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# Environmental Conservation and Sustainable Development

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## A. Formidable Challenge for the Future

The growing global population reached 5.4 billion in 1991. It is projected to be 6.3 billion by the year 2000 and 11 billion by the end of the next century, when it will level off or start to decline. Some 95 percent of additional population growth will, it is said, be concentrated in developing countries.

The increasing strains on the natural environment by development activities have led to mounting concern about sustainability of development, which has brought out serious awareness of the relationships between development, population and the environment.

Environmental problems such as air pollution, water contamination, deforestation, desertification and loss of biodiversity are widespread on a global scale and constraining socio-economic development and human welfare. They are exacerbated by rapid population growth and poverty.

Current agriculture is confronted with a variety of environmental problems in both developed and developing countries though the extent and nature of the problems are different between developed and developing countries, and even between regions among developing countries.

Intensification of agriculture in developed countries has had negative environmental effects resulting mainly from over-reliance on technical advances in machinery, chemicals and improved seeds. The most widespread environmental problems due to agricultural intensification are pest resistance to biocides, groundwater and surface-water contamination by chemical fertilizers, livestock wastes and pesticides, soil erosion and compaction.

The environmental problems of the developing countries are primarily the consequences of over-exploitation of natural resources such as deforestation, desertification, soil erosion and reduction of biodiversity.

Growth in crop production may be ascribed to changes in three factors: arable land, cropping intensity and yields. Agricultural production currently takes place on around 770 million hectares with a cropping intensity of 78%, implying an annual harvested area of some 600 million hectares. FAO proposes a strategy of crop production increase in "Agriculture : Toward 2000" that 65% of crop production increases should come from yield gains, 15% from the rise of crop intensity and the remaining 20% from arable land expansion. This means that if the production projected for 2000 is to be achieved, arable land has to increase by 83 million hectares, cropping intensity by to 84%, and therefore, harvested land by 115 million hectares.

Area expansion for agricultural use must be well-planned to avoid adverse ecological effects, particularly in tropical rainforests and rangelands, which are only marginally suitable for annual crop production. Much of the increases in harvested land will stem from reduced fallow periods in areas of sedentary agriculture and of shifting cultivation. In both cases reduction of fallow periods without compensating measures in soil management will have grave consequences, notably soil erosion and lowered soil fertility.

Over the last two decades, per capita food production did decline in many developing countries, particularly in Africa, including countries in which there was scope for maintaining or increasing the land/man ratios. According to FAO's report "The State of Food and Agriculture, 1990", food production significantly lagged behind population growth in 49 developing countries and in about 80% of the total number of countries in Africa in 1985 - 89. Inadequate infrastructure and economic incentives, including insufficient effective demand, impeded the advent of technological change which underpinned growth in other countries and regions.

Appropriate agricultural technologies do not seem to exist to sustain the present and future population growth for many resource-poor countries, and even some resource-rich countries appear reaching their maximum output. Production systems used by farmers are often unsustainable due either to commercial over-exploitation or attempts to meet their survival needs.

Nobody is certain about the question of whether the global population can be satisfactorily fed when it reaches 11 billion by the end of the 21 century as projected.

Meeting global needs for agricultural products without damaging the natural

environment and redressing existing regional disparities in food production per capita present a formidable challenge for the future.

**B. sustainable Agriculture and International Cooperation**

In the 1988 FAO Council, sustainable development in agriculture was defined as follows:

"Sustainable development is the management and conservation of the natural base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. such sustainable development that conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable."

Agricultural production systems are heavily dependent on the productive capacity of natural resources to sustain their development. Advances in agriculture have modified this dependency and reduced natural constraints to production through the use of irrigation, high-yielding varieties, chemical fertilizers, pesticides, etc. However, these advances have not supplanted agriculture's fundamental dependence upon the productive capacity of the natural environment.

Government policies aimed at encouraging farmers to enhance agricultural production should simultaneously encourage them to use natural resources in a sustainable manner. That implies providing adequate economic incentives which bring farmers more profit by conserving natural resources than by destroying them, in both short and long terms. Such agricultural policies needs to be complemented by policies to curb population growth and provide alternative employment opportunities.

In the absence of effective national and international support, and of alternative employment opportunities, the rural poor in developing countries will be forced to the mining of soil nutrients, cultivation of fragile soils, overgrazing of rangeland and the excessive collection of fuel materials in order to feed and warm themselves.

Conventional agricultural technologies were developed based on the notion that what is required or lacking for enhancing agricultural productivity should be artificially supplemented, e.g. in the form of chemical fertilizers, pesticides and irrigation water. They were input-oriented technologies without due consideration to long-term effects on agricultural productivity and the environment.

On the one hand, they have made a great contribution to increasing agricultural production worldwide. On the other hand, they have brought about loss of soil fertility, soil erosion, water contamination, water-logging, etc. which seriously affect agricultural productivity and sustainable development.

A number of natural factors affect agricultural productivity. Soil fertility, rainfall pattern, ambient temperature, topography, etc. vary in localities. The development of farming systems and techniques is much influenced by such local factors.

More attention should be directed at agricultural research to harness ecological process and relationships between soil, water and living organisms and to develop farming systems and techniques which suit local natural and economic conditions. That is to say, the research should focus on four critical components of resource management: soil fertility management, water management, integrated pest management and integrated crop, livestock and forestry management such as mixed farming and agro-forestry.

It is often cited that traditional farming techniques can produce relatively high yields of varied crops while maintaining soil fertility and reducing farmers' reliance on agricultural inputs such as chemical fertilizers and pesticides.

In the short run, traditional farming systems will be useful to feed poor farmers' families and are agro-ecologically sustainable. However, they may not be sustainable in household economy in the long run because farmers cannot gain enough profits from traditional farming to meet increasing long-term family needs. Therefore, merits of traditional farming systems should be incorporated in developing innovative farming systems which are ecologically and economically sustainable.

Are traditional farming systems and techniques practiced in certain regions applicable to other regions of the world? More research efforts have to be made to explore applicability of traditional farming techniques developed in some region to different regions and to develop agro-ecologically sustainable farming techniques.

The emphasis on ecological approaches would not contradict efforts to promote the use of chemical fertilizers and other off-farm inputs in developing countries. These will continue to be a major contributor to increased agricultural production in the foreseeable future. Ecological approaches can complement or substitute for off-farm inputs to attain sustainable agriculture and reduce production costs. They would favor particularly a great number of resource-poor farmers in developing countries. Research on ecologically sound agriculture has to be more stressed in

agricultural policy in developing countries and international cooperation should give high priority to it.

In the meantime, it is essential to incorporate environmental consideration into development activities which have adverse impacts on the natural and social environment. An useful tool for the incorporation of environmental consideration is environment impact assessment (EIA), which is now widely applied in the process of planning development projects and decision making in developed countries and is becoming increasingly adopted in developing countries.

The methodology of EIA has much advanced since the official adoption of an EIA procedure by the U.S. Government for development projects in the latter part of the 1960s, and is being more refined as an essential tool for sustainable development.

However, there are a few shortcomings in EIA. Regional integrated development approach has been gaining popularity in recent years. EIAs are usually conducted on individual projects. Becoming more important is the overall assessment of several projects of a different nature which collectively exert significant impacts one way or another on the regional environment.

Agricultural development should be seen as an integral part of regional development, and agricultural development projects should be assessed likewise. However, such EIA methodology has not been fully developed yet. In that sense, farming activities of individual farmers need to be assessed collectively regionwise. Their day-to-day activities would continuously exert deleterious pressure on natural resource base such as soil and forests. Although their individual impacts may not be discernible in a short run, their collective impacts on natural resources will be significant in a long run. Agricultural policies must be made considering those prospective impacts they will cause as a result of farmers' behavior directed by the policies.

Furthermore, degradation of natural resources such as soil erosion, deforestation and water contamination needs to be figured out economically or quantitatively. The results should be properly fed back to development planning and policy making. Such a methodology is yet to be developed.

**C. Foresighted Policies and Farm-level Efforts**

Land use planning plays a very important role in balancing development and

environmental conservation. It is practiced to a limited extent in developing countries, but is essential to optimize return on investment while minimizing the loss of good agricultural land to other uses, to reduce pressure to extend agriculture into marginal soils, and to link forest management and agricultural development. In some developing countries, land reform is needed to ensure the rational use of land and to check misuse of marginal areas.

Policy-makers have to be foresighted enough to allocate scarce resources to environmental conservation which usually bear only long-term benefits. Sustainable development and well-being of the society depends on how successful environmental conservation will be. International cooperation has a great role to play for it in terms of technology transfer and financial assistance.

Soil degradation involves soil erosion, nutrient loss and reduction in organic matter. The long-term fertility of the soil depends on more than the availability of mineral fertilizers. Of critical importance are the levels of organic matter in the soil, the availability of essential trace minerals and the water-retaining capacity of the soil. By replacing organic manures, chemical fertilizers would lead to a marked deterioration in soil structure, leaving the land prone to erosion, drought and compaction. Improving or maintaining soil fertility is imperative to sustainable agriculture.

The task of sustainable agricultural development cannot be left to the government alone. Much of the motivation has to come from farmers themselves. This requires an approach to environmental conservation which focuses on the introduction of conservation measures into agricultural production systems at the farm level. In this context, local farmers' institutions should be revitalized, or newly formed as necessary, to be a catalyst to effectively implement government policies on the farm level and to channel farmers' needs and problems to policy makers.

**D. Conclusion**

Agricultural production largely depends upon natural resources such as soil, water and forests. However, environmental problems associated with agriculture such as soil erosion, water contamination, deforestation, etc. are widespread in both developed and developing countries, although the extent and nature of the problems are different among countries. The natural resource-base in being seriously eroded in some developing countries and the productive capacity of natural

resources has been decreasing due to over-exploitation of natural resources for either commercial purposes or mere survival.

Such sustainable farming practices that contribute to maintaining soil fertility and conserving water have to be adopted by individual farmers through the introduction of moral as well as economic incentives supported by continued government commitments.

Future agricultural sustainability lies in the gradual and careful shift to lower external inputs, farming management to conserve natural resources and soil fertility and a balance between conservation and meeting the short-term needs of farming families in low-potential areas.

Research directed at such objectives should be given the highest priority in agricultural policies, and international cooperation in these areas should be strengthened.

Feeding the projected 11 billion people will be an unprecedented challenge for human civilization and ingenuity.

# DISCUSSION

## (SESSION IV)

(Ohta) Dr. Scherr discussed a lot of issues related to natural resource management and rural development. Lots of discussion on the causes of serious environmental issues which are so offen discussed in every country were made. Lots of suggestions were also made to solve them. But no one can solve all the causes at present. There is a suggestion, for example, to decentralize resource management. I think this is very important but I believe there is no possibility that decentralized resource management will be implemented in the near future. From my experience, local authorities unfortunately have no capability at present in many countries to manage resources. For example, in resource management what is the most important tool? It's a map. Without a map, you cannot manage the natural resources. But unfortunately in many developing countries a map is most important and top secret for security reasons. Map are not available. Then people cannot manage the resources.

Also land-use planning or land-use mapping is very important, as everybody knows. When I visit some top government officials in developing countries, I say hello, and see that behind those gentlemen there is a land-use map. The scale is one million or 500,000. If we bring it to the field, how useful is it? The most important useful land-use map will be 1 : 10,000 scale. Then everybody can recognize how to use the land itself. But in most of the countries, 1:10,000 scale maps are not available. How can local government manage the resources? How can local governments establish land-use mapping or land-use plans? Therefore we have to discuss management systems more and more, the system itself how to manage system, government systems, institutional systems or legal systems to provide legal power to the governor or local the government officials, and so forth.

(Scherr) That's an excellent question. I think that a lot of the progress we might hope to make in the future hinges upon our ability to address exactly that question. The question has two parts. One is the potential for effective management at the local level and the second has to do with the importance of maps as a critical tool.

The issue of the local management has a lot of variations. There are some situations where traditionally there were local units of organization which might not have been the government, perhaps it was a tribal unit or some other form of local organization. That was actually very effective before the colonial period in some African countries. That was certainly the case in a lot of South East Asian countries prior to the rise in power of central governments. In many of those cases there is

still some organization which exists, which, if allowed to do so by the central government, could it in fact take over management functions, particularly if they had access to some technical assistance on a consultative basis with experts from national systems.

There are other situations in which the role of a central government agency will continue to be important, but where the planning process, will fully be done in cooperation with local communities. This has particularly been the case in forestry management over the last 15 years, particularly in India. Also in South East Asia, we have been some of the most impressive examples of forest department officials working with local people in order to develop management plans. You find big changes in some forestry departments in many countries in the world once it was realized it was possible to do this, and they can cease to take on so much of a policy function. The point in most of these situations is that a lot of these local organizations require support in terms of management training. There is a lot of very interesting exploratory work being done in international assistance and in national government programs to help local organizations to get the management training that they need.

On the mappping question, there is an enormous amount of very interesting and totally unexpected experience with doing participatory mapping exercises with local communities and with regional groups. It is very interesting and very unexpected. The extent to which extremely accurate mapping in terms of critical topographic features, hydrologic features, use patterns, management patterns has been developed for purposes of looking at forest resources and looking at entire landscapes for purposes of doing soil conservation interventions. People have done maps that have later been checked against the official maps and were found to have no significant differences, and in fact to be superior to most of the available maps, partly because of the scale problem and partly because the key management features are not reflected in the official maps.

(von Braun) I have a comment on the presentation of Mr. Sudo, which I like particularly because it has this long-term perspective in terms of the challenge of feeding 10 or 11 billion people in a couple of decades. What makes this really a challenge is the prospect of doing this while mouing to lower external inputs. Then, of course, the challenge becomes much larger, and probably the research investments have also to be much larger. If these research investments are not forthcom-

ing, we must be careful about placing a constraint on external inputs, if no other solution is available. I'm concerned about that.

My second question is related to a statement on page 35 of your paper which says, quite sensibly, that policy makers have to be foresighted enough to allocate scarce resources to environment and conservation. The problem is policy makers are not foresighted. That's not what they are elected for, if they are elected. The question is how can incentives be given to the electorate and to policy makers to create foresightedness? There is a role for development assistance-donors to allocate funds to create these incentives. Japan can play a very powerful role in that network. If there is a basic conflict between the short-term problem of poverty, malnutrition and food insecurity of people, and the long term problem of environmental sustainability, is it not logical that government solve first food, the nutrition and food security problem in order to permit poor people to be environmentally-conscious? Rather than saying if governments don't have proper environmental plans, they don't get resources, I am arguing if they don't have proper policies in place to stop malnutrition, they don't get resources for environment. That's the conditionality question which may be more complex.

(Sudo) Thank you very much. It's a very difficult question to answer. One thing I would like to say is that in the perspective of environmental conservation and sustainable development, we all have to change our conventional ideas and attitudes towards the way of life, even if we have to try to change the policy makers' mind. So in that sense I mentioned in the paper that they have to be more foresighted. About the first question on the low inputs for agriculture. Of course we need to invest or put more resources in agricultural research and in the practice of agricultural production. But the point is that we have to hit the balance between nature conservation and the long-term production capability or sustainability. I have just raised the points we have to look at for our future.

(Scherr) I just want to add something to what my colleague has said. I think that we do have to be very realistic about the decision making framework, not only for policy makers but for farmers and rural land users who are the resource managers. Their perspective is absolutely critical in all this, except when we are talking about very isolated instances like protecting some part of a rainforest that will never get touched because it is so distant from where anybody lives. Those are the exceptions. Most of our resource management questions involved a resource manager

who is most likely to be some farmer or herder or woodcutter. They have similar time horizons to policy makers in that they are interested in relatively short-term returns. That gives us a very realistic challenge of how we need to think about technology and how we need to think about interventions.

Let me give you just one example. In Kenya when they first began to try to promote farm forestry, and to some extent this is still the case, there was a real emphasis on growing timber. Timber is a long rotation crop. The economic returns to a person with very small land holdings to doing a rotation of timber is simply not profitable. And farm forestry programs based on that were just failing one after another until finally they said, "People here want short rotation tree crops." They started to look at the production of poles, the production of fuel and the production of other sorts of short rotation products, and there was immediate uptake on the part of farmers. They got the same level of afforestation that they wanted in terms of farm forestry, but it was for a product that was much more appropriate. In terms of forestry that's another one of the reasons for thinking about agro-forestry where the farmer doesn't have to give up crop production in order to grow trees. So I think the part of it is a technological issue.

I see your point very much about not making assistance to production conditional on environment investment. But I think that, as much as possible, we need to embed environmental objectives into production and poverty objectives. The importance of common resources, of common property resources, for the livelihood of the poor is so significant that anything we do to improve the management of common property resources and ensure access by the poor, is very effective, and much more effective than having the national government take over common property resources and manage them. That is the danger of the environmental conditionality, of separating out the environmental issues from the other aspects. This leads me to another point: we should be extremely cautious about subsidies, major subsidies for environmentally oriented sustainable technology. If the only way we can get farmers to adopt a particular soil conservation effort is by heavily subsidizing it, the first thing we should do is rethink whether the technology is an appropriate technology. I think we should be very cautious about institutionalizing large scale subsidy programs.

(Andersen) It seems to me the critical issue we are trying to deal with here is where can policy intervenetions be most effective. As long as there are a large

number of people fighting for survival, environmental concerns mean very little. I am not sure poverty rates can be reduced and environmental issues taken care of by imposing conditionality. The poor are going to degrade the environment because they want to survive. It may well be that povety must be tackled at least simultaneously, if not before, the environmental problem is tackled. That is what some developing country policy makers are trying to tell us. What they are trying to say is that while it is very important that we focus on reducing degradation of natural resources, they have much more pressing problems to deal with. People are dying for lack of access to food and other poverty-related problems. If environmental concerns are put before poverty, we may well not be able to find the effective way of intervening. I think we really need a lot of more discussion of this issue.

(Katsurai - Moderator) I think we now learnt the difficulty of this environmental conservation problem. Mr. Sudo explained the present situation. He explained about the formidable challenge. Later Ms. Cherr analyzed the four items of decentralized resource management and mentioned about the technology, price and investment policy, and mentioned about bio-reserve. As Mr. Von Braun mentioned, there is a short-term policy and long-term policy, there is a kind of contradiction. It is not so easy for us. But here also we can expect the innovation of technology. And I am interested in, as Ms. Cherr mentioned, indirect incentives for farmers. If we can expect such good incentive by the innovation of technology, I think we can have some hope. Before closing this session, I'd like to introduce Mr. Ohta. He is my colleague and he is a specialist in environmental policy development. He will be assigned in Indonesia for the project-type technical cooperation of JICA. So I'd like to ask him to explain for the IFPRI members the example of JICA technical assistance in the field of environmental management.

(Ohta) Environment covers very wide areas. For example, one is an issue we have just discussed, another related to natural resource management. Another one might be urban environment, which is a serious problem even in a developed country, in Tokyo or in New York or even in a least less developed country. In capitals so many people come from the rural area to the city. Capital cities face a lot of problems such as slums, waste management, domestic waste management, congestion and sometimes security problems–lots of crimes and drugs. Another issue we created is industrialization. We have to divide enviromental problems into three categories. Because each category has its own strategies to solve the problems,

which are totally different. Therefore JICA is, as he just mentioned, establishing an environmental management center in Indonesia under the grant aid, which is one form of Japanese government aid. The amount of grant aid will be just 20 million U.S. dollars. And at present the building is under construction and a large amount of equipment will be installed. The role of the center is to monitor the environment in urban areas–air quality, water quality and particularly impact to health. In developing countries, unfortunately there is no monitoring system to assess the environmental quality. People say, "Oh the smell is very bad." It might be dangerous. But there is no scientific evidence showing the exent to which pollutants provide a vast impact and adverse effect to human health. One of the functions is then, to undertake a monitoring program. The second is for training purposes. The third will be environment research, particularly pollution control technology. This type of center has been already established in Thailand, where it is called Environmental Research and Training Center. There JICA provided, as he just mentioned, the project-type technical cooperation. At present in Thailand eight Japanese persons are there, and they assist in managing the center, which was established two years ago. It is still going on. Also the Japanese government has provided a big amount of assistance to China to establish an environmental research these center as well. Recently a number of countries, for example Mexico, Chile, Philippines, have submited requests to the Japanese government. However, decisions for those requests have not yet been made. But in the future JICA will probably provide some assistance to those countries as well.

# SESSION V

## Women in Agricultural Development

# Women in Development: JICA's Major Activities and Programmes

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## Introduction

In parallel with the growing concern of the global community as a whole, JICA has been concerned with such social issues as education, the environment, population and poverty alleviation; however, little attention had been paid to women in development (WID) issues. Nevertheless, there has been a growing awareness that WID perspectives should be integrated in Japan's Official Development Assistance; this awareness resulted in the establishment of a study group for development assistance on the theme of women in development.

The study group was set up in February 1990 under the auspices of the President of JICA, consisting of eight prominent scholars, former government officers, development specialists of OECF and representatives of NGOs. The group also formed within itself a taskforce consisting of ten development experts of JICA working in various fields of development. The concerned department of the Ministry of Foreign Affairs also participated in several meetings of the study group.

The study group searched for basic principles and priority areas for Japan's future assistance on WID[1/] through literature studies, correspondence with concerned national and international organizations, formal and informal meetings among members and the taskforce, international seminars and field study missions to Africa, Asia and the South Pacific. An open national forum was also held to discuss the draft final report of the study group before its finalizaion. The meeting was held at the Institute for International Cooperation and attended by more than 150 people, including government officers, scholars, women NGOs, development-oriented NGOs, journalists and others.

1/ Although the term "WID" is used throughout this paper, JICA is well aware of the argument of WID, WAD and GAD. To avoid the confusion among those who had not been familiar with the term WID and gender, the JICA's WID report avoided using the term "gender" and GAD, though the basic concept of gender was well incorporated in the appropriate places in the report.

This paper mainly presents the major thrust of the report with its constraints and limitations as well as the review of JICA's major activities and programmes developed after the report was published and submitted to the President of JICA in February 1991.

**A. Major Recommendations of the Study Group on Women in Development**

A-1. Major Strategies for WID Assistance

It must be noted that the main contents of the report have been primarily directed towards the Japanese audience, especially to those who have been working in the field of official development assistance, as well as Japanese women-NGOs who had thus far been rather more concerned with internal equality issues between men and women than with development issues. It also targetted conservative groups within JICA itself and government offices.

The report, therefore, started with a general introduction to the socioeconomic situation of women in the developing countries and the problems they face, explaining why it is important to integrate women's concerns into development processes and projects, and what would be the results if these concerns are not properly taken into consideration. It drew upon the experiences of other development agencies, such as USAID, CIDA and NORAD. It also had to bring to their attention the various attempts made by the United Nations through the United Nations Decade for Women, and show how much the Decade had done for promoting the WID issues in the developing countries and for linking together people in the South with people in the North. Unfortunately, most of the Japanese people, both men and women, looked at the Decade as a part of the western women's liberation movement, per se. It also had to show Japanese contributions to WID programmes and projects executed by such international organizations as UNICEF, UNIFEM, INSTRAW, ESCAP and ILO.

The report stressed that socioeconomic development of the developing countries should be based upon a participatory approach, meaning development should be achieved through equal participation of men and women. However, in order for women to become active agents for change, which would include their participation in the decision-making processes of development, basic conditions like education, employment and health must be improved. It well noted the need for people in developing countries to fight poverty and to work on their own to achieve economic and social self-reliance, and the need for development aid to support these efforts.

In order to achieve sustainable development, high priority should be given to dealing with such problems as the ever greater population of the poor, stagnating food production and security and worsening environmental conditions. As these problems take a particularly hard tool on the lives of women in the developing countries, it is necessary for women to actively participate in their solution.

The study group strongly recommended that Japan should, first of all, make clear aid policies and strategies outlining its intention to actively support the WID activities and projects. Such aid policies should be expressed at higher political levels and elucidated in aid policy dialogue being periodically held with the developing countries' governments. Secondly, the aid policies and programmes should consider the WID issues from a cross-sectoral perspective and should consider the gender perspectives at all phases of development projects, namely, planning, implementation and evaluation, giving due consideration to the differing socio-cultural characteristics of women in different societies. Apparently, these approaches had not been previously taken at all.

A-2. Priority Areas for WID Assistance

Based upon the above-mentioned approaches, the report recommended that Japan's development assistance should initially place high priorities on promoting women's economic participation (including the agricultural sector), education(both formal and informal), health and family planning, and environmental protection and management. This should be accomplished through women's better access to and control of production resources and benefits, including training opportunities and appropriate technologies.

In addition, supports should be given for information activities, especially through promoting paricipatory information collection and strengthening information processing systems and networks. Finally, the national machinery and NGOs concerned with women in development issues in developing countries should be assisted in their efforts for upgrading institition-building capabilities within themselves.

These areas are to be both intrinsic and high-priority needs based on Japan's aid policy and its past experience with assistance. All these areas are closely intertwined, and the long-term desirability of an integrated approach is an obvious fact.

A-3. Institutional Reforms Required for WID Programmes

In order to actualize the major recommendations of the report, institutional reforms were required. It was an absolute must to establish a WID unit within JICA's Planning Department to co-ordinate all the WID activities and vigorously promote the identification and implementation of WID-related projects. The WID unit was, finally, set up in May 1991, and it simultaneously deals with environment and other global issues. The unit further appointed a WID officer-in-charge in every operational division of JICA and is now trying to do the same for its overseas offices.

The promotion of WID issues requires JICA officers and experts to become well aware of the WID issues and be able to apply their WID perspectives to all the developmental activities concerned. Based upon the recommendations, the WID issues have been examined during the orientation courses for the newly joined JICA staff. A two-months training course on WID has been also set up for future JICA experts to be dispatched to the developing countries.

With the intention to quickly disburse Japanese ODA for mini projects in developing countries, the government of Japan established a small-scale grant aid scheme in 1989. Both government and local NGOs in developing countries are eligible to apply for this fund. Many NGOs have already used the fund for women-related activities. The government also set up a small grant scheme for Japanese development-oriented NGOs , which has been, however, not yet well utilized by Japanese women-NGOs. The report, therefore, recommended to increase the amount of these funds for use for WID projects and urge Japanese NGOs to make a full use of them.

Since the WID concerns are new to JICA's programmes, a lot of researchers and studies should be undertaken on the socioeconomic situation of women in the developing countries as well as on methodologies to apply their results to development projects under JICA's system. The report recommended JICA to secure funds for research activities to be undertaken in cooperation with researchers in both developed and developing countries.

Finally, the report recommended JICA to establish internal and external information networks on WID issues and promote development education in Japan. The government of Japan has, as a result adopted the Revised New Plan of Action for the Advancement of Women(1991-1995), in which international cooperation on

WID activities was stated as one of the most important issues to be pursued by all the government and NGOs concerned in Japan.

**B. Recent WID Activities and Programmes of JICA**

B-1. Formulation of WID Checklists

In conjunction with the 1989 DAC/OECD guiding principles on the integration of women's concerns in development assistance, WID checklists have been developed to assist JICA staff and experts in ensuring WID consideration in every JICA's project. They include main gender-sensitive checkpoints in such areas as agriculture, forestry, fishery, water and sanitation, education, health and medicine, social infrastructure and occupational training.

The checklists are presently being circulated among the operational divisions and in-house experts for their comments. The final checklists will be published by the end of this year, then be tested in various stages of projects development and field missions. They will be continuously upgraded and revised to better meet the actual needs and situations in the developing countries.

B-2. Research Activities

Since 1991, research activities on WID issues have been undertaken by JICA as below:

1) A three-year study on the upgrading of women's life in rural areas through appropriate technology development has been initiated by the Agriculture, Forestry and Fisheries Development Study Department of JICA since 1991. The study group was formed, consisting of scholars and development experts, to firstly review Japan's experience and knowledge accumulated through farm-life extension services established under the Ministry of Agriculture, Forestry and Fisheries since 1948, and secondly find possible ways to apply them to developing countries.

The services have been initially extended to "the wives of farmers" for the improvement of nutrition through better eating habits and reforming kitchens. However, with the growing importance of "women farmers" as against the general declining agricultural activities in Japan, the farm-life extension services are now aiming towards the upgrading of women's capabilities in farm management with computer technology, improving working environment especially in green houses, and introducing new agricultural processing and marketing technologies.

At present, there are about 1800 female extension workers under the Ministry, whose experiences would be well applied to overseas cooperation. The study group has thus undertaken a field mission to Bolivia and Honduras in April 1992 to find out about the women's rural life and possible ways for future JICA cooperation in this area. The study group will continue to meet and dispatch field missions to Africa in 1992 as well as to Asia in 1993.

2) The Institute of International Cooperation of JICA has been undertaking a study on the application of gender analysis methodology to JICA's projects since June 1992. The specific field selected for case study for the first year is social forestry. The study team will visit social forestry projects being implemented by JICA in Nepal and Thailand in December 1992. The final report will be published in March 1992.

3) The Planning Department of JICA has subcontracted local consultants to undertake studies on WID situations and possible projects development in Ghana and Kenya. Similar studies were already done by JICA Morocco and Pakistan Offices. These country profiles on WID are being examined by the WID unit for further follow-up.

4) Apart from these JICA's research activities, the Ministry of Foreign Affairs is conducting a study on WID integration in Japanese infrastructural development projects in Asia. The report will be submitted to the DAC/OECS WID Bureau meeting to be held in May 1993.

B-3. Training Programmes in Japan

JICA annually receives over 5,000 overseas trainees to be trained in various fields of development, of whom about 18% are females. Most of the female trainees are concentrated in such traditional courses as nursing and family planning. Based upon the recommendations of the above-mentioned JICA WID report, several new courses have been set up on the women's issues. It is obviously important to create new training courses directed to women's needs; however, it is more important to integrate women's participation in every training courses conducted by JICA in the long term.

Some of the newly established courses are listed as below:

1) A training course was set up on strengthening the functions of national machinery for the advancement of women in developing countries in cooperation

with the Women's Affairs Office under the Prime Minister's Office since 1990.

The main theme of the course held in 1990 was on the Convention on the Elimination of All Forms of Discrimination against Women. It was conducted together with the UNCSDHA. The main theme for the second year was women in development experience and methodology. The third year will deal with the topic on the collection of gender-specific data and information in cooperation with INSTRAW. About 15 participants are invited to each course from Asian and African countries.

2) In cooperation with the Kitakyushu Women's Forum, recently established by the Kitakyushu local government, JICA set up a pilot training course on the local government administration on women's affairs. The two-week course was well received by the participants from Asian countries and JICA decided to continue the course through the second year.

3) JICA has been conducting a training course on women- related policy and administration in cooperation with the Ministry of Labour for the past several years. The number of the participants has been increased to nearly double this year and the theme has been also expanded to include health and agricultural policy issues and activities.

Other courses have been conducted in such areas as agriculture and farm-extension services by the Ministry of Agriculture, Forestry and Fisheries, and women's information system with computer technology by National Women's Education Center, under the Ministry of Education.

B-4. Development of Japanese WID Experts

JICA considers it an urgent need to educate experts on WID issues as well as to develop WID specialists. A ten-week training course, consisting of English lessons, general development topics and WID issues, has been set up since January 1992. The WID part is about four weeks, including general introduction to gender analysis, such specific topics as women and agriculture, education, health and employment and a field trip to the Philippines for one week. The first course was attended by an officer of the Prime Minister's Office, local government staff, farm-extension experts, a doctor, a JOCV returnee, and several other observers. Canadian consultants from Halifax University were invited to assist in the gender analysis workshop. The second course is currently being held at the Institute for Interna-

tional Cooperation.

More training courses will be needed for JICA's own staff and experts as well as consultants contracted by JICA to carry out project identification and planning studies and missions.

B-5. International Meetings

Since 1991, two major international meetings on WID have been held by JICA: one on the WID policies and programmes of DAC/OECD WID Bureau member countries held in August 1991 in cooperation with the Ministry of Foreign Affairs and the other on WID project experience and lessons in Bangladesh, Kenya and the Philippines in February 1992 in cooperation with Yokohama Women's Forum. Both meetings were well received by Japanese participants and foreign residents in Japan.

The head of the INSTRAW was invited to the latter meeting as a keynote speaker in addition to the main presenters from Kenya and the Philippines. Since then, INSTRAW has been proposing other international seminars possibly to be held in Japan and the Dominican Republic, where INSTRAW is located, on such topics as the improvement of gender-specific indicators and statistics and time-use surveys in the developing countries. The proposal is being examined by the Planning Department and Training Department of JICA.

**C. Future Development of Possible WID Projects**

Even before the publication of JICA's WID report in 1991, there have been WID-related activities and projects as listed in JICA's WID brochure. However, the concept of WID itself had never been discussed by then, thus it has been rare to find WID mentioned in any JICA report and no conscious and explicit efforts have been made to promote women's concerns and integrate gender perspectives in development processes.

The WID unit, since its establishment in 1991, has been trying to develop possible WID-specific as well as WID-integrated projects through sending projects identification missions to the developing countries. Unfortunately, however, only two missions have been sent-to Ghana-on WID specific projects in rural areas and no projects have been yet developed. A project formation mission on poverty alleviation was sent to the Philippines in June-August 1991 with a WID specialist

accompanying the mission and trying to integrate gender perspectives. Another grant-provision mission to construct school buildings was sent to Niger in West Africa in August 1992 in which a WID expert was also included to incorporate gender perspectives in early stages of the project planning.

**D. Major Constraints and Limitations for WID Cooperation**

Major constraints for JICA to further develop WID projects may be listed as follows:

1) Available experts concerned with WID are quite limited at present. With the above-mentioned WID training courses for Japanese experts, some number of experts will be equipped with WID knowledge and methodologies; however, theys-till need a lot more experience in the field. Several young women are now studying WID issues at graduate schools in the Netherlands, United Kingdom and USA, but it will still take some time for them to be well recognized and registered with JICA as WID experts. In-house experts of JICA may be the best sources for quick future WID experts. There are about 70 such experts attached to the Institute for International Cooperation, most of whom are males; however, they are quite understanding about gender issues owing to their practical and rich experiences in the field.

2) It has been the most difficult task for the WID unit to develop either WID-specific or WID-integrated projects. It is mainly due to its function as being co-ordinator and promoter of WID issues rather than project operator with a provision for executing budget. It has not yet been given authority to appraise every JICA project to ensure proper WID integration. JICA's institutional constraints which oblige the project to take sectoral approaches and recruit experts from narrow sources are also affecting WID projects development. It is hoped that the research activities currently being undertaken will lead into concrete WID project development in the future.

3) Although JICA has been conducting country and regional studies as well as studies on specific global issues, it is necessary to encourage universities and research institutions to seriously take up WID studies. The theoretical understanding about WID is still insufficient to involve a lot more scholars and researchers to seriously consider WID issues as a part of their academic pursuit, which succeedingly provides little foundation to development efforts. More collaboration will be needed among development-concerned agencies and academic institutions in Japan.

4) Probably there are more constraints for JICA to vigorously pursue WID issues, such as its neglect of social impact analysis and the background of JICA's institutional establishment. These issues should be studied with full elucidation of their impact on the promotion of WID issues in the future.

**Conclusions**

Numerous activities on WID promotion have been taken place since the publication of JICA's WID report in 1991. Some are quite epoch-making, such as the three-year study on women's farm-life improvement and the new training course on Japanese WID experts. However, no concrete results have been found in terms of actual development of WID-related projects so far. It has been a great progress as no policy paper existed before 1991, and JICA has done quite an amount of work ever since. However, there are still a lot of constraints to be overcome in terms of number of staff, expertise, budget and present institutional set-ups if WID concerns are to be seriously pursued. It is a long way to go, but at least a step has been taken.

**Annex: List of Recent JICA's Publications on WID**

1) JICA, February 1991. "Study on Development Assistance for Women in Development", Study Group on Development Assistance for Women in Development, in English and Japanese.

2) JICA, August 1991. "IFIC International Seminar on Women in Development", Institute for International Cooperation, in English and Japanese.

3) JICA, February 1992. "Report of the International Seminar on Women in Development: Lessons Learned from Field Experiences in Integrating WID in Development Cooperation", Institute for International Cooperation, in English and Japanese.

4) JICA, March 1992. "Women in Development", brochure in English and Japanese.

5) JICA, March 1990. "Basic Study on the Planning of Farm-Life Improvement in Malaysia", Department of Agriculture, Forestry and Fisheries, in Japanese.

6) JICA March 1991. "Basic Study on the Planning of Farm-Life Improvement in Sri Lanka", Department of Agriculture, Forestry and Fisheries, in Japanese.

7) JICA, 1992. "Basic Study for A Women in Development Technical Institute in Kenya", JICA Kenya Office, in English.
8) JICA, March 1992. "Pakistan Women in Development: Government Policies and Foreign Assistance", in English.
9) JICA, 1992. "WID in Morocco", JICA Morocco Office, in Japanese.
10) JICA, forthcoming "Study on the Women's Farm-Life Improvement through Appropriate Technology in Bolivia and Honduras", Department of Agriculture, Forestry and Fisheries, in Japanese.
11) JICA, forthcoming. "WID Profile in Ghana", in Japanese.
12) JICA, forthcoming. "Study on the Women's Farm-Life Improvement Extension Services in Japan and Its Possible Application to the Developing Countries", in English and Japanese.
13) JICA, forthcoming. "WID Integration into JICA's Projects: A Case Study on Social Forestry in Nepal and Thailand", Institute for International Cooperation, in English and Japanese.
14) JICA, forthcoming. "WID Guidelines and Checklists", Planning Department, in Japanese.

# Women in Agricultural Development: A Key Focus in Poverty Alleviation Strategies in the 1990s

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## I. Introduction and Policy Issues

Alleviation of poverty requires economic growth, employment creation, and healthy living environments. Efficient poverty alleviation requires that good use be made of available resources such as human resources, land, and capital. Sustainable poverty alleviation requires that the demographic transition-reduction in mortality and fertility towards stabilized population levels be rapid. Agricultural growth–through its forward and backward linkages, its employment and income generation capacity, and its food supply contribution–is an important component of a poverty alleviation strategy. Women play a substantial role in the agriculture sector of low-income countries. Underemphasizing women's exisiting and potential role in growth-oriented poverty allevitation strategies becomes more and more costly as human productivity, natural resource preservation, and environmental externalities become increasingly relevant to the sustainability of such strategies.

### *Scope for Revisiting the Theme in the 1990s*

Despite substantial improvement in recent years in the understanding of women's economic contribution and their role as agents of change in health and education, the state of awareness of "women in development" issues leaves much to be desired. Although policymakers are more cognizant about addressing the constraints to women's productivity, much more investment in knowledge is required in this area (Behrman 1990). Women's lack of power and rights in many societies, combined with obstacles they face at all levels–household, local, national, and international–in articulating their concerns justifies the development agencies

address of "women in development" issues, from the motivations of achieving civil rights and of overcoming inefficiencies in development.

The theme of "women in development" received a major push during the United Nations Decade for Women (1975-1985). It is, however, worthwhile to revisit this theme, with a particular emphasis on "women in agricultural development," when fundamental changes in economic and development strategies are underway in many low-income countries, with profound implications for their agricultural and rural economies. Some of these changes are part of a long-team structural transformation of rural economies in low-income countries and are well studied (Lele 1986); other changes are new and additional. These changes relate to and arise from increased population pressure in rural areas with implications for migration and land markets; greater reliance on technological change in agriculture to maintain the balance between population growth and increased demand for food given constrained land resources; expanded market orientation of agriculture under structural adjustment; and redefinition of public institutions, especially the role of the state versus private agents for poverty alleviation.

Many early projects for women in low-income countries were relatively unsuccessful in generating income and promoting participation in economic growth, and a number of them degenerated into solely welfare projects. The "misbehavior" of many projects for women–that is, their lack of success and sustainability–is attributable to the choice of projects themselves, (which tended to lack a focus on economic objectives), the limited capacity of women-based institutions to successfully include women in mainstream rural growth and development programs, and the preference for welfare action by women-based implementation agencies in developing countries as well as in donor agencies (Buvinic 1986). Still, "women's" projects have made an important contribution to raising awareness of "women in development" issues.

This paper focuses on constraints that women face in access to resources in food and agriculture production which hamper their equal participation in society and raise the cost of any given poverty alleviation strategy. The paper emphasizes that the new focus of a "women in agricultural development" policy is on overcoming access constraints and inequalities in factor markets (land, labor, credit) and in provision of agriculture-related public goods. This approach of integrating women into mainstream development contrasts with the approch of actively promoting

small-scale targeted women's projects, may of which have frequently ended up as subsidized welfare programs focused on community processes rather than on economic empowerment, with commensurate effects for intrahousehold strengthening of women (Buvinic and Yudelman 1989).

A brief paper such as this on a complex and broad topic of "women in agricultural development" risks glossing over the great socio-cultural, political, and other differences that exist among women in low-income groups. These differences should guide the design of appropriate development strategies and development assistance programs. It is, therefore, stressed from the outset that just as agricultural development strategies need to take into account local and regional conditions of the agricultural sector, strategies for strengthening women's role in the development process similarly need to take into account current situations and institutions that determine women's positions.

## II. The Changing Role of Women in Agriculture and The Food Economy of Low-income Countries

Women make up a large proportion of the agricultural labor force in low-income countries, much larger than accounted for in official statistics due to underestimation of on-farm, home production, and trading activities. Most economically active women in Africa and Asia, an estimated 80 and 60 percent, respectively, are engaged in agricultural activities (UN 1991). Only in Latin America and the Caribbean is the share of women engaged in such activities quite low—about 10 percent. Moreover, agriculture has absorbed much of the increase in the women's labor force that occurred in recent years in Asia and Sub-Saharan Africa, but it is unlikely that it will be able to continue to do so in the long run. It has been noted for quite some time that women's role in crop prodution tends to decline with accelerated technological change and commercializartion of agriculture (Boserup 1970). However, this declining trend has not yet been observed in many low-income countries.

Women are involved in a wide range of agricultural activities, depending on availability of resources and on cultural factors. Women may farm their own farms, work as agricultural laborers on other farms, rear livestock and poultry, process and market their produce, and perform innumerable other on-farm and off-farm activities. The sexual division of labor is particularly pronounced in many parts of Sub-

Saharan Africa, but regional differences are large, and old stereotypes, such as that women grow food and men grow cash crops, no longer apply.

Over 565 million rural women live in absolute poverty in the developing world-about 50 percent more than there were 20 years ago (IFAD 1992). Women in the agriculture and food economy of low-income countries have been exposed to new forces of change in the past decade, generally resulting in both increased participation by women in agricultural economic activities and changes in the nature of their participation. Several of these changes are reviewed next.

*Migration Flows*

Male out-migration is one of the factors leading to increased women's participation in agriculture. Many men are migrating out of rural areas in search of income-generating opportunities. They may migrate for short periods during slack agricultural seasons or for long term to take up employment, for example, in the mines of South Africa or in the oil-exporting countries of the Middle East. The female household heads left behind have to cope with the full responsibility of farm activities--without necessarily having the decision-making authority or access to production resources that male heads would have-- with possible adverse effects on productivity, farm assets, acreage cultivated, and crop mix (Palmer 1985). As Table 1 shows, female headship of rural and farm households has reached sizeable proportions in a number of countries.

*Table 1--Rural households headed by women in selected survey settings in poor rural areas*

| | Percent of Households Headed by Women |
|---|---|
| Brazil (Zona da Mata) | 9 |
| Guatemala (Western Highlands) | 2 |
| Kenya (Western Region) | 11 |
| Zambia (Eastern Province) | 26 |
| Sri Lanka (Kandy District) | 15 |
| Bangladesh | 2 |

Source: Selected IFPRI surveys, reported in von Braun and Pandya-Lorch (1991).

*Structural Adjustment and Constrained Response*

Structural adjustment and economic policy reform, which have been, and continue to be, undertaken by low-income countries, are another source of change in

women's roles. Because women are frequently poorer to begin with, economic contraction tends to have more critical effects on them. Structural adjustment's price incentives result in an emphasis on traded crop production, which can lead to inequality of work burdens when intrahousehold arrangements in burden sharing are distorted (USAID 1991). This, however, is not a uniform result. In countries where labor mobility, education, and access to resources are quite uniform across gender, the ratios of male to female employment and wages stay constant. Jamaica appears to be such a case (USAID 1991).

Women farmers frequently face a supply response dilemma. The few studies that are available on the relative productivity of men and women in farming activities suggest that women are as productive as men, once the greater access of men to education, extension services, and other production inputs is controlled (Moock 1973; Fortmann 1978; Puetz 1992). However, women face a number of constraints, of which some are associated with poverty but others have to do with their gender per se, which prevent supply response capability.

*Changing Technology and Commercialization*

Agriculture is increasingly becoming a skill-intensive sector, even in the smallholder sub-sector. Investment in human resources through education and training therefore becomes essential for women. Both the burdens and the benefits of technological change and commercialization need to be assessed at the household level to judge the effect of gender, and both gender and child welfare are relevant in this respect (Leslie and Paolisso 1989). The effect of technological change and commercialization on poor women is more complex; the bigger the change, the sharper the division of labor and labor markets by gender, and the greater the separation of control over farm resources.

A comparative analysis of commercialization in five case study countries–Gambia, Guatemala, Kenya, the Philippines, and Rwanda–indicated that women's role in the new technologies or commercialized crops was much reduced, even if they had been important contributors to farm production before the change was introduced (von Braun, Kennedy, and Bouis 1989). The Gambian and Guatemalan case studies suggest, contrary to the new conventional wisdom, there is considerable income pooling going on within the household, so that women do gain, though less than proportionally, from the increased income of men arising

from the introduction of new technology or commercialized agricultural production.

In the Gambia, where rice was a traditionally a women's crop, women's access to new technology for rice irrigation was hampered by the difficulties they faced in hiring the necessary labor. Their work burden increased more than that of men. Despite women's relative–in some subgroups, absolute–loss of personal income, technological change resulted in increased household income (von Braun, Puetz, and Webb 1989). The increased household income in turn increased caloric consumption and reduced seasonal fluctuations in weight for women. In Guatemala, the introduction of export vegetables resulted in improved household food consumption–including women–despite incremental income being largely controlled by men (von Braun, Hotchkiss, and Immink 1989).

In this context, it is worthwhile to consider the implications of untargeted new technology for poor women in rural areas. In semiarid India, for example, almost all hand weeding is done by hired women, and earnings from this employment make up a significant share of the wage income of female agricultural laborers. Thus, technological development that would make herbicide use more cost-effective, perhaps through subsidies, would certainly have adverse effects on employment and income opportunities for this population group (Binswanger and Shetty 1977).

*Tenancy Rights and Land Scarcity Pressures*

Modernization of agriculture involves land intensification and increased exploitation of common property resources. Both processes involve issues of of land ownership and tenancy rights. Typically, these rights are dealt with at the household level. Women's customary rights tend to be largely disregarded, leading to stronger asset control by male heads households. Women also tend to be neglected in larger land reform programs, including land redistribution schemes. Women's lack of access to private land property where land markets exist, or where they are created under public contract (for instance, in new irrigation perimeters), or where they are emerging due to increased population pressure (such as in many parts of Africa) has far-reaching implications for their capacity to engage in agricultural production, gain access to credit and technology, and earn income. Lack of land titles or land security also adverse effects on production incentives.

*Changing Rural Financial Markets*

While women are active in many ways in informal rural financial markets, formal rural credit systems have largely shunned them. Women generally receive less than 10 percent of credit extended to farmers (FAO 1989b). The unwillingness and sometimes inability of banks to serve the rural poor, lack of assets for use as collateral, and cultural beliefs that women cannot effectively manage loans, especially large loans, are some factors limiting women's access to formal credit. Women are, therefore, forced to borrow on the informal credit market, usually at hefty interest rates and shorter repayment periods.

In recent years, a number of innovative credit projects have been developed that have quite successfully incorporated women. Bangladesh's Grameen Bank makes more than half of its loans to women; a majority of these loans are utilized for agricultural production activities (Hossain 1988; Safilios-Rothschild 1991). Indonesia, Pakistan, and India also have successful experiences with credit projects for women (Safilios-Rothschild 1991). Considerable evidence exists that women can effectively use credit and repay it on time, which supports changes underway in rural financial markets of many low-income countries.

*Health Constraints and Women's Time Stress*

Health constrains in rural areas hamper women's productivity. Many women in developing countries are malnourished and suffer from poor health; it is not unusual to find women in these countries being ill 15 to 25 percent of the time. Moreover, many women in these countries spend a large proportion of their reproductive years being pregnant or lactating. Improvement in health and nutritional status and reductions in time costs of achieving good nutritional status are preconditions for effective participation by women in agricultural and after other economic development.

Closely related to health constraints and loss of productive time for women is the general issue of excessive demand for time. Women in low-income countries spend many hours every day doing household chores such as fetching water, collecting firewood, and, of course, caring for children. For instance, in the hill areas of Nepal, women spend up to half of their recorded total work time on collection activities alone, much more so than men (Kumar and Hotchkiss 1988). Besides household chores, women also engage in agricultural or nonfarm economic activi-

ties. Adding together time spent on housework (unpaid) and economic activities, women's working days are much longer than those of men; in Africa and Asia, for instance, women spend almost 15 hours more per week working than men (UN 1991). Hence, easing women's time constraints on household chores or low-return agricultural activities will permit them to engage in more productive, income-generating activities. Women's economic participation has important positive effects on food consumption and nutrition, especially for children (Garcia 1991).

When household budget constraints are severe, it is likely that health expenditures are biased toward boys, rather than girls (Thomas 1989). The starkest health outcome of this differential access to welfare-enhancing services can be observed from mortality statistics: although women have higher life expectancies than men, there are more surviving men than women in the developing world as a group–100 men for 97 women (Sen 1987).*1

Health systems have come under new and additional stress in many countries that face severe fiscal constraints and have cut back on services. Health clinics may not be available at all, may be too far away, may be insufficiently stocked and staffed, or may have inconvenient hours, all of which can reduce women's access to them. Already, urban-based hospital networks have come under incremental pressure from urban concentration of HIV (AIDS) in some countries.

### III. Policy Priorities for Women in Food and Agriculture and Beyond

Women's due participation in the benefits of agricultural modernization requires that the constraints hindering their access to technologies and markets be overcome. Moreover, policy particularly needs to be careful to not create new constraints in the agricultural modernization process. As a precondition, misconceptions of existing rights of women and of constraints facing women, which are frequently why agricultural change excludes women from the benefits stream of new technology or why it even creates adverse effects for women, need to be overcome.

This section considers policy priorities for women to have access to five major sources of economic opportunities: land, technology, credit, employment in public works, and health and nutrition.

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*1 Note that in Europe and North America, there are 106 women per 100 men (Sen 1987).

*Access to Land Resources*

In rural environments where land security is not fully assured and where women are weakly organized, there is little that women can do about absolute or relative loss in asset control. Governments need to extend legal access to and control over land to women and to protect women during land tenure transitions (Cloud and Knowles 1988). Donor agencies that finance economic programs that could lead to changes in land control have a responsibility to facilitate women's access to land in such situations, or, at least, to ensure that their access to land is not threatened. Upgrading technology on land currently used by women does not necessarily guarantee that women have access to the resources under improved technology (von Braun, Puetz, and Webb 1988).

*Access to Technology*

It is only late after the "green revolution" that women-based knowledge and women's constraints (including time) and preferences are explicitly being taken into account in the research-based technological generation of food crops, other agricultural products, and processing technologies (Jiggins 1986). The Consultative Group on International Agricultural Research and national agricultural research systems have increasingly integrated women's concerns into technology generation. IFPRI has made the analysis of gender dimension of technology policies an explicit research concern.

Small-scale women's projects in agricultural technology utilization, for instance, gardening programs, may be able to raise awareness, but they cannot rectify the larger constraints faced by women farmers in agriculture, unless these concerns are taken into account at the outset, that is, in the research process leading to new technologies and in the overall policy design facilitating widespread technology adoption by women farmers. The latter is of particular relevance in Sub-Saharan Africa and parts of Latin America. A better understanding of rural labor markets and women's role in these is a central in many parts of south Asia, as are the land access issues mentioned above.

Extension services are a key mechanism for bringing new technology to farmers. Women farmers are typically bypassed by extension agents. For instance, women farmers in some African countries receive only 2 to 10 percent of the extension contacts (FAO 1989a). The problem of extension services that bypass women in agriculture is exacerbated when input delivery systems are linked to

(biased) extension workers, which then leads to differential access to technology.

The capacity of extension services to reach women is facilitated, but not assured, by a larger proportion of female extension workers. Having more women extension workers is no guarantee for more effective outreach to women farmers (Blumberg 1989). There is evidence that male extension workers can effectively reach women farmers when women farmers are organized into groups, when a clear message is sent to extension agents that reaching women farmers is important and efficient, and when extension workers are trained to understand the role of women farmers (Weidemann 1987). Improving extension services outreach to women farmers can be a major priority of development assistance policy in the 1990s.

*Access to Credit*

There have been a some promising innovations in group-based credit systems in the 1980s, many increasingly utilized by women. Noteworthy examples are to be found in Indonesia and Bangladesh, and increasingly in Sub-Saharan Africa where they build upon indigenous rural financial savings and credit institutions. Group-based credit systems facilitate access to financial means through group collateral rather than individual assets, ease the integration of rural women into the exchange economy, and facilitate small business investment. Credit institutions of this nature have other beneficial effects for community development and women's empowerment (Safilios-Rothschild 1991; Hossain 1988), and are possibly one of the most promising development programs in the 1990s for women in rural areas. Innovative group-based credit systems also provide a new way of reaching out with extension of education (literacy) and information to women.

Building assets for women through integrating them into rural financial markets and investing in provision of rural goods and services may be promising in the rapidly diversifying rural economies of many countries. This is especially the case in those countries whose rural infrastructure facilitates such rural growth without severe demand constraints for those goods and services that the poor can produce initially when their access to credit is facilitated (for example, animal production and simple manufacturing).

*Access to Labor-Intensive Public Works Programs*

Rural infrastructure deficiencies and household food insecurity are major con-

straints in the least developed countries (Ahmed and Hossain 1990). Employment creation through labor-intensive public works programs may address both problems. Such programs have been successfully employed in a number of Asian and African countries (von Braun, Teklu, and Webb 1991). Women participate in these low-wage employment programs in China, South Asia, and Africa to a greater extent generally than men. This is not surprising given the limited alternative employment opportunities available to women and the lower wage rates they receive in frequently segmented labor markets in rural areas. While the women appear to be integrated into employment programs, there is scope for program expansion that will facilitate labor market integration of women in countries with segmented labor markets.

*Access to Health and Nutrition Programs*

Women have traditionally been the primary target of health and nutrition programs in rural areas. Such programs are to be seen as complements rather than as substitutes for any of the above-mentioned policy actions. Women's health and the health of their children are closely connected (Garcia and Lofti 1991). Strengthening women's health and nutritional status has favorable long-term implications for children's survival and nutritional improvement. The link between current income flows and health and nutritional outcomes of mothers and children may be rather weak, but the link between women's ownership and control of assets to their welfare is considerably stronger. This underlines the necessity of overcoming access constraints in factor markets as stressed above, jointly with access constraints to health services. The latter has to come through improved density, quality, and–for the poorest–subsidy of health services.

## IV. Policy Conclusions

In the 1990s, the "mainstream" integration of women in development, in many low-income countries, appears to be promising approach because of the greater recognition accorded to participatory governments. If participation, including voting, becomes more of a reality in low-income countries, particularly at local levels, the forces toward "mainstream" integration of women's concerns in development policies and programs may receive a new qualitative push. This could substantially exceed the isolated activities that emerged in the early 1980s to integrating women

into agricultural development, and could be more effective and sustainable than a marginal expansion of programs and projects in women's niches.

The "women's project" approach can be transformed to provide an important intermediate role for women's integration into mainstream economic and agricultural development. Women's groups around such projects can be catalytic for women's equal participation in the five main priority areas advocated above: access to land and tenure rights; access to agricultural technology; access to credit; access to employment programs; and access to health services. International development assistance is active in all five areas, and thus influence women's access to these developmental forces.

Investment in improved quantitative knowledge is an important precondition for success in overcoming integration constraints. This investment includes better monitoring of information and a broad-based overhaul of statistical and reporting systems in the food and agricultural sector, especially of women's employment. By focusing on market transactions, formal employment, and cash payments, and excluding non-market transactions and production of "home" goods, many of these statistical and reporting systems understate women's rale. Misconceived statistical reporting systems may lead to misdirected policy priorities.

Analytical tools also need to be reshaped. Assessment of policy and program impact–that is, the targeting efficiency and effectiveness of policies and programs–need to explicitly integrate the gender dimension (Haddad and Kanbur 1990). The limitations of cost-benefit analysis for addressing specific distributional and poverty issues, such as the gender dimension of policies and programs, must also be recognized (Kabeer 1992).

Integration constraints have to be overcome at three levels: local, government, and international donor agency. Improvements in information and quantitative knowledge, as stressed above, can facilitate this at all three levels. Participatory approaches at local levels are increasingly demonstrating their capacity to improve program choice, design, and sustainability. At government levels, information constraints are still linked to the problem of choice between "women's only" projects or "mainstream" integration of women in development programs. The lead ministries in food and agriculture need to adjust; they should take into account already mentioned constraints to women's productivity, and design projects and programs accordingly. Allocations of domestic and international resources can seriously con-

sider making this a precondition, on the basis of productivity and equality concerns. International donor agencies, however, are themselves only recently beginning to comprehensively address the "women in agricultural development" issue, and only slowly are they permitting this issue to emerge from the niche it has occupied for a long time. Strategies, staffing, patterns, and budgetary commitments are changing.

The inefficiencies of not taking seriously the need to overcome constraints that women face in access to productive resources will become increasingly obvious in the next few years when agricultural growth constraints will combine with limited foreign assistance resources, severe foreign exchange constraints, and public budgetary constraints. While advocacy and political articulation may have been central for achieving progress in the early phases of promotion of "women in development" issues, more substantial investment will be required in the coming years on research-based knowledge for accelerating the "women in development" process in the food and agriculture economies of low-income countries.

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# DISCUSSION

## (SESSION V)

(Katsurai - Moderator) I think everybody agrees with Mr. von Braun's presentation. So I'd like to ask Mr. von Braun's opinion about a related matter. As Ms. Tanaka mentioned, so far JICA has taken some steps in the field of women in development; we did some studies, we did some research work and we sent a short-term expert to Ghana, but we have not yet established any project-type technical cooperation or we have not yet even sent a long-term expert. Usually we send a long-term expert for a period of two years. So Mr. von Braun mentioned many important issues. What do you think about the next step for JICA, which issue or which kind of technical cooperation would you recommend?

(von Braun) I would recommend two things. One is that checklists, such as you apparently have been preparing, can be an important step for assessing the effectiveness or the neglect of women in development issues and technology development programs. But they must not be applied like cookbooks. It is more important that JICA staff have an appreciation of the importance of the women in development issues, because the diversity of the issue by regions, by countries in different agro-ecological settings, is so large the checklists cannot provide all the answers. But I am not saying don't do checklists. They can be an important first step. Secondly, it's important to identify the institutions in developing countries which are active in development-oriented promotion of women in development issues. There are a large number of institutions in most countries which are active in the area and could make very good use of development assistance resources. They themselves identify the priorities, but they require strengthening in administration, management, efficiency, and in applying the tools of development planning and cost benefit analysis. These institutions exist in many countries, growing out of advocacy groups into important players in the development business. To support such institutions after your missions screens them for potential may be more effective than identifying specific technical assistance projects for women in development.

(Rosegrant) I quite enjoyed this presentation because you identify the market failures that, in a sense, would justify particular interest in women and particular policy intervention towards women as a group. But is there really strong empirical evidence in a wide range of countries and societies that these market failures are significantly worse for women than for men? In general, credit, access to credit and problems of tenancy are wide-spread and significant problems but for all people in the countries. Is it really significantly worse for women?

(von Braun) Let me just respond by citing one piece of strong empirical evidence. If you compare the growth returns per labor day, per day of women farmers in West Africa with that of male farmers, women farmers' average net returns tend to be 40 to 50 % below those of male farmers. When you control for male farmers access to incremental resources including access to fertilizer, improved seeds and transportation equipment, the difference is totally eliminated. How do women have to respond in such environments? They have to form smaller farms, smaller field crops, and have longer time wastage of going to field and coming back. They forego scale economies to overcome the market failure problems. These market failure problems result in diseconomies of scale for women farmers, not to say anything about the credit market here.

(Scherr) I have a question for Ms. Tanaka. I was really interested to see that you use gender analysis at the beginning of projects to identify how the project might affect women. A common problem in the early stages of many projects is that project managers do not know how to integrate the women in the plan. That is, they ask the women farmers their views about what the technology should be, but are discouraged to find that women won't talk to them or come to the meetings. Functionally, it didn't work. And so it seems that there has been a lot of experience, built up by people who have done this a lot, as to how to do this effectively. You can't just go in and use the same tools used to invite men to a meeting. Because culturally there may be lots of reasons why. You've got to get the right fix on it. And I was wondering if you had been thinking about any other kinds of training for JICA staff and also field staff in the developing countries to prepare them for managing a project where you are expecting women to be participating.

(Tanaka) First of all, JICA usually does not conduct any needs-surveys and socioeconomic surveys before they implement the projects. So social consideration is very small to begin with, and much less the consideration for women's participation. So this has been a great constraint for women's participation, including the gender perspectives. But there has been some moves in the Planning Department and some operational divisions about how they can include the social impact analysis and socioeconomic surveys. And sometimes while the projects are being implemented, then they will undertake the socioeconomic surveys to improve the quality of the projects. But never before the project gets started, though I might be wrong. You can ask the operational division. So this is one difficulty. Regarding the

training of JICA staff, it has been very difficult. Since they are overloaded already, they don't want to participate in long training courses. The maximum they can probably spend is four or five days. They have spent a week on the project cycle management(PCM) training courses so far. So maybe in the future, they can participate in the gender analysis courses. But not in the near future.

I want to ask a question to Mr. von Braun. In Japan, many people think that if you give an extension service to a husband, the knowledge and information are automatically transfered to his wife. So it is not necessary for the training courses to directly target the "wives of the farmers." And it has been very difficult to convince people that there is a clear need for training extended to female farmers. They are not just wives, but farmers.

(von Braun) In the area of extension there are great potentials for integrating women into agricultural development programs. But there are also some misunderstandings. For instance, one is to suggest that if ehere are women extension agents, those agents will share their experience with other women. We don't have much clear evidence on that. So it would not make sense to condition financing of extension projects on the proportion of female agents. Male extension agents can be very effective, if they get the right guidance in conveying the extension experience to women farmers. Secondly, on your question, there are many farm situations whether there is specilization in the farm between husband and wife. That specilization is not only between cash crops and food crops, but also within different crops and for different activities; one takes more of weeding, the other more post-harvest conservation, and so on. That specialization the extension service has to take into account in order to efficiently convey extension messages. This is an example of why leaving out the gender and women in development issue in agricultural development is simply inefficient. Similarly, an extension service which trains the male head of household in optimal cropping and field operation in swamp rice production in west Africa, would bypass the 95% of swamp rice producers who are women in that setting.

# CLOSING REMARKS

# CLOSING REMARKS

**Yujiro Hayami**
Professor at Aoyama Gakuin University,
Member of Board of Trustees, IFPRI

Well, time is already behind schedule. Also there have been so many discussions that it is not appropriate to summarize all the discussions. I would rather present my own perspective, to the extent possible to relate my biased perspective of the discussions and presentations of today. By attending this interesting workshop, I was again impressed by the fact that we are in the so-called second paradigm in the post-war development thought. What is the first paradigm? The first paradigm, I would say, which dominated the development thought from the end of World War II to around 1970, was what I called "government-guided development strategy". For low income countries to develop faster and catch up with the advanced countries, it was considered necessary to strengthen the government planning, regulation, and control on resource allocation. This paradigm was based on three assumptions. The first assumption is that poor countries have no capacity to save if people are left to their free decision or their own preference in a free market economy. Therefore, some sort of forced saving mechanism must be developed. In other words, the government must suppress consumption by people by some artificial means and increase savings for faster capital accumulation.

The second assumption is that a market economy promotes more inequal income distribution. In this view the market economy is a system in which more capable, more powerful, more rich people can win in the competition. Therefore they accumulate assets and income while poor people tend to drop out. If the resource allocation is left to the market mechanism, income inequality will increase. Therefore the government has to control or regulate the working of free market mechanisms. The third assumption is about market failure. This relates to the environmental issue. Private enterprises in free market cannot take care of externality. Environmental qualities such as clean air and bio-reserves which cannot be traded in the market place tend to be degradated if left to market mechanisms.

These are the three major presumptions underlying the predominace of what I call "the government guided development strategy" in the first quarter of the post-

war period. Based on this paradigm, not only central planned economies in the communist block but many low income countries in the third world, in Africa, India, in a varied degree of government intervention adopted the strategy to develop the economies by means of government regulations and interventions. The fact that this strategy was not effective in promoting development of low income countries became evident as time passed with the disintegration of the Soviet block, the economic crisis of Eastern Europe and the transition of China from a centrally planned to a market-oriented economy. The stronger a country has adhered to this paradigm, the poorer has been its economic performance. This tendancy is evident from a comparison of many African countries and India versus a country like Thailand. Thailand's case is a "typical example of success of economic development", not based on this government guided development paradigm. Thailand's success very much depended on a provision of public goods. Typically Thailand made a huge investment in highway systems. The highways were built more for military purposes. Yet it is true they made a very large initial investment in public goods. Then they quickly shifted from government guided import substitution industrialization policies to more liberal market oriented policies.

The failure of government-guided development strategy stemmed from the fact that people misunderstood the nature of government and market failure. Market failure surely is a serious issue. But while recognizing market failure, people were not aware of how serious or disastrous is government failure. In other words, for the government-guided development strategy to succeed, government leaders must be philosopher politicians in the Platonic sense who consider the welfare of the people instead of the leader's own benefit. But that is not really the case. All the government regulations and controls not only biased and distorted resource allocations, but created huge rent-seeking activities. That is really the crux of socialist central planned economy. Now as the basic defect of government-guided development paradigm has been recognized, development thought has been shifting to the second paradigm. That is what I call the "decentralized market-guided development paradigm" in which the role of the market in resource allocation and the role of market competition to suppress rent-seeking activities are recognized. According to this paradigm, resource allocation for private goods should be left to market mechanisms, while government should concentrate on the provision of public goods, not only physical infrastructure such as road and harbor, but maintenance of

property rights, laws and law enforcing mechanisms such as courts and police.

Today's discussion emphasized the need to remove the government regulations and controls on resource allocations for private goods according to this new paradigm. Several discussions today indicate the policies based on the government-guided development strategy result not only in inefficiency but very often result in the promotion of inequal income distribution. We know that for subsidized credit and subsidized inputs in many cases, a disproportional share of such subsidized inputs is captured by the rich instead of the poor, because of the riches' connection the rich have to the government officials and their influence in the local communities and local government. In the case of women, too. The poor women's working opportunity and income source from weeding was reduced because of government subsidies on herbicide which reduces the weeding labor opportunities. Another example is say fertilizer subsidies to rice or price supports on rice that reduce the relative income of agro-forestry operations, and thereby reduce the chance of success of resource conserving agro-forestry systems. Thus the shift to the new paradigm is a very sound move, very consistent with modern economic thought of the neoclassical tradition.

We learned several decades ago in graduate schools of economics that to achieve the social optimum, resource allocation must be left to a market where there is no externality and, on the other hand, government should concentrate on the activities to provide public goods. And therefore the shift from the old to the new paradigm is a very sound and healthy move. However, what will be the optimum design of policies based on the new paradigm is not so clear cut, partly because there is a gray zone between pure public goods and pure private goods. Also, provision of public goods is very costly in many cases. For example, forestry has strong externality, and for that reason, management and conservation of forestry should better be made by a public body such as government. That should be so if government has an infinite budget or resources. But government's revenue base is very weak typically in developing economies. Forestry rangers are very small in number and they are poorly equipped with communication and transportation means, while sometimes squatters are better equipped, having rifles. In such a situation the theory of welfare economics cannot apply so readily. The increase in government revenue by heavy taxation and the larger allocation of government budgets to strengthen forest rangers may increase the welfare of the society, but it

might not be politically feasible. In such situation what will be possible alternatives?

One is to strengthen intermediate organizational structures such as the village community or tribe. This is a practical option, if the local community is tightly structured and able to prevent free riders. Free riders mean some community members who cut down community forests secretly without paying. It could aork it the local communities such as the village or tribe are tightly structured so that the community can impose some penalty on the free riders either through giving them a bad reputation or either by ostracism. In a small community, a bad reputation is a very strong constront for anyone to survive. I may gain by cutting trees in the community forest, but if someone watches my cutting, people all of a sudden will start saying that I am a very bad guy, and the village children will telling the children they have a bad dad. My child may not have anyone to play with. If this sort of community sanction can work strongly, instead of using high cost forest rangers or the police or the courts, public goods can be properly managed. This is one possibility. But this aproach is feasible only when the community is relatively tightly structured. In such a case a bad reputation or people's social interaction works as a sufficiently strong enforcement mechanism.

That is the case in Japan. And probably that is the case in Taiwan. But in many developing countries I am not quite sure how strong this mechanism works, in countries characterized as a loosely structured society as compared with Japan which is called a tightly structured society by a famous anthropologist, John Embree. Compared to Japan, the community enforcement mechanism might not work so strongly. In Japan even in the premodern feudal period, population pressure was high and water was scarce. Therefore, in order to prevent water disputes, land disputes and forest disputes, people gradually developed the ability to organize their community for the enforcement of common property resources. But in Thailand as well as many other developing countries, maybe Africa too, until very recently the population had been scarce and natural resources had been quite abundant, and they had not found a need to develop strong coordination within village communities. But through the population explosion, all sudden, resources have become scarce relative to population. But people's mentality and community sense cannot change so quickly. In this kind of society, strengthening of the community enforcement mechanism, even if it is desirable, might not work so effectively.

Another possibility is to strengthen private property rights or extend private

property rights to common property resources such as forests. I just came back from Vietnam, where I found an interesting example. Vietnam, as you know, recently shifted from collective farming to a private responsibility system. In other words, village-wide collective farms were subdivided into private units leased for 15 years under private management, similar to the household responsibility system in China. What I found very interesting was a case of private management of fish ponds. I visited a very low-laying paddy field area where fields are submerged under water during the wet season. In the dry season a field is subdivided into private units for rice production, divided by small banks. But in the rainy season, water rises to a high level so that the low banks are submerged under water, and it becomes a big pond of 1 to 3 hectares within which several tens of private units are included. So in a sense that paddy field becomes a common property resource for fish culture in the wet season. In the beginning of the rainy season, they seed fries and harvest fishes at the end of the season. It is the common property resource, because one cannot exclude others from the use of one's land plot within the pond to culture fish. So each pond must be managed as a common property resource in the wet season, even though each plot within the pond can be managed as a private property in the dry season.

They say, in fact, that they used to manage it in the past as a cooperative fish culture pond. But after they shifted from the collective farm to the private responsibility system, these ponds in wet season are now auctioned to private fish culture entrepreneurs. Many people bid for the use of a pond. The person who offers the highest bid obtains the right to use that pond for that particular season. His payment is divided among owner's of land plots in the pond. Some landowners are employed by the fish culture entrepreneur for wages. Of course that entrepreneur who manages fish culture in the pond can earn a high income. They say that landowners' income are also increased. It looks as if most people are better off. This is a kind that we call "Pareto improvement". I am not saying that this is the only approach to a solution of the problem. If a similar situation existed in Japan and Taiwan, it would be likely that the private management of the common property resource would not have been adopted. Instead, the pond would have been managed by a cooperative.

But in South East Asia, the private management of common property resources might be a better option. I also went to hillsides. It was very interesting to

find that they are not only shifting arable lands to the private responsibility system, but they are also shifting forest lands in hillsides and mountains to private management. In this case villagers auction out certain hillside areas for their own forest management. They are responsible for reforesting the lands within a certain number of years. And at the time when they harvest the trees, maybe 30, or 40 years later, one half of timber must be paid to the village. In a sense this is a sharecropping arrangement between villagers and the village community. Previously those forestlands were managed by cooperatives or communes. At that time it was very difficult to prevent free riders who illegally cut trees and steal timber. Once land was allocated individually, village people are now moving their residence to the hillsides and mountains from the hamlet. They are themselves monitoring and acting as forest rangers. As a result, illegal timber cutting has been greatly reduced. I do not know how this kind of experience can be applicable to other countries.

This experience contrasts to the experience in the Philippines for example. In the Philippines, there was a reforestation program in which villagers were employed by the government. They were paid proportional to the number of planted trees. What happened? Villagers were happy to receive wages for planting trees. So they planted. But once the trees began to grow and all the lands are reforested, they lost opportunities to get wages. So they secretly cut the trees they had planted to create the opportunity to be employed for planting trees again. This contrast seems to show that large room exists for improving the management of common property resources if adequate private property rights are designed and assigned. Again I am not saying that this kind of option is always efficient in all the areas in developing economies. As I say, in Taiwan, in Japan, as well as some developing countries, rural communities are sufficiently strong, so that the cooperative or group management of common property resources can be efficient. But there could be other cases in which the common property resource management can be done more efficiently through privatization. Which option we should choose must be determined on the basis of social structure, value system and cultural tradition. In other words, optimum policies under the second paradigm cannot be designed without understanding of grass-root structures of rural communities in the third world.

With these comments, I'd like to conclude the seminar.

Thank you very much.

# ANNEX

**(1) Program of the Seminar**

**(2) List of Participants**

Annex (1)

# PROGRAM OF THE SEMINAR

10:00~10:05 **OPENING ADDRESS**

Shinichiro Omote, Deputy Managing Director of JICA, Institute for International Cooperation

10:05~10:45 **SESSION I** "Activities and Perspectives of JICA and IFPRI"

(Moderator: Yujiro Hayami, Member of Board of Trustees, IFPRI)

Presentations:

JICA: Takeshi Kagami, Managing Director, Planning Dept.

IFPRI: Per Pinstrup-Andersen, Director General

10:45~11:00 **BREAK**

11:00~12:10 **SESSION II** "Food and Agricultural Development Issues in the 1990s"

(Moderator: Per Pinstrup-Andersen)

Presentations:

IFPRI: Nurul Islam, Senior Policy Advisor

Keiji Oga, Research Fellow, Special Development Studies Div.

JICA: Toshio Sagawa, Managing Director, Agriculture, Forestry and Fisheries Development Study Dept.

Discussion

12:10~13:10 **LUNCH** (Working Lunch)

13:10~14:20 **SESSION III** "Technology Policy for Agricultural Development in Asia"

(Moderator: Kouichiro Katsurai, Agricultural Development Specialist)

Presentations:

IFPRI: Mark Rosegrant, Research Fellow, Environment and Production Technology Div.

JICA: Hideyuki Kanamori, Irrigation Development Specialist

Discussion

14:20~15:30 **SESSION IV** "Environmental Conservation and Sustainable Development"

(Moderator: Kouichiro Katsurai)

Presentations:

IFPRI: Sara Scherr, Research Fellow, Environment and Production Technology Div.

JICA: Kazuo Sudo, Deputy Director, Environment, WID and Global Issues Div., Planning Dept.

Discussion

15:30～15:50 **BREAK**

15:50～17:00 **SESSION V** "Women In Development: A Key Focus in Poverty Alleviation Strategies"

(Moderator: Kouichiro Katsurai)

Presentations:

JICA: Yumiko Tanaka, Human Resources Development Specialist

IFPRI: Joachim von Braun, Division Director, Food Consumption and Nutrition Div. and Rajul Pandya-Lorch, Research Analyst, Food Consumption and Nutrition Div.

Discussion

17:00～17:30 **CLOSING REMARKS**

(Yujiro Hayami)

Annex (2)

# LIST OF PARTICIPANTS

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**Takeshi Kagami,** Managing Director, Planning Dept., JICA

**Toshio Sagawa,** Managing Director, Agriculture, Forestry, and Fisheries Development Study Dept., JICA

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**Kazuo Sudo,** Deputy Director, Environment, WID and Global Issues Div., Planning Dept., JICA

**Yumiko Tanaka,** Human Resources Development Specialist, JICA

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**Sara Scherr,** Research Fellow, Environment and Production Technology Div., IFPRI

**Joachim von Braun,** Division Director, Food Consumption and Nutrition Div., IFPRI

*Moderators*

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**Sinzo Adachi,** Assistant Director, Multilateral Cooperation Div., Economic Cooperation Bureau, Ministry of Foreign Affairs

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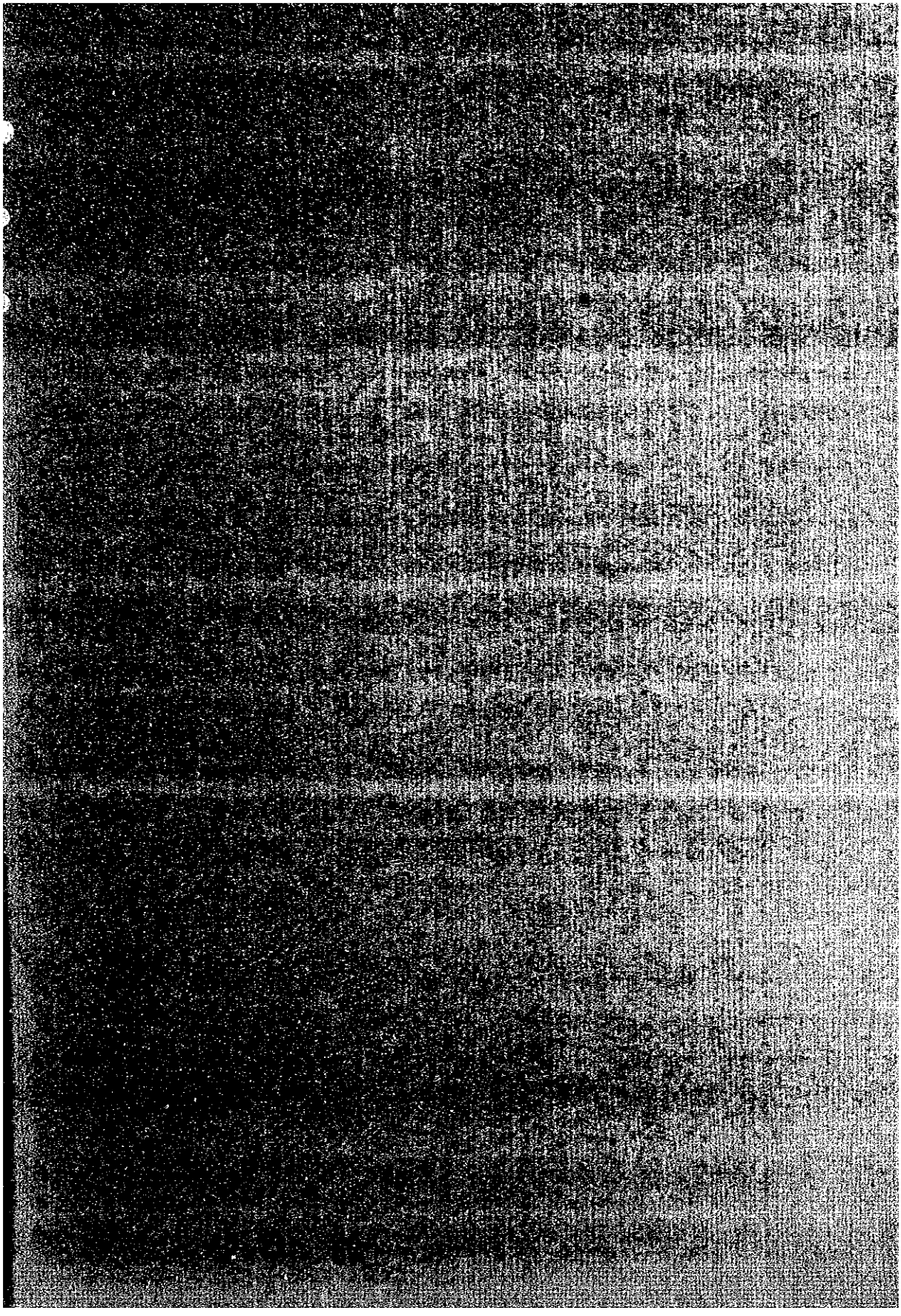

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