (1994) is a useful tool for distinguishing between different organisational policy approaches. *Gender-blind policies* (e.g. those which claim that 'this is a household programme')

reinforce or perpetuate gender hierarchies in society. This is typically the case in the design of community institutions in relation to natural resource management interventions, where the predominant membership norm is one adult from each user household. Inevitably, this is the male head of the household, and women who are the principal users of natural resources for household subsistence are left with token representation on the management committees.

Gender-neutral policies believe that targeting resources to the 'right' gender (e.g. health and hygiene education to women) will enhance the effectiveness of such interventions and bring more sustainable benefits. In other words, this 'instrumentalist' use of women for delivering community health services, or other welfare needs such as clean water and sanitation, is not only meant to be more efficient, but it further perpetuates the social construction of women as 'natural carers'.

Other development organisations have begun working on gender as a result of their focus on poverty alleviation, wherein women are seen as the 'poorest of the poor'. *Gender-ameliorative policies* favour the targeting of specific resources to women (e.g. microcredit interventions), but, without a transformatory potential built into them, such approaches do not necessarily question the existing distribution of resources and responsibilities. In contrast, *gender-transformative or redistributive policies* seek to move beyond the provision of practical gender needs (water, fuelwood, credit, etc.) to provide spaces for women to articulate and organise around their strategic gender interests. This may require men to give up certain privileges and take on new or additional responsibilities in order to achieve gender-equitable development outcomes.

In this framework, let us look at Utthan's mission:

To initiate sustainable processes of socio-economic and political development in the communities, which have been exploited and oppressed, through issues pertaining to drinking water, environmental sanitation, natural resource management, community and women's health, economic status that leads to empowerment, and social justice, that leads to gender justice and community empowerment. (Utthan 2000a)

The statement describes a process of rural transformation beginning with the provision of a critical livelihood resource, such as drinking water to the communities in Utthan's project areas. In meeting a practical gender need, Utthan's approach at one level could be described as gender ameliorative since it is focused on reducing the drudgery of water collection faced by poor women. And in making potable water more easily available throughout the year, Utthan's interventions also have an impact on the health and economic status of households and communities. However, in its organisation of women in self-help groups for access to credit, Utthan has moved beyond a gender-ameliorative intervention to look at other aspects of social change (e.g. challenging the dominance of the traditional money-lender). Furthermore, in involving women in decision making on water (and other resources) through facilitating and strengthening their participation in community-level institutions, such as *pani samitis* (water management committees), and providing assets (e.g. roof-water collection tanks) in their name, Utthan is initiating a gradual process of empowerment. In so doing, it is trying to address strategic gender interests (e.g. women's access to, and control over, resources such as water and credit). The question remains as to whether Utthan has the capacity to sustain and strengthen this process of transformatory change in the long term.

The structural level: translating gender equity concerns into action

Social transformation in organisations can be de-railed at the structural level—verbal and paper commitments to a vision of gender have a tendency to 'evaporate' when there

is resistance to putting policy into practice through the procedures, mechanisms, and rules of the organisation. (Sweetman 1997:5)

Looking at gendered structures and practices necessitates an analysis of time and space within organisations, as well as recruitment procedures, promotion policies, the allocation of tasks and responsibilities, the distribution of resources, and patterns of decision making. As Acker argues (1992:255):

The gendered substructure lies in the spatial and temporal arrangements of work, in the rules prescribing workplace behaviour and in the relations linking workplace to living place. These practices and relations, encoded in arrangements and rules, are supported by assumptions that work is separate from the rest of life and that it has first claim on the worker. Many people, particularly women, have difficulty making their daily lives fit these expectations and assumptions.

Practical arrangements of space (office space, approaches to fieldwork) and time (flexibility of the working day, life cycles, and career management) are essentially expressions of power as they 'reflect the physical and social capabilities of those who dominate organisations' (Goetz 1997:17). Where organisations are dominated by men, a response to legitimate demands raised by women staff are usually seen as 'concessions' rather than as opportunities to promote capacity building of all staff.

Moreover, the presence of more women in an organisation does not necessarily mean that it is going to reflect a greater degree of gender awareness, though it certainly affects its capacity to work on gender issues. This is particularly important in socio-cultural environments where male fieldworkers do not find it easy to approach rural women. But questions need to be asked about where women staff are located in the organisation, and equally, what tasks are allocated to them. Gender parity is also important in drawing attention to a number of practical gender needs of women staff (e.g. childcare provision or flexible working hours). Although this does not imply any structural change in terms of the gender division of roles and responsibilities, it has the potential to stimulate the examination of more strategic aspects of gender inequalities within the organisation (Macdonald et al. 1997:88).

Another issue is the structure or 'shape' of the organisation—it is usually assumed that flatter, decentralised organisations are more open to participatory decision making and are therefore more gender sensitive. But research has shown that collective or consensual management does not eradicate problems of dominance—it simply makes them invisible or 'latent' while other ways are found to establish dominance. Linked to the debate on hierarchy is the issue of management style, that is, is there a distinctively masculine or feminine style of management? Some organisational analysts feel that women leaders and managers are inherently more nurturing, flexible, and sensitive, while men are driven by targets, tasks, and authority. But bringing personal gender attributes into the public domain is highly debatable, and it has thus been argued that these should be seen as preferred styles of working because of the multiplicity of roles and responsibilities that women and men have to manage.

Gender-sensitive leadership

Translating the organisational commitment to gender equity into practice requires gender-sensitive leadership, which is not necessarily vested in one individual, but more broadly includes the head of the organisation as well as those involved in senior management positions who are able to influence the direction, style, and values of an organisation. Barot, as one of

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the founder-leaders of Utthan, has played a critical role in creating gender-sensitive understanding among the staff members, but she does not link this to her gender:

What is important is the sensitivity of a person—whenever I talk to one of my employees, whether they are men or women, I always try to put myself in their place, to feel the way they feel about a particular problem so that I can understand them better. But I am sure that other staff members would try to do the same. (Interview, Ahmedabad, 1999)

However, she admits that women probably respond to and confide in other women more so than they would do with men, a fact that is corroborated by some of the women staff members who still feel more comfortable talking to her about their problems. Most of the staff, particularly the older ones who have been with Utthan for at least ten years, agree that having a woman as leader meant that they could have a clear focus on gender-equity issues right from the beginning. But now that gender equity is beginning to be institutionalised within the organisation, some staff contend that it does not make a difference if, as is the case currently, the executive director is a man.

As the founder-leader of Utthan, Barot articulated a vision motivating other professionals and local people to work with the organisation. Although she may not be able to travel to the field as extensively as she used to, Barot continues to provide the critical interface with the external environment. Today she is involved in policy advocacy on decentralised alternatives for water management, networking with other organisations working on gender issues in Gujarat, and mobilising funds, despite having to use a wheelchair as the result of a car accident in 1998.

Staff recruitment: the question of numbers

In the patriarchal context where Utthan works, the practice of *purdah* (seclusion) makes it difficult for male staff to reach out to women beneficiaries. The process of social mobilisation requires considerable time and interaction, often in the privacy of women's homes, which male outsiders cannot access easily:

In the beginning, women [in the village] did not trust us because they had had a very bad experience with another organisation. So they told us to talk to the men only. But now they talk and discuss things with us—for example, they have suggested a place for the standposts. (Male community organiser, interview, Bhavnagar, 1999)

Over the years, Utthan has tried to make a conscious effort to hire more women, especially because in the areas where the Darbar community is strong, interaction with women is constrained by cultural barriers. In September 1999, as a result of its growing activities, Utthan went through a major expansion from 14 to 44 full-time staff with various roles and responsibilities as indicated in Table 1. Presently, 36 per cent of the staff are female, which is one of the highest female:male ratios enjoyed by the organisation and certainly compares well with other mixed NGOs working on similar issues in the country. As Table 1 shows, the number of women in management positions is equivalent to the number of men, but interestingly there are no women in any technical positions. Women staff tend to dominate in process-oriented roles such as community organising, even if they come from technical backgrounds and/or are exposed to technical training at Utthan.

Apart from gender parity, Utthan is also sensitive to the ethnic diversity of its staff and encourages representation from disadvantaged groups, including minorities, scheduled castes and tribes, and the physically challenged. Currently, just under a quarter of the staff are from these groups, though they tend to predominate as community organisers, partly because of their educational background, skills, and experience.

Table 1: Full-time staff at Utthan in March 2000

Category	Women	Men	Total
Managerial	2	2	4
Technical	0	4	4
Prog. Coordinator	1	2	3
Administrative	1	4	5
Accounts	2	3	5
Computers	0	1	1
Comm. Organiser	10	12	22
Total	16	28	44

Source: Utthan (2000b:11).

An effort is being made to hire more local staff, in the hope that they would be retained and that women in particular would be able to be closer to their families. All new staff go through an induction period of six months in which they learn about the organisation's work and approach as well as attend workshops to develop skills and knowledge in specific areas related to their proposed work (e.g. gender awareness). Staff performance review is an annual process, which determines salary increments. It involves self-assessment as well as peer-group review by the director, programme coordinator, and monitoring-in-charge.

Gender and space: women, mobility and life cycles

As is typical of many other NGOs, it is difficult for Utthan to retain women staff, particularly at the field level. Not only are there societal pressures (e.g. from their families) which prevent young, single women from doing extensive fieldwork, but marriage (patri-local) and motherhood also restrict women's mobility. Apart from restrictions because of their place in the life cycle, women face added physical constraints in terms of doing fieldwork. Public transport is minimal in the areas where Utthan works and not all women feel comfortable about using a motorbike. One of the women staff members in Bhavnagar recounted how in the early days they often walked 2 to 3 km to reach villages, or hitched rides on local trucks and jeeps, but now that they have access to office motorbikes, albeit via their male colleagues, it has saved time. As it is not safe for women staff to go to villages at night when most community meetings are held, the Bhavnagar field office has asked male and female members to travel together in pairs.

Childcare and child-support facilities

The issue of childcare and child support is emerging as critical, particularly as the number of women in the organisation has increased and older women are having their first children. As women struggle to cope with their home responsibilities and work commitments, support from

male colleagues is mixed. Sometimes, women bring their small children (especially nursing infants) to the office if there is no home caretaker. But interviewed male colleagues said that they often find this practice disturbing: small infants crying or older children running around and shouting—this is not what ‘office space’ is meant for in their opinion. One of the female programme coordinators discussed the difficulties she was facing while working with Utthan after her first child was born:

Earlier I had no problems with the management as such and I enjoyed being in the field, but after my son's birth I have been facing a lot of difficulties. It is not easy for me to commute daily, 30 kms each way in a public bus with a small child. There is no creche facility here [referring to the place she currently lives in and where her husband works] so where can I leave him? Sometimes I reach the office late, but I usually compensate for this by bringing work home. However, the organisation, particularly my male colleagues, does not seem to understand this and they have begun to cut (my time) from my annual leave. We may shift to Ahmedabad so that he can go to school there and I will have the support of my parents too. Then I could visit the field for 1 or 2 days and he could stay with them. (Interview, Dahod, 2000)

Utthan is in the process of developing a gender policy for the organisation, and one of the factors under consideration is a creche facility in each office. Although there is no explicit flexi-time arrangement, women are given ‘time off’ to attend to sick children or other family members and if they are not feeling well themselves, or have their monthly period, they are not compelled to go to the field.

Roles and responsibilities: gendered tasks?

Utthan encourages all its staff members, whether male or female, to be involved in both technical (‘hardware’) aspects, such as water-related infrastructure, and social (‘software’) aspects of its programmes, such as the process of forming community groups. However, while some women staff have been trained in the technical aspects of watershed and water resources development by Utthan, their participation is not always forthcoming for a number of reasons. Male staff members feel that women lack the self-confidence to deal with technical matters (‘they are self-doubting’) and given the choice they would prefer to stay in the office and do deskwork. In this respect, they cite the example of the last receptionist at Utthan who was a highly qualified civil engineer: but she preferred to take up an office job, rather than go to the field, though this was more due to family compulsion than to personal choice. Similarly, Utthan had a part-time woman accountant for a short period, but in 1997, based on arguments raised by senior staff, they decided to hire a full-time male accountant who would be able to help the field offices with their accounting processes.

Men maintain that while women are competent in administrative work, they are hesitant to carry out certain tasks in the field by themselves. For example, in the neighbouring project area of Amreli, women staff were reluctant to be involved in the purchase of materials for watershed programmes, while in Bhavnagar women are part of the materials management committee. In contrast, male staff members readily join in the process of community institution building, attending meetings of the *pani samitis* and *mahila mandals* along with their women colleagues. As a result, they have an understanding of the problems faced by rural women in the project area and the factors affecting their participation in community meetings.

Resources for sustaining a focus on gender

Perhaps the most critical factor, before the staff expansion, was the sheer shortage of human resources, particularly women staff, to cope with the growing amount of work, both geographically and in terms of Utthan's focus on gender equity. Although the recent addition of staff will meet this need to some extent, they will need to be trained and sensitised to the organisational perspective. Moreover, Utthan still requires a full-time trainer to handle organisational training and human resource development as well as another person to look after research, documentation, and dissemination.

In terms of financial resources to sustain its focus on gender equity, Utthan is fortunate that most of its funding partners share a similar perspective and are supportive of capacity building for community institutions. One of the problems which Utthan, like many other NGOs, faces is the late approval of funds and the time-lag between the sanctioning of a grant and the actual flow of money. These two factors affect the smooth functioning of the organisation and it is compelled to arrange funds for the buffer period, borrowing from other commercial agencies with a high rate of interest, or to fall back on its own reserves.

In 1996, budgeting, which until then was a centralised process, was decentralised to involve the three field teams in the development of project or programme proposals with the finance committee at the head office. Non-financial expenditure earmarked for each project is now deposited directly into the respective account and those involved with the project have the power to take certain financial and administrative decisions.

The cultural level: changing attitudes, changing minds

This is perhaps the most fundamental level at which transformation needs to take place, as it touches on the beliefs and value systems of individuals and is thus the point at which the personal really does become the political in organisations. 'No matter how radically structures and systems may be reformed, if organisational culture is unchanged, the changes will remain superficial, cosmetic and ultimately without effect' (Macdonald et al. 1997:20). People do not leave their culturally defined gender perspectives and attitudes at the gates of organisations—they enter with them and this has a significant bearing on the organisation's own gender perspective.

In this respect, the leadership of an organisation, as well as strong, articulate gender-sensitive women and men, play an important role in developing an appropriate value system for the organisation. Such a value system is not necessarily imposed from the top, but needs to evolve gradually in response to organisational processes of sharing and learning. Gender-sensitisation training for all staff is one method increasingly being used by a number of NGOs to facilitate such institutional change, empower women staff, and redefine the power of men within the organisation (Murthy 1998:203). However, training cannot be seen as an end in itself, but needs to be part of a wider process which includes the creation of space within NGOs for staff to share experiences and reinforce their learning as well as network with other organisations that have similar concerns.

It is also important to recognise that organisations do not have a monolithic culture, although they may appear to in terms of their public face. Rather, organisations are made up of a number of 'sub-cultures' and 'counter-cultures' which will either facilitate or resist efforts to integrate a gender perspective in the organisation (Sweetman 1997:7). In the final analysis, the development of a gender perspective, policies, and culture in an NGO is reflected not only at the level of organisational change, but equally in its accountability to its programme partners, particularly the poor and vulnerable, and in its advocacy efforts

towards more gender-sensitive policies. Mayoux (1998) defines this as the 'gender accountability' of development organisations, and she maintains that it is one of the more contentious aspects of accountability, partly because of the complexity of gender subordination, and partly because of the unwillingness and, to some extent, the inability to take it on board fully.

Gender-sensitisation training: assessing organisational impact

Most of Utthan's staff have attended gender-sensitisation workshops and have begun to 'own' the concept of gender equity, though the understanding of gender varies across the organisation. This is partly due to an individual's social background, educational and work experience, length of time with the organisation, and his or her expectations from gender-training workshops.

For one senior male staff member, these workshops did not provide any significant new or interesting insights: 'Women are human beings just like us [men]. If we treat animals with great care why can't we behave nicely with women as they play an important role in life. As a child I was raised to respect women' (interview, Ahmedabad, 1999). Given his years of experience with Utthan, this kind of welfarist attitude towards women is surprising as it equates gender with women, rather than understanding the social construction of gender relations.

Sometimes the content of gender workshops can be too radical and men don't feel comfortable about translating concepts into practice. As one male staff member explained: 'A few days back I had gone for a gender awareness workshop, but the steps they were proposing for achieving gender equity were not practically possible in my opinion' (interview, Ahmedabad, 1999).

It is difficult to assess the impact of gender training on the organisation and its work because of the lack of documentation and analysis in this respect. Qualitative insights suggest some changes in people's attitudes and their behaviour. A number of women employees agree that there has been a change in the organisation as far as understanding the constraints that women staff encounter, both as a result of their biology and social pressures: 'Earlier men never understood women's [health] problems, but now if a woman says she cannot go to the field, they understand that she may not be feeling well', claimed one of the senior female coordinators (interview, Dahod, 2000).

Another senior female employee who has been with Utthan for 14 years explained that when she got married, her in-laws, who are quite wealthy, did not like her working: 'They did not mind me doing an office job, though personally I prefer going to the field, but they did not approve of it. So after my marriage, I made it very clear to the management that I could not continue with a field placement and they understood' (interview, Ahmedabad, 1999). She added:

My family members are very conservative. As the daughter-in-law of a joint family there is so much work at home, but I do everything without complaining. Sometimes the situation at home depresses me, but I really want to work [with Utthan] so I struggle hard, usually with little encouragement or support from either my husband or other family members. I did not take any leave during my pregnancy, just the three months of maternity leave which was due to me, and then I immediately re-joined work.

It is this growing perception of the problems that women staff members face that has helped men and women within Utthan gradually support each other more in their work. This bonding, almost as a family, is very visible in the Bhavnagar office, where men and women, often

coming from conservative families, share common social spaces and are learning to respect each other's capabilities.

Towards gender-sensitive organisational practice

The analysis of gender within Utthan reveals that as an organisation it is committed to gender equity at the substantive level, that is, in terms of its mission and its overall policy goals. However, at the structural level this process of social transformation has shown mixed results. On the one hand, strong leadership has played a critical role in engendering change, while on the other hand, resource constraints, a target-driven project approach, and social barriers underlying gender discrimination have made it difficult to translate gender equity concerns into sustainable initiatives. At the cultural level, however, it is clear that the understanding of gender varies across Utthan, with more experienced and older staff members acknowledging that it is an integral part of their work and organisational environment.

Male staff members tend to accept a gender perspective both because of their political commitment to social justice as development workers and perhaps more importantly, because they have seen the potential role that rural women can play as change agents. To a large extent this perspective is rooted in the WID (women in development) discourse. Men interpret gender as being exclusively concerned with meeting (rural) women's needs and expect gender workshops to provide them with 'technical' solutions (tools and techniques) for enhancing project output based on strengthening women's participation. They fail to see themselves as 'part of' gendered structures and 'inside' gender relations (Macdonald et al. 1997:42). For example, the presence of small children in the office was often termed a 'nuisance' and seen as a 'woman's problem', rather than working towards an organisational response to provide women (and men) employees with a convenient and practical alternative.

Women staff members, on the other hand, are able to draw parallels between the patriarchal structures which govern their ability to work (the family) and those which restrict rural women's participation in the public domain. One employee described how she had broken out of the *purdah* system and was now convincing village women to speak out at meetings, even in the presence of other male family members. But women staff members have not yet collectively organised to demand any specific attention from Utthan, partly because most of them are quite new to the organisation and do not occupy significant decision-making positions. They would prefer to be accepted by their male colleagues first, and whatever gender concerns they share as women they do so privately and not necessarily in the public space of the organisation.

On the whole, it is the management and leadership within Utthan which is more visibly concerned about engendering the organisation and about the *Realpolitik* aspects of promoting this from the point of view of the organisation's image. Staff members tend to focus on gender as an issue which affects the practical running of programmes and projects they are responsible for, as they have little space to manoeuvre around organisational policy. In the final analysis, looking at gender within an organisation raises questions about 'the self', the gendered nature of power, and the willingness to change or at least challenge this. As a development organisation, Utthan has shown that it is committed to putting its own house in order. But it realises that this agenda cannot be pushed from the top, and that staff need the time, the exposure to knowledge, tools and techniques, and, more importantly, collective support to promote gender awareness in

relation to their roles and responsibilities. However, the frequent urgency of development work makes it difficult for small NGOs like Utthan that face resource constraints to provide the space for self- or collective reflection. In this respect, the role of donor agencies which are committed to gender, as well as strong and sustained leadership to translate learning into organisational practice, are critical.

Notes

- 1 'Gendered', in the context of an organisation, refers to the social construction of power within an organisation, while 'engendering' defines a process of changing or challenging this to support women staff and project partners towards gender-just and sustainable development.
- 2 'Rural Change, Gender Relations and Development Organisations', a study undertaken by IRMA and Dalhousie University, Halifax, through the CIDA-funded Shastri Indo-Canadian Partnership Programme (1999–2000).
- 3 'No-source' villages essentially do not have an accessible and potable source of water within a radius of 0.5–1 km.

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Women Empowerment Programme of Kerala - Kudumbashree

Introduction.

Government of Kerala with the help of NABARD have introduced a Novel Project called Kudumbashree, with the objective of eradicating absolute poverty from the State within a period of ten years. This project is implemented by "State Poverty Eradication Mission" through local self-governments. The first step of implementation is identification of risk families through a survey on the basis of a nine point risk index developed in Kerala. If any four indices are satisfied, we will include that particular family as risk family.

Kudumbashree Mission

Kudumbashree Project is conceived not as a conventional project but as a Mission. It is planned to work on a zeal and enthusiasm and our mission statement is:

To eradicate absolute poverty in ten years through concerted community action under the leadership of Local Governments, by facilitating Organisation of the poor for combining self-help with demand-led convergence of available services and resources to tackle the multiple dimensions and manifestations of poverty holistically.

History and evolution.

After independence in 1947, Government of India have launched various poverty eradication programmes through Rural Development Department. But only in late 1980s Government decided to intervene in a planned manner in the area of urban poverty eradication. So many programmes like UBS, UBSP, PMIUPEP etc., were launched. Later all these programmes were converged into SJSRY. For effective implementation of Urban Poverty Alleviation Programmes, a model was tried in Alleppey Municipality in the year 1993. In the pilot phase, it was started only in 7 wards of the Municipality and later in 1994 it was extended to the entire Municipal area. This particular model was later known as 'Alleppey Model' and has won various national and international reputations.

With the help of UNICEF, similar programme was launched in the Malappuram District in the name of Community Based Nutrition Project & Poverty Alleviation Programme (CBNP & PAP) in 1994. After Completion of five years, we could establish 4800 NHGs in Malappuram Dist. Govt. of Kerala after reviewing the progress decided to launch the programme for the benefit of poor in the entire state. The modus operandi of implementation will be the same as in CBNP and Alleppey CDS. Kudumbashree Programme was inaugurated by our Hon'ble Prime Minister of India at Malappuram.

Kudumbashree - 3 tier community structure organisation.

The risk families were identified on the basis of a nine point risk index in Alappuzha Municipality and Malappuram district. Before this, the poor families were identified purely

on economic criteria. But the identification of income, especially in rural area through government officials is a cumbersome procedure and cannot be relied on. Hence the following 9 parameters identified and tried in Alappuzha and Malappuram were utilised for identifying a risk family.

1. Status of house-thatched or sub-standard house/hut.
2. Absence of latrine
3. Dependence of family on one or no earning member
4. Presence of at least one illiterate adult person in the family.
5. Presence of children below age of 5 years.
6. Non availability of safe drinking water within a radius of 150 mts. in urban areas (within 300 mts. in rural areas).
7. Presence of an alcoholic or drug addict in the family.
8. Family belonging to SC/ST
9. Family having only two or less meals per day.

If any of the above four parameters are found to be positive, we consider this as a "Risk Family". These parameters were included in the BPL survey and results are codified with the help of computers at State level. After identifying the families an elaborate list will be prepared and validated by presenting it in the adhoc Neighbourhood Groups.

Formation of Neighbourhood Groups (NHGs) by including one woman family member from each risk family is the next step. For cohesiveness, the size of the group is restricted to 15-40 on a contiguous basis. This group will meet at least once in a week and will formulate various strategies for eradicating poverty.

The unique feature of this group is division of labour on the basis of activity and expertise. Five member volunteer system is introduced for division of labour. Each volunteer will be trained according to their requirement by Kudumbashree.

1. Community Health Volunteer: This volunteer will co-ordinate the health activities and provide a direction for health intervention.
2. Community Infrastructure Volunteer: This volunteer will prepare detailed plan of action after considering the resources and requirement, and monitor implementation of infrastructure development programmes.

3. Community Income generation Volunteer : This volunteer will co-ordinate the thrift and savings promotion activity of the NHG. Group members pool their thrift at the weekly meetings. Our experience in Malappuram has proved that from around 4600 NHGs, and amount of Rs.2 crores could be mobilised within a period of one and a half years. In the urban area through 58 Community Development Societies, the thrift have gone up to Rs. 3.05 crores. This amount is recycled into the system as loans, which facilitate free flow of capital. Assistance from NABARD, Rashtriya Mahila Kosh etc., is also channeled through the system.
4. NHG Secretary : She will ensure the smooth functioning of the NHG
5. NHG President : Will preside over the function and give direction to NHG in consultation with Area Development Societies (ADSs) and Community Development Society (CDS)

Area Development Society (ADS) & Community Development Society (CDS)

At ward level nearly 8 to 10 NHGs are federated into Area Development Societies (ADS) which is federated into Community Development Society (CDS) at the Municipality/ Panchayat level. CDS is a registered body under the Charitable Societies Act, and is expected to function as an NGO.

Various facets of Kudumbashree

1. Identification of poor through a non-economic index and empowerment of women through community based organisation (CBOs) of the poor women.
2. Promotion of thrift and credit operations leading to establishment of an Informal Bank of poor women, functioning 24 hours a day and 365 days a year.
3. Formation of sustainable micro enterprise leading to large scale employment generation and accrual of additional income to the poor households.
4. Further steps down in democratic decentralisation process going on in the State.
5. Establishment of a rural marketing network throughout the State.
6. Convergent Community Action - Convergence of all possible resources and activities for Poverty Eradication.

Kudumbashree is aiming to reach out the families through women and to reach out the community through families.

Kudumbashree-Milestones

In contrast to our previous poverty eradication programmes there is no specific financial and physical targets set for Kudumbashree. In Kudumbashree we practice a process approach and not a project approach. For effective monitoring of the programme the following mile stones are adopted.

1. Formation of 60,200 NHGs all over Kerala.
2. Formation of 10,500 ADSs at Ward level
3. Formation of 1048 CDSs at Panchayat/Municipality/Corporation level by federating various ADSs.
4. Linking at least 20% of NHGs with NABARD's scheme for linkage banking every year.
5. Provide shelter to all poor.
6. Provide safe drinking water within 300 meters of their residence.
7. Provide sanitation facility in all the families within next five years.
8. Establish at least one sustainable micro enterprise in each NHG leading to large scale employment.
9. Establish an Informal Bank of Women in the model of Bangladesh Grameen Bank.
10. Implementation of special package programme for the development of SC/ST and traditional fishermen.

Executive Director
Kudumbashree

Gender Impact of Agricultural Technology – Experiences at ICRISAT¹⁽¹⁾

R Padmaja and M C S Bantilan²⁽²⁾

Introduction

Women play a predominant role in household food security through agricultural and food production inspite of the diversity in household production patterns. According to FAO report (1997) women in developing countries spend upto two thirds of their time in traditional agriculture and allied activities with their work hours tending to exceed those of men. Women have a significant role to play in cash crop farming along with a major share in subsistence food production. Given the crucial role they play in food production and provisioning, efforts to increase women's productivity is vital to global food security. Making women more productive and hence more effective income -- earners, not only enhances their status and security in the family, but has positive effects within the household, and, contribute to the productivity of the agricultural sector (Benett et al., 1989; World Bank, 1994).

The most effective means of promoting agricultural development may be closing the gap between current and potential productivity levels. Women's productivity and aggregate output increases when ready access to technological inputs, training and information is available. Increasing agricultural production is therefore contingent not only on labor input but also on ensuring women equal access to appropriate technologies and other input and support systems. In developing countries, large scale adoption of new technologies is essential in order to raise the agricultural output and productivity on a sustainable basis. Agencies like the UN and World Bank have realized that these technologies have to address the needs of not only male farmer, but also incorporate the requirements and adaptability of women in the farm sector. Hence research on gender related issues is a prerogative to achieve the goals of 'equity' and 'efficiency' in development and transfer of technology.

ICRISAT was one of the first of the International Agricultural Research Centers to take specific steps to bring a gender perspective in its research activities and make its program more inclusive of gender concerns. Considerable importance is put on 'gender analysis' as, ICRISAT's commitment to equity in its pursuit of poverty alleviation requires attention to the different ways men and women benefit from its research (ICRISAT 1997).

ICRISAT's gender research agenda

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ICRISAT's gender perspective in technology development that promotes greater social equity in the process of accelerating agricultural development. The focus on women cultivates benefits for the future, because women are the primary caretakers of the children who will shape it. ICRISAT also assumes that gender provides an important basis for targeting technologies that would improve food security and household welfare and hence, concerns itself with the impact of change in agricultural technology on the welfare of women (Rohrbach et.al 1997).

Several steps have been taken by ICRISAT to raise awareness within the institute and to begin a program that would lead to the incorporation of a gender perspective in its work. The gender-related research activities being carried out can be categorized under:

- Germplasm enhancement and breeding
- Crops and cropping systems
- Improving policy
- Training
- Priority setting and project proposals and review

ICRISAT incorporates a gender dimension in its priority setting exercise (Socioeconomics and policy team being the focal point for this activity) by making use of gender parameters (female illiteracy). ICRISAT also includes a question concerning the gender implications of research and training in its project proposal review and reporting forms with the intention of making scientists reflect more upon who the user is and how he/she will be affected by the work at hand.

ICRISAT is currently taking up ex-post studies for gender analysis. This implies that women's participation is observed only in the technology adoption, diffusion and evaluation process. ICRISAT now plans to take up ex-ante studies wherein participation of women is ensured in the technology design, development, testing, adoption, diffusion and evaluation stages. Participatory research and gender analysis are viewed both as a means to improve technological design and as a means to enhance the probability of technological change.

Highlights of gender analysis work at ICRISAT

Research was carried out at two sites, one representing cropping pattern changes (from finger millet to groundnut) and the second on two villages representing a with-technology and without technology situation. The technology was ICRISAT's groundnut variety and production management package. The aim was to understand SAT agriculture and the effects of agricultural technologies on a) the roles and responsibilities of men and women of farm households and b) between different groups of farm households. Three exclusive case studies were carried out to study the differential effects and likely effects of technology on men and women.

Case study 1. An ex-post gender analysis of impact of groundnut technologies in the Indian SAT to examine the differential effects of groundnut crop production technology on men and women farmers of the region in relation to the package of production technology introduced by the Legumes

On Farm Testing and Nursery Unit (LEGOFTEN) program of ICRISAT in the eighties. The study was carried out in Maharashtra, India. This research is reported in detail elsewhere in the paper.

An ex post evaluation was carried out in the groundnut-growing areas of Maharashtra in India to identify key indicators of gender-related impacts of improved agricultural technologies. 'With' and 'without' technology situations were compared in relation to the Groundnut Production Technology introduced by the LEGOFTEN program of ICRISAT in the late 1980s. The following indicators emerged with strong implications on gender: a) labor-activity pattern and time allocation; b) decision-making behavior of men and women with regard to resource use and utilization of crop products; and c) user perspective-differing perceptions of men and women with implications for technology development. Evidence suggests task specificity between genders. The decision-making patterns indicate gender-related segmentation of market and domestic activities. Evidence also suggests the existence of a difference in perception regarding technology between men and women.

Given the crucial role women play in food production and provisioning, efforts to increase their productivity is vital to global food security. This study suggests that gender-specific perceptions will yield valuable information about the usefulness of a technology as well as the constraints that hinder its adoption. As part of an analysis of gender considerations in the development of groundnut varietal and management technology, differences in the priorities men and women attach to alternative grain and plant traits were evaluated. It was inferred that both men and women have distinct needs which must be considered when setting varietal selection priorities. These differences may also affect varietal adoption patterns and seed marketing strategies. Integration of gender-differentiated quantitative information with qualitative information provides a holistic basis for capturing the effects of technology intervention in terms of efficiency and equity consequences.

In this light, effective involvement of men and women in agriculture is possible if the views and perceptions of both genders of the farming community is sought during technology generation and development. An R&D agenda incorporating analysis of gender disaggregated farmer perspectives is likely to lead to a more appropriate and acceptable technology which will gain further and wider adoption.

Case study 2: An attempt was made to characterize gender roles and responsibilities in a changing cropping pattern situation in Kolar district of Karnataka, India. This study gave information on gender roles, responsibilities and decision-making in a food crop (Fingermillet) situation and a cash crop (Groundnut) situation. A shift study of this type is useful to get advance information on the effects of technology intervention involving new cropping patterns or changes in crop management practices.

The results clearly indicated the changing gender roles due to crop substitution. The groundnut crop created an extra demand for female labor-for both family labor as well as hired. As a result

certain operations turned out to be exclusive female dominated operations. Sowing, fertilizer application, weeding, harvesting, shelling are the operations which became exclusively female tasks. For finger millet it was the men who used to do the broadcasting of the seed whereas for groundnut, men used a seed drill and open furrows for sowing, while women dropped the seed through the seed drill. Similarly, finger millet harvesting is done both by men and women whereas groundnut harvesting turned out to be done more exclusively by women.

The decision-making pattern showed an interesting picture. Women in the groundnut crop situation have more control over resources than women of the finger millet crop. The former have marginally less or equal control with men in the selection and use of seeds, fertilizer, manure, and decisions regarding hired labor. As the related tasks are more female-labor intensive, women seemed to have gained control over decisions. The analysis of benefits, however showed that men have more control over the uses and disposal of groundnuts as compared to the uses of finger millet. This revealed that the increase in market-related activities for groundnut may have expanded the decision-making options of men.

Case study 3: This case study carried out in Karnataka, was focused on diagnosis and technology intervention with a gender perspective. An ex-ante analysis of gender perceptions and constraints of groundnut crop production helped in designing on-farm trials for pest and disease management on groundnut crop. This study traced the likely success of the adoption of pest and disease management intervention based on the perceptions of the recipient men and women farmers.

The performance of women farmers was comparable to that of male farmers in identifying pest and disease, but the performance of women who usually do not work in their fields was below expectation. Even among those women who participate in the daily field activities, many had difficulty in understanding the details of the pest and disease management illustrated during the trials. The majority of the cooperating male farmers on the other hand, did not have difficulty in understanding the recommendations made by the scientists. This has shown that the women who are participating in their own farm work had never been exposed to the technical knowledge related to new technologies, so that they lag behind men during the initial intervention stage.

Enthusiasm to participate was observed among women and they are ready to organize themselves, even overcome constraints (e.g., finding sprayers) to be able to participate in the demonstrations. Women were found to be performing all complementary activities to actual spraying related to crop protection (carrying water etc.) except the actual spraying. Thus involving them in the management of pest and disease on a sustainable basis may prove to be beneficial both in terms of productivity and resource allocation. The potential of drawing gender implications in technology intervention is well recognized in this study which however was not concluded due to discontinuation of the trials in 1997.

Gender related impacts of agricultural technologies

The multidisciplinary and collaborative work under the gender analysis projects created a 'gender awareness' among scientists in the institute - breeders, agronomists, entomologists and agricultural

economists, especially those who participated in various project activities. Collaborating scientists became more conscious about gender/user perspective in technology development and transfer. The ICRISAT entomologist, in fact, declared that "involving men and women who generally participate in the field activities is very important for the success of any management intervention since both men and women participate equally in all the activities related to crop management."

There are observed many direct and indirect gender related impacts. Some of them include:

- Increased social benefits/empowerment
- Greater control of the decision making process
- Increased economic benefits
- Employment opportunities
- Build up of farmer capacity to identify problems and do research for their own benefit
- Acceptance of technical improvements

Increased social benefits: Adoption of groundnut production technology in Umra village, the technology being of a complex nature, and requiring more supervision, care, and labour – developing better relations with the *adivasi* (tribal) *lambada* population in the village who were the main source of labour was considered to be important. Better social and political relations were an outcome of technology adoption since everyone stood to gain from it. Farmers in the village also displayed a rare willingness to join hands in repaying their long-term debts to various formal and informal creditors in the initial years of gains from the technology, so that they could begin investing in production enhancing assets, as well as improve their creditworthiness – important since the technology needed relatively more inputs

Increased economic benefits : The impact of improved chickpea varieties in the Barind area of Bangladesh also had a favorable impact on women in the area. Chickpeas provided a reservoir of green vegetative material during the dry season. Women started to harvest the top twigs of the plant for consumption or sale as a green vegetable. This has excellent market value in the Barind as other green vegetable crops are not available in the dry season. Because women harvest the crop, they control the income obtained from its sale. The twigs sell for about the market price of chickpea grain.

Likewise, CG 7 a groundnut variety gave a boost to Malawian farmers especially women. Women farmers actively participated in project field days in farmers' fields and tended their farm carefully, using most of the recommended practices learned from scientists. The income from the sale of very good groundnut harvest was used to buy books, clothes, payment of fees for children, repayment of seed loans and distribution among kin.

Empowerment – Knowledge sharing: A study in Rajasthan, India was carried on how farmers manage their seed stocks, and how researchers can use this knowledge to breed varieties that farmers will readily accept. As part of the study, a workshop was organized where all the participants were farmers. Women had been specially invited because of their prominent role in selecting and maintaining seed, and their deep knowledge of millet. For example, Hira Bai, a woman farmer from the village Agolai, could immediately spot her own millet population out of 81 experimental plots in the field trials. The farmers were invited to evaluate field trials in which their millet populations were grown alongside commercial varieties and breeding lines from ICRISAT. These farmers had earlier taken part in participatory breeding trials coordinated by ICRISAT in collaboration with the Indian national research organizations, such as ICAR's Central Arid Zone Research Institute, Rajasthan Agricultural University, and Rajasthan Department of Watershed Development, as well as NGOs. Learning from this experience, ICRISAT breeders have widely participatory breeding methods across all crops, involving farmers in key stages of plant evaluation and selection. They have found that sharing ideas with farmers is a win-win exercise for everyone involved.

Employment opportunities : New innovations can provide employment opportunities as well as reduce the drudgery of women's work. Pigeonpea stalks are an ideal fuel, reducing the onerous task of firewood collection that largely falls on women. And the introduction of an improved groundnut production package developed by ICRISAT and ICAR in Maharashtra State, India not only generated 71% more income for farmers, but also reduced the labor burden of women, because it made weeding and harvesting easier. It also helped generate more employment opportunities for them and gave them a greater role in decision-making.

Capacity building: One could hardly find a better example than Maria Kaherero. Maria became interested in the farmer-participatory varietal selection approach that led to the highly successful 1989 release of 'Okashana 1' millet in Namibia. She took seed back to her own farm and grew it to naturally cross with local landraces, producing a genetic mixture from which she began selecting types for her own needs. The Maria Kaherero Composite remains a prime gene pool used widely across southern Africa to this day – proven by comparative tests run recently against breeders' own populations.

Green pigeonpea seeds (harvested as a fresh vegetable before maturing) are a popular food in Kenya and neighboring countries, and have become an important source of income for women. Short-duration varieties like ICPL 87091 developed by KARI and ICRISAT mature early, reaching the market before the rest and fetching premium prices. The women learned how to use the dry (mature) pigeonpea grain by milling it into the form of Indian dhal or split pea, during a visit to India facilitated by ICRISAT. They even carried back a traditional Indian grinding stone, or 'chakki', to copy for manufacture in Kenya.

Conclusions

Substantial work has been done to introduce a user perspective into adaptive research within the formal research sector. At present there is a significant growth in the application of extant participatory techniques in adaptive research and technology transfer. There has also been significant development and adaptation of tools at field level.

Gender analysis and the participation of men and women farmers in agricultural R&D is crucial and therefore continues to be an important issue. This can be achieved by generating sound evidence on differentiating the needs of men and women as *users* of technology, and recognising different contributions of participants in research. It also requires increasing skills and knowledge of researchers to use gender analysis effectively and appropriately and promote information dissemination and exchange about best practices and lessons learned.

Researchers can enhance the participation of women by simply involving them more fully in the process of technology development. ICRISAT organizes special field days for women farmers, providing them with a forum for feedback to ICRISAT on women's needs. This forum also provides access to specialized knowledge and information not always available through male-oriented extension systems. This types of interactions facilitates empowerment, elevating women status and authority both within the family and in the wider rural community. Our results show that ICRISAT through its partnership based research activities has succeeded to some extent in improving women farmers access to resources, technology and information. But there are some emerging concerns that are still to be addressed.

To empower women in agriculture it is important to look at new alternatives in the global economy and the requirements for gender-differentiated needs for technology, skills and knowledge/information. Together with mainstreaming gender into the existing research agenda, it is vital to take into account the livelihood options and the assets that women in poor households depend on. Moreover, the effects of globalization which is creating a pressing need to find alternative sources of income in situations where traditional means are no longer economically viable, require us to go beyond adjusting technology to fit with the traditional responsibilities and constraints faced by poor men and women farmers.

By unleashing the power and ingenuity of women to turn the marginal areas of the semi-arid tropics green, ICRISAT and its partners are not only improving the livelihoods of today's generation. They are also seeding the Grey to Green Revolution for decades to come. If the generous and steadfast commitments shown by development investors so far can be sustained, children of the generations to come – and the planet they inhabit – have a much brighter future ahead (ICRISAT 2001).

Farm Mechanization and Gender Impact

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According to Indian mythology "*where women are respected prosperity is there*". By virtue of her rich civilization, India has been a leading nation that has recognized the role of women in the development of society. Women have played and will continue to play a key role in several spheres of national development and conservation of basic life support system, such as land, water, flora and fauna. It is believed that it was women who first domesticated crop plants and thereby initiated the art and science of farming. They have protected the health of the soil through organic recycling and promoted crop security through the maintenance of varietal diversity and genetic resistance.

Human, animal and electro-mechanical energy is used in agriculture for production and agro-processing. Use of electro-mechanical energy in recent years has increased considerably but animate energy is equally used (Fig 1). As per 1991 census, the population of India was 844.32 million out of which 406.52 million (48.15%) were women. Population dynamics of agricultural workers (cultivators and agricultural workers) is given in Table 1. About 304.05 million women (75%) lived in rural areas. Of the total rural women population, more than 81.5 million (27%) were workers. Of these, 57.4 million (70%) were main workers and 24.1 million (30%) marginal workers who are forced to take up some sort of economic activities to supplement the income of the family in addition to the domestic chores Fig 2. About 60% of rural women were reported to be illiterate as against 46% of rural male as per 1991 census. Only a small group of 3% rural women had secondary education and 0.4% graduation and above (Table 2).

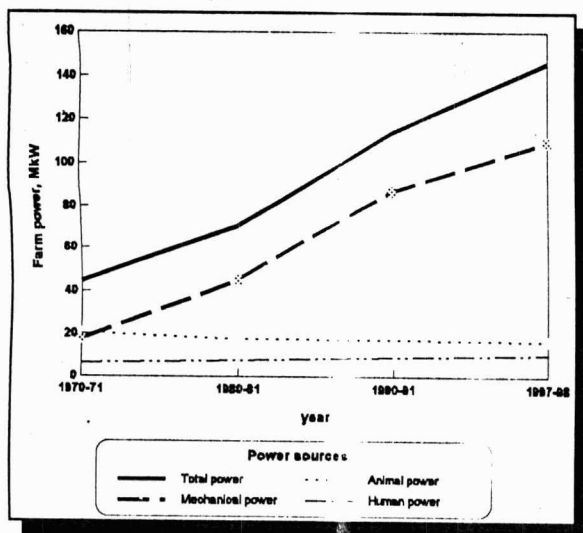


Fig. 1 Farm power in agriculture

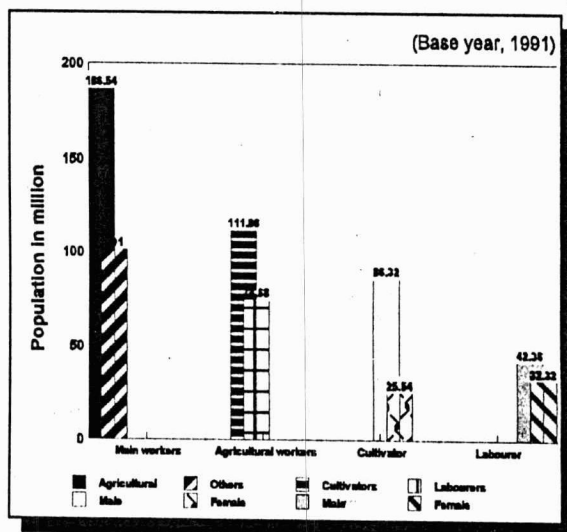


Fig. 2 Distribution of women and male agricultural workers

Table 1: Human power in Indian agriculture

Population	1951	1961	1971	1981	1991*	1996*
Agricultural workers, million	97.2	131.1	125.8	151.7	186.5	206

Sources : Livestock Census Reports. Agricultural Statistics at a Glance, 1995.

Table 2: Education level of rural population above 15 years of age

(% of the total population)

Year	Illiterate		Primary		Secondary		Graduate and above	
	Male	Female	Male	Female	Male	Female	Male	Female
1987-88	46.3	76.4	28.9	15	9.5	3	2	0.4
1983-84	49.8	79.8	28.5	13.6	7.5	2	1.4	0.3

Ref: NSS 43rd Round, 1987-88, Ministry of Planning, GOI, 1990.

Human and animal power is exclusively used with traditional farm tools and implement. Improved farm tools, implement and machinery has been developed to be utilized by animate and mechanical power. These have been used mainly by male workers. Out of the estimated 207 million agricultural workers, more than 27% are female workers (1997). Of these 70% are main workers and remaining marginal workers who are forced to take up some sort of economic activities to supplement the income of the family in addition to the domestic chores. The women continue to perform various farm operations using traditional tools and equipment which cause lot of drudgery. Due to socio-cultural bindings, women rural workers seldom come forward to operate mechanical equipment in the field. The R&D institutions in India have developed a good number of gender neutral equipment for crop production and processing. These can easily be adopted by rural women which will help in improving agricultural productivity besides enhancing women's employment opportunities and economic status.

Involvement of Women in Agriculture

In developed countries with the advancement of science and technology, the role of women specially in agriculture has changed dramatically. Gradually, farm men and women have been drawn away from the routine operation of farming and absorbed in the industrial and service sectors. That has led to (i) reduction of drudgery, (ii) improved productivity, (iii) enhanced income, and (iv) diversified and feasible opportunities for productive and remunerative employment in both rural and urban areas. In most developed countries, mechanized agriculture is operated and managed by a small number of men; very few women remain in the agricultural sector except in food processing industries and backyard livestock and vegetable production. Japan is an exception where women account about 60% of the total agricultural labour force and provide about 40% of labour in rice cultivation. They operate and maintain farm machinery and play important roles in farm decision making.

In contrast the experience of developing countries specially India, has been uneven. Modernization of agriculture has provided women with better income earning opportunities in some areas but has displaced them from their traditional roles in others specially agricultural operations. The latter is particularly serious when job destruction is not accompanied by job creation in other activities.

Women are involved, both in production as well as processing of crops, horticultural, animal and aqua-cultural products. In production of field crops, rural women are employed in clod breaking, picking/removal of stubbles, sorting, grading, seed treatment and sowing/planting, raising of nursery for paddy, uprooting, washing, transplanting, compost making, application of manure/fertilizer, weeding, hoeing, earthing, raking, gap filling, surveillance of insect/pests and diseases, bird scarring, irrigation, harvesting, threshing and marketing.

Women and Agricultural Mechanization

Most of the works performed by farm women are tedious and time consuming using traditional tools. They cause considerable fatigue and drudgery. Also many of these operations are done in body postures which if done for long duration cause body pain. Women are also exposed to several occupational diseases while performing operations like spraying of insecticides, without sufficient safeguards. To facilitate these operations, improved implements have been developed which are suitable for women workers. CIAE Bhopal is conducting training to train them in use of these machines. Some of these are listed here.

Tillage Equipment : Women are rarely employed for tillage operation with draught animals or tractor drawn implement in India. Digging of soil by women in hill regions where animals/tractors can not be utilized due to topography of land is commonly practised. Suitable bullock and tractor operated plough, cultivators and harrows are commercially available and used by the farmers for seed bed preparation. These can also be operated by women if socially accepted and properly trained.

Sowing and Planting Devices : Men and women are equally engaged in sowing operation, either behind the plough or utilizing funnel tube sowing device. Both these methods are arduous. Manual dibblers, animal and tractor drawn seed-cum-fertilizer drills have been developed, which save time and improve placement of seed and fertilizer. Machines are available for planting potato, sugarcane, groundnut, cotton etc. In semi-automatic machine, women/men place the setts/tubers from a hopper to a distributor which regulates dropping as desired in furrows. Furrows making, placing of setts/tubers, soil covering and ridge making is performed automatically by the machine operated by a pair of bullocks or tractor. For transplantation of plantation crops and trees, digging of hole is pre-requirement. These are manually done. Tractor and power tiller operated post hole diggers facilitate hole making and subsequent planting operation can be performed manually.

Transplanter : Rice transplanting is largely performed by women in most parts of the country which is highly arduous. Long hours of bending and standing in deep silty soil may result in foetal loss in early stages of pregnancy. This also causes various forms of damp diseases including gangrene, loss of nails, etc. Six row manual rice transplanter has been developed. The transplanter requires only about 16-20 mandays/ha for transplanting. The device is simple in construction and easy to operate. The machine requires two persons to operate - one for operating the machine and other for handling the seedling. About 0.12 ha land can be transplanted in a day. A power operated rice transplanter is under going extensive evaluation which could be operated by women workers as well. These transplanters require mat type nursery for which specific training is required.

Interculture and Weeding Equipment : There are various methods for control of weeds in the field; uprooting to killing of undesired plants by chemical or biological methods. Uprooting/cutting of weed is usually done by women. It takes 300-600 h/ha to remove weeds by local hand hoe (khurpi). Simple manual wheel hoe weeders operated by either sexes are available. These reduce the time to 25-110 h/ha. These weeders are operated in standing posture and do not require bending of body and thus, reduce the drudgery considerably.

Harvesting and Digging Equipment : Sickle, khurpi, spade, country ploughs, etc. are usually used for harvesting and digging by men/women. The fruits are plucked manually. Serrated sickles facilitate cutting and require less effort. Power tiller/tractor/engine operated reapers harvesters are also available. Women may find it difficult to operate, but given the opportunity, skill can be developed in them for operating these machines. Tractor operated potato and groundnut diggers are also commercially available for facilitating the digging operations.

Threshers : In traditional method of threshing, where 'Bhusa' is required, the crop is treaded by animals and in other crops, it is done by beating action. These threshing operations are full of drudgery mainly performed by women. The mechanical power threshers have eased the drudgery and are now universally adopted by farmers. The power threshers are operated by diesel engine or electric motor. Men and women both can operate these machines taking adequate safety precaution. These are available from 5 to 15 hp. Since there are a number of high speed moving components, adequate safety precautions need to be taken while handling these machines by women, who wear loose garments. Pedal operated paddy threshers are also available and have become popular in Bihar, Orissa, West Bengal and Assam. These threshers are also suitable for use by farm women.

Shellers and Decorticators : Shelling and decortication bring the products in more useful form and wastes and by-products remain in production catchment where these can be better utilized. Low cost manual and power operated shellers can enable the farmers - men and women, to sell value added products. The shelling capacity of maize can be increased to 16-24 kg/h with the aid of a simple hand maize sheller. Likewise, manual groundnut decorticator is another simple device for removal of kernels from the groundnut pods. The capacity varies from 60-80 kg pods/h.

Improved farm equipment suitable for rural women are given in Table 3.

Table 3 Improved farm equipment suitable for rural women

Operations	Traditional Technology	Improved Technology
Field preparation in hilly areas	Spade	Simple tools/power tillers for seed bed preparation
Sowing/planting	Hand dropping, pushing seedling in mud	Improved multi-row drills for seedling/fertilizer application, rotary dibblers, jab planter, manual seed drill/seed cum fertilizer drill animal and power operated seed cum fertilizer drill, 6 row rice transplanter
Fertilizer application	Manual broadcasting	Fertilizer broadcaster
Weeding/hoeing/thinning	Khurpi, Kudali, spade	Manual weeder, wheel hoe, garden rake
Spraying/dusting	Hand spraying and dusting with sieves	Hand operated/foot operated sprayer with safety devices
Harvesting	Sickle	Serrated sickle, self propelled reaper
Threshing	Manual beating, bullock treading	Mechanical/power thresher, pedal operated threshers \strippers
Pit digging	Khurpi, spade	Augers and post hole diggers
Seed treatment	Hand mixing of seed with chemicals	Manually operated seed treatment drums

Ergonomic Characteristics of Women in Agriculture

Ergonomics (Human Engineering) is the scientific study of relationship between man/woman and his/her working environment. The term environment includes tools and materials, work method, ambient conditions, physical environment and organization of work. The application of ergonomics can help in increasing the efficiency and thereby productivity of the workers

without jeopardising their health and safety. The following ergonomical data are important for suitable design of equipment and work methods.

Anthropometric data : It includes data on various body dimensions of workers. Seventy nine body dimensions have been identified as useful for farm equipment design. It is widely recognized that the anthropometric data vary considerably with factors such as race, gender, ethnic group and age. Very little data are at present available for female workers. According to those data, the mean height and weight of Indian female agricultural workers are 148 cm and 45 kg, respectively as against 163 cm and 50 kg for male workers. Therefore, it can be seen that in many cases, the equipment will have to be designed keeping in view the limiting dimensions of women workers. It will help to make the equipment more women friendly and safer for operation.

Muscular strength : The strength parameters important in agricultural machinery operations are hand/s grip strength, push and pull strength, elbow flexion and extension strength and leg strength, and foot strength. Almost no data on these aspects are available for female as well as male workers. However, it is generally considered that a woman has only about 2/3 strength of a man.

Maximum aerobic capacity : The maximum aerobic capacity, also called as maximum oxygen consumption rate, set the limit for maximum physical work capacity of a person. For women, this value is 75% of that of men. As per the scanty data available for Indian workers, this value for women workers is about 1.51/min.

Physiological cost of operation : Physiological cost of any operation is expressed in terms of heart rate and oxygen consumption rate. For an eight hour work period for women workers, a work load requiring oxygen at a rate of 0.6 l/min is considered as the upper limit for acceptable work load. The heart rate for such a work load would be about 105 beats/min. Physiological cost data on women workers need to be collected for different operations and equipment to assess the suitability of equipment meant for them.

A good working posture is the one, which requires the minimum static muscular effort. Here the work performance will be better and the body discomfort will be lower. If a work can be done in a standing posture instead of bending or squatting posture, it should be preferred for long duration jobs. In many cases, it may also be possible do the job in the sitting posture which is most comfortable. Discomfort is the body pain arising as a result of the working posture and/or the excessive stress on muscles due to the effort involved in the activity. In many situations, though the work may be well within the physiological limits, the body discomfort may restrict the duration of work depending upon the static load component involved in it.

Thus, it can be seen that women have different ergonomical characteristics than men and therefore, to make the equipment suitable for women workers, due attention needs to be given to their capabilities and limitations while designing and using different equipment.

Women and Home Management

Energy in rural sector are required for rural home management, production agriculture, cottage industries and agro-processing. It is estimated that about 66-80% of the total energy for the rural sector is used mainly for rural home management and 16 -25% for agriculture production (Table 4). Household activities include food processing, preparation and cooking, gathering of fuel wood and water, dairying, washing, child care, utensil cleaning, etc. are performed by women. Scarcity of fuel wood in many areas compel local people to remain highly dependent

Table 4: Rural energy needs

● Home management and rural industries	: 66 - 80%
● Agricultural production	: 16 - 25%
● Post harvest activities	: 2 - 4%
● Animal husbandry and dairying	: 2 - 5%

on seasonal agricultural wastes and animal dung which would have otherwise can find better uses in agriculture. Commercial energy are used only to the extent possible since they are not available readily at every place. These are met by

bio-energy, natural energy, electricity, fossil fuel and coal. Cooking alone consumes 70% of the total energy which is met by wood, crop residues, and dry animal dung. About 3-5 kg of fuel wood per household is required for every day. Yearly requirement of fuel wood for rural sector thus, alone will exceed 200 million tonnes. The rural energy needs are different than urban needs due to economic disparity. As per NSSO Report No 404, 1997, about 78 % Rural household use fire wood compared to 30 % in urban areas for cooking and about 31 % rural house hold use electricity for lighting compared to 85 % in urban areas (Table 5). Only about 86 % villages are electrified. The remaining households use kerosene. This requires about 4 litres of kerosene per month per family. This would require more than 300 million litres of kerosene in rural homes for lighting. One of the reasons of poor industrialization of rural sector is due to inadequate or non-availability of assured electricity in the villages.

Table 5: Monthly per Capita Consumption of Energy in Domestic Sector (1993-94)

	Rural	Urban
Fire wood (kg)	17.27	6.09
Electricity (kWh)	2.27	9.67
Kerosene (litre)	0.68	1.42
LPG (kg)	0.04	0.88

A number of studies have been conducted in different parts of India to assess the amount of energy spent in household sector and the role of women in particular as women are the ultimate dispensers of the most of the energy used in households. The first comprehensive survey of household energy consumption pattern in India was carried out by the National Council of Applied Economic Research, New Delhi. Their findings showed that domestic energy constituted about 60% of national energy consumption (NCAER 1959, 1965). In subsequent reports of Fuel Policy Committee (1974) and the Working Group on Energy Policy (1979), it was accepted as a single largest energy consuming sector.

Maheshwari, et. al (1981) conducted a detailed survey of village Islam Nagar in Bhopal (Madhya Pradesh) and observed that on an average women were engaged for 8-12 h/day in cooking, child care and animal care including preparation of dung cake, washing and other household activities. They also observed that about 84% of energy used in this village was spent on household sector and majority of it (97%) was spent on cooking. The cooking energy was basically met by wood, dung cakes and other biomass fuels. Only a very small percentage of household energy was met through kerosene, etc. On an average, biomass based fuels contributed about 95% of the household energy needs.

Studies conducted in three villages in different parts of country, namely, Mogullavampu in Andhra Pradesh, Thirudaimarathur in Tamil Nadu and Bhokhra in Punjab indicated that the average annual energy consumption in rural household was 96,117 MJ/household. The contribution of non-commercial energy was maximum(84%) and was mostly derived from firewood, agricultural wastes and animal dung available from local areas. Commercial energy use was 9% of total energy consumption, the use being mainly in the lighting of households. Human energy use was 7% of total energy consumption out of which about 86% was contributed by women. On an average, women contributed the maximum energy (81.5%) followed by men (17%). Among the three areas, women in Andhra Pradesh devoted 89% of total human energy followed by Tamil Nadu (83%) and Punjab (78%).

These studies clearly show that the non-commercial energy sources like fuelwood, dung cake and agro-residues contribute about 75-90% of household energy needs. The human energy (about 75-90% provided by women) contributed about 5-15% of domestic energy needs in rural areas and commercial energy (kerosene and electricity) contributes about 5-10% and the average annual consumption for a family of 6-7 members is about 35-60 GJ(exception being Punjab due to heavy energy requirement for animal care). The studies also emphasized the need of developing system which would reduce drudgery of women, reducing energy consumption (more by conservation) and making use of alternate energy resources (renewable). The ultimate aim of the system should be to attain sustainability and improved health and hygiene of the rural people, a factor often disregarded in many planning approaches.

Opportunities of Enhancing Employment and Entrepreneurship for Rural Women

The opportunities of employment and entrepreneurship development of rural women are in the following areas:

- i) Agricultural production sector
- ii) Post harvest, agro and food processing sector
- iii) Domestic and rural energy management sector
- iv) Off-farm activities sector

Agricultural Production sector : Agriculture is the backbone of the rural economy. Therefore, a vast scope for developing entrepreneurship specially for rural women lies in agricultural production section. Given proper encouragement, training and support, they can get employment and can take entrepreneurship in several areas such as Production of seed (cleaning, grading and sorting, production of hybrid seeds of cotton and other crops) , Preparation of manure/ bio-fertilizers, Raising of nursery, Integrated pest management, management of water by using drip and sprinkler systems, By operating and renting various types of machinery in the field (seeders, weeders, sprayers/dusters, reapers, threshers, shellers, decorticators etc.), Fodder production, Horticulture, Aquaculture, Animal husbandry, Poultry management, Forestry/social forestry, Sericulture, apiary, Rabbit keeping etc.

Post harvest technology and agro and food processing sector : With the achievement of green and white revolution, the post harvest problems have multiplied manifolds. To overcome these problems a concentrated effort is needed, emphasis are being given in that directions by the planners. There is a great scope of generating employment and entrepreneurship development in this area specially for rural women. Some important areas for enterprising women in the area of post harvest technology and food processing sectors are Primary processing, secondary processing, agro-processing centre, and value added products etc.

A whole series of products have been developed by the Central Food Technological Research Institute, Mysore, and other organizations which could be adopted by women entrepreneurs. Similarly the post harvest activities in sericulture like reeling and/or spinning and weaving are the activities suitable for women.

Domestic and rural energy management sector : Women are the custodian and users of fuel specially in kitchen. Impact of use of various types of fuels, good or bad, therefore, are felt much better by them only. In urban kitchen cooking gas and electricity are being used but still a big majority of population specially in rural areas are dependent on agricultural wastes, jungle woods and cow dung. The fuel consumption with increasing population of India will be very high in near future. According to an estimate made by the Advisory Board on Energy, Govt. of India, the domestic fuel consumption by the year 2004-05 AD would be equivalent to 1500-2000 million tonnes of coal each year (Table 6). The domestic consumption comes

under category of non-commercial energy, that is concern of women. In non-commercial energy, firewood, agricultural residues, animal manures and human animal power are used in rural areas. This component of energy is used in Nepal (90%), Bangladesh (83%) and India (43%). Therefore, a proper management and utilization of energy from fuel wood, dung cake, agricultural residues, biogas can contribute to a great extent in house-hold sector, specially in rural areas, in consumption of energy.

Table 6 Energy consumption in household sector by 2004-05 (estimated) in India

Fuel	Consumption
Fuel wood	300-330 Mt
Dung cake	199-221 Mt
Agricultural residues	90-104 Mt
Biogas	169-188 Mm ³
L.P.G	2-3 Mm ³
Kerosene	16-18 Mt
Soft coke	20-22 Mt
Charcoal	3-4 Mt
Electricity	96-107 GWh

Thus, the potential of entrepreneurship development in energy sector for women is very high. The rural women, therefore, could be enterprising in several activities of domestic energy management like Making of fuel (briquettes) from agro wastes, Running and maintenance of biogas plants, Making of improved stoves/ chulahs, Raising wood species for fuel purposes etc.

Off-farm activities sector : There are large number of enterprising avenues of off-farm activities type where women are involved. For example, involvement of women in textiles is century old. At cottage industry level through KVIC and Gandhi Ashram, women are very well engaged in this enterprise at various stages like yarn making, spinning, weaving, printing, screening, fashion designing, modelling, etc. In silk yarn making, women in Karnataka and North Eastern part of India have complete command on this industry.

The bleaching, finishing and printing of fabrics are other areas at cottage level industries where women are contributing. The art of dyeing and printing is more than application of dyestuffs to the yarn. The women entrepreneurs are involved in various types of printings, for example in IKAT, Batik, Block printing, silk screen printing etc.

Rural folk-art has been traditionally the work of women. In present days it has become a fashion and already taken a shape of enterprise in several states. Similarly, pottary, leaf work, (for making bowls etc.), bamboo work, cane-furniture work, making of musical instruments, making of sports items, etc. have high potential where rural women could be enterprising. Some of the important items where off-farm entrepreneurship for rural women could be developed are Textile, Paper & pulp, Sweet making, Mongoloid culture (Bamboo is a product in North-East used for several art-and craft work. It is mostly done by women.), Pottery and wall painting, Embroidery and chicken work, Herbal and minor forest produce, By product utilization etc.

Constraints in Adoption of Technology by Women

Improved technology package have been developed in country, as reported in earlier chapters but these have selectively been adopted mainly by male farmers and entrepreneurs. The female farmers and entrepreneurs have remained passive spectators and continue to adopt traditional practices. The reasons may vary from technological to marketing and social barriers. These may be grouped into technological, training and skill, passive attitude towards modernization, credit facilities, marketing systems and social barrier. As a result, some

technologies need operationalization as well as refinement. Factors for non adoption of improved equipment by women are discussed in the following paras.

Technological : The equipment for agriculture production are developed keeping ergonomic design factors of male operators. For women these are scaled down in size but their physiological responses under long duration of work are hardly investigated. The physical strength, working posture, attire and environment under which female workers are employed, etc. varies from region to region, which influences the adoption of technology. The research institutions have hardly appointed female researchers and technicians for evaluation of women specific technology.

Training and skill : The training facilities available for women in selected trades are largely located in cities and rural women can hardly avail these opportunities. Agriculture production related training facilities (agricultural machinery and equipment) are nowhere available to cater to the needs of rural women. The programmes confine mainly to demonstration of machinery and women hardly get chance to handle these machines. This does not improve the skill of women but creates awareness and therefore, modern machinery do not generate interest among women workers.

Passive attitude towards modernization : In traditional agriculture women farmers were equally involved in decision making process. In the absence of knowledge of modern agriculture technology, men alone take the decision for modernization of agriculture and the female members are left behind as passive spectators. They give their share of labour through traditional tools and equipment. The attitude of women towards accepting modern machinery can be changed only through proper training and demonstration.

Credit facilities : The modern agriculture including improved machinery requires higher capital investment which is not adequate from farmer's savings alone. The inept women farmers are not conversant with banking system and procedure for availing loan and thus, are deprived of credit facilities for purpose of machinery and other agricultural inputs.

Marketing system : Purchase of improved machinery or sale of agro-produce requires knowledge of industries dealing in machinery and organized marketing network system for agro-produce. The women workers seldom handle such issues outside their village boundaries, though they are involved in trade or local markets. Since marketing requires movement away from their villages, it will be appropriate to organize group societies to look after such issues. Network can be established like contract farming, franchise trading, supply to organized cooperatives/stores for value added products for assured marketing.

Social barriers : Women are equally competent to operate any mechanical device as such in urban areas. In Philippines, Thailand and Malaysia, women equally participate in operation of field machinery. But the rural women workers in India, Pakistan, Bangladesh and Nepal have confined to using hand tools and there is social reservations in handling machinery in the field. Social and technological efforts are required to persuade and train them to handle agricultural machinery. This may take sometime and there is no short cut. Only persuasion, motivation, patience and social recognition to their field work with use of machinery will encourage them to adopt mechanical devices.

Women friendly technologies and approaches of ICAR

Hema Pandey¹

Introduction

Women play an important role in Indian agriculture. They constitute nearly half of the human resource of the world and contribute significantly to the world economy. Nearly 84% of all the economically active women in India are engaged in agriculture and allied activities. Approximately 77% of total women population belongs to rural area with agriculture as their major occupation. They constitute one third of agricultural labour force.

Contribution of women in agriculture

Baring a few like ploughing, women share almost all the agricultural & allied activities i.e., sowing the seed behind the plough, sowing of all types of nurseries and after care, transplanting, weeding, manure and fertilizer application, harvesting, picking of vegetables and species, digging of tuber crops, threshing, winnowing, cleaning, grading and drying of produce, care of seed, feeding and cleaning of domestic animals, milking and processing of milk, processing of fish, fuel & fodder & drinking water, collecting drinking water, cooking domestic work, child care. The multiple roles of women in different farm and allied activities has been depicted in following figure. All these operations make the farmwomen work for long hours and they hardly find any time for leisure. There are some operations like transplanting, weeding, harvesting etc. for which women have to devote 10-11 hours a day in the peak season.



As the world's principal food producers, women are involved in every stage of food production and although traditionally there is a gender based division of labour, women tend to shoulder the larger share - in crop production as well as in animal husbandry women has to do most of the hard labour oriented tasks. Farm operations such as dropping seeds in furrows, transplanting of seedlings, removal of weeds, harvesting and transportation of harvest and threshed crops were carried out mostly by women, which involve heavy muscle power and result in work burden and drudgery.

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Rural women face many hazards in the home, in the farm and in the factories. The physical and mental drudgery in various operations in crop production include:

- Farm operations and child bearing and rearing simultaneously;
- Transplanting paddy seedlings by remaining in mud for long time under rain and scorching sun;
- Weeding with conventional implements or by hand in hot sun, rain and cold for long hours;
- Harvesting by bending, with traditional sickle;
- Drying produce by standing under scorching sun;
- Winnowing in dust and sun for a long time; and
- Dehusking, shelling, pounding and grinding of cereals and pulses by hand operated chakli and parboiling of rice by traditional arduous methods involving hard physical labour.

Women are exposed to a multitude of biological, chemical, physical and mechanical hazards during farm work. In case of rice transplantation arthritis, intestinal and parasitic infections may take place due to long hours of work in mud and water. In the marine food processing sector women workers carry out their activities in unhygienic and taxing working conditions. They perform time consuming monotonous and tedious tasks.

High rates of machinery-related accidents and respiratory occupational illnesses are seen. Many occupational diseases in women go undiagnosed if the farmer's wife is not asked what she does on the farm.

Due to the use of agro-chemicals women are exposed to several health hazards such as gynecological infections.

Reasons of higher involvement

More farm women are involved in agriculture due to following reasons;

Women labour is cheap

Landlords prefer women labourers as women are offered lower wages compared to men for the same work.

Scarcity of men labour

Migration of male towards urban areas causes scarcity of men power in many parts of the country. In these areas, women folk are used as farm labour and also the companion worker to complete the job in time.

Poor economic condition of the family

If the earnings of male are not sufficient to cater to the need of family, the female members have to supplement the family earnings by working on the fields of other farmers. The landless or marginal farm families are the examples of this category.

Nature of work

The agricultural operations needing patience and tender care are allotted to women. Many such agricultural operations are care of seedlings, transplanting paddy and

vegetables seedlings, picking of cotton lint, pods, plucking of flowers are mainly performed by women.

Time consuming

Time consuming and repetitive jobs like manual shelling of maize, decortication of groundnut, cleaning of seed end many of such other works are delegated to women.

Low energy requirement

While going for work distribution among family members the hard works are normally shared by the male members and comparatively easy agricultural operations are left to the women.

Customs

In tribal and hilly areas women bear prime responsibility for all the agricultural operations except ploughing. They feel proud of working in the field rather than household work. Some times men share the household work and take care of children at home. Though migration of male folk outside in search of job may have been one of the reasons for the involvement of female but now it has become a culture.

Parameters of women friendly technologies

Women friendly technologies have to be ergonomically suitable for women, economically viable and easy to employ and operate with minimum drudgery.

A brief criteria of technological options is given below:

Cropping system

Women may like to adopt a cropping system with low risk, demanding less labourer or self dependent, involving the crops of low volume high value but of non-perishable nature. Moreover, she may prefer to go for all types of crops of family requirement over commercial cropping.

Choice of varieties:

Besides high yields and market acceptance, there are other many criteria on which choice of variety depends. Among major issues which concern the farm women in varietal choice are:

- i. Dual purpose - Women in hilly and tribal area have to walk long distances for fodder collection. According to a study conducted in Himalayan region of Uttar Pradesh nearly 84 per cent farm women spent 2-4 hours time for fodder collection alone especially during February, March and December. This is why women's preference goes to dual purpose varieties which could save the time and drudgery of back breaking load they carry up and downs in hilly terrain.
- ii. Easy in threshing - The entire job of threshing specially in rice and pulse crops is done manually. In rice, this is not only beating the bundles against hard surface or wooden log but there is practice of trampling the produce under the feet of human being where participation of ladies is quite considerable. This practice requires a variety which can be easily threshed.

- iii. Easy in dehusking - Manual dehusking of paddy and preaparing of rice is also done by women in many parts of country even today. This operations requires a lot of time and energy. Therefore women desire a variety which can be dehusked easily and in which the rice grain breakage is less.
- iv. Desirable cooking quality- While sharing the responsibility of house a women tries to provide a good quality food to the family members. Thus the easy cooking expansion ratio as well as the taste of the variety is also the major concerns of women.

Besides the above general issues the women also has to choose a variety as a women farmer and a field worker. The varietial characters like yield potential, resistance to the attack of insect, pests and diseases, competition ability against weeds etc. are some of the issue which directly or indirectly concerns a farm woman. The researchers need to take care of these concerns of women farmers.

Women friendly technologies of ICAR for reducing operational drudgery

The operational aspects mainly those having maximum participation from the women include transplanting or sowing, weeding, harvesting, threshing, drying and storage. All these including development of suitable field implements have been taken care by the ICAR.

PEDAGOGY IN GENDER STUDIES

Mina Swaminathan

Gender studies being a very new and recent entry into the academic world, especially in science and agriculture there are as yet no fixed syllabi, course materials, or methodologies of teaching. This is a great advantage, from one point of view, as it provides scope for teachers to think, holistically and from scratch, as it were, about the subject—what it is and how they want to go about teaching it. In other words, it provides an opportunity to reexamine both content and process, and the freedom to recreate both according to both. At the same time, the difficulty for teachers is that there are no ready-made textbooks or resource materials available to turn to for help. In fact, we are in the stage where we will have to create the resource and teaching materials needed for the students, as well as for the next generation of teachers. This is no doubt a challenging and exciting experience, but also time-consuming and burdensome. Some examples will be given below to illustrate how the task may be approached and how content may be created through the process itself, by making students partners in the process.

Aims and Objectives

To begin with, one may ask what are the objectives of teaching gender studies to today's students, who are going to live and work in a world very different from the one we know. Obviously, we cannot prepare them for that future by providing answers to all the questions that they are likely to meet, but only by making them capable of responding — that is, by focusing on the development of skills and analytical tools, rather than on information or knowledge, which may soon become out of date. As technical specialists in agriculture who wish to serve the community and make a living, the skills that they need most may be summarised as

- Sourcing information
- Problem-solving and
- Social sensitivity

This last implies sensitivity to various social groups and segments as well as sensitivity to social issues, and the ability to use problem-solving skills to tackle those issues. This is where sensitivity to gender and its numerous ramifications in life comes in. From this standpoint, the goal of teaching gender studies may be redefined as sensitizing to gender issues, as well as providing the tools for analysis and problem-solving.

Tools and Strategies

Next, we may ask what strategies are helpful to meet these objectives, and how to build up a set of materials that can be used for the purpose. Not only that, there is a need for strategies and materials that can be used not only with students, but with different groups, such as extension functionaries, community leaders, grassroots level workers, and members of the community. The following are some examples of useful strategies, some of which are also an introduction to field research methods. Each can generate materials for recording, reference and reinforcement, and use at different levels.

- Surveys, as are commonly used in RAWE, but with gender-sensitive schedules
- Developing group reports based on gender analysis of surveys
- Analysis of case studies in groups
- preparation of case profiles based on interviews
- video clippings followed by discussion
- brainstorming
- games
- role plays
- drama and simulation
- open-ended interviews
- oral history
- debates
- computer-aided instructional modules
- focus-group discussions

An example

An illustration was the demonstration of a short video clipping (3 mins.) titled "What were you doing?" which provides an arresting visual introduction to the topic of gender roles by taking a peep into the daily life of a rural couple engaged in agricultural work. The film provides opportunities to discuss many issues such as women's multiple roles, the social construction of gender, women's "invisible burden", rural-urban and class differences, and the impact of technology. The different reactions of each gender to the film and the reasons for such different perceptions can also be taken up for discussion. The insight that the film is based on careful research and a theoretical perspective can lead directly on to the field use of a tool such as the 24-hour time clock. The process of critiquing, feedback and modification underlying the film and its value in developing communication media, as well as the uses of visual and aural/oral media

can also be discussed. Finally, such tools provide opportunity to deal with the whole area of attitudes and feelings, which are rarely consciously dealt with in classroom situations, paving the way to more-self-aware and self-critical attitudes on the part of the participants, and to an understanding of how stereotypes are formed.

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