



First Global Conference on Women in Agriculture

13-15 March, 2012
New Delhi, INDIA



PROCEEDINGS



**First Global Conference
on
Women in Agriculture (GCWA)**

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Indian Council of Agricultural Research
New Delhi, India



Printed : October 2012

**Proceedings of First Global Conference on Women in Agriculture (GCWA)
held during 13-15 March, 2012, New Delhi, India**

Compiled and Edited by

K.D. Kokate

ICAR, New Delhi, India

Krishna Srinath

DRWA, Bhubaneswar, India

Bhag Mal

APAARI, New Delhi, India

P. Adhiguru

ICAR, New Delhi, India

H.K. Dash

DRWA, Bhubaneswar, India

V.P. Chahal

ICAR, New Delhi, India

Suresh Pal

IARI, New Delhi, India

N.N. Singh

TAAS, New Delhi, India

Design & Production

V.K. Bharti

Punit Bhasin

DKMA, ICAR, New Delhi, India

Published by

Indian Council of Agricultural Research (ICAR), New Delhi, India

Asia Pacific Association of Agricultural Research Institutions (APAARI)
Bangkok, Thailand

Co-Sponsors

GFAR, CGIAR, WORLD BANK, ADB, USAID, ACIAR, AGAP, IDRC, UKAID,
TAAS, RAGA

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Lasertypeset by M/s Dot & Design, D-35, 1st Floor, Ranjeet Nagar Comm. Complex, New Delhi 110 008
and printed at M/s Royal Offset Printers, A-89/1, Naraina Industrial Area, Phase-I, New Delhi 110 028

शरद पवार
SHARAD PAWAR



कृषि एवं खाद्य प्रसंस्करण उद्योग मंत्री
भारत सरकार

MINISTER OF AGRICULTURE &
FOOD PROCESSING INDUSTRIES
GOVERNMENT OF INDIA

FOREWORD


SUSTAINABLE agricultural development requires technological, institutional and human resources. In this context, addressing issues concerning women empowerment is crucial for researchers, extension personnel and policy makers. Globally, role of women and implications of issues in women in agriculture is gaining importance which have resulted in global efforts and partnerships among national and international organizations sharing their experiences.

Against this backdrop, the Global Conference on Women in Agriculture (GCWA) was organized during 13-15 March 2012 in New Delhi, India by Indian Council of Agricultural Research (ICAR) and Asia-Pacific Association of Agricultural Research Institutions (APAARI) with International and National Co-Sponsors assumes greater significance. The conference was a historical event attended by researchers, development practitioners and policy makers from more than 55 countries. The deliberations of the Conference provided an opportunity for stakeholders to share the problems experienced by women in agriculture as well as sharing their experiences, innovations and successes in women empowerment. The Conference has gained significance in the sense that it drew global attention to the issue of women in agriculture and demonstrated the commitment of global community to work together for empowering women in agriculture.

The fruitful deliberations of the Conference have led to several recommendations. This document entitled 'First of Global Conference on Women in Agriculture – Proceedings' is a compilation of the deliberations and recommendations, which I am sure, would provide a road map to the researchers, policy makers and institutions for empowering women in agriculture both in national and international arena.

Date : 20th September 2012

Place : New Delhi



(Sharad Pawar)

PREFACE

EMPOWERMENT of women is a pre-requisite for achieving inclusive growth. The United Nations Decade for Women, 1975-1985 set in a process of learning, deliberations and negotiations for identifying and addressing gender inequalities in different facets of development and empowering women through policies and projects at various levels. But the pace of progress has been skewed across countries and sectors. Agriculture, which is an important sector for livelihood and employment of women and sustenance of many others, too suffers from many gender based inequalities in areas of access to inputs, resources, services, technology and sharing of benefits. This has cost us heavily in terms of low level of productivity, poor standard of living and welfare for vast sections of the society.

Realizing the critical importance of women in agriculture, the GCARD 2010 too emphasized on making the needs of women producers central to agricultural research and rural development processes and urged all the stakeholders to work together to reshape the agriculture agenda to better meet the needs of rural women.

Towards this end, the Global Conference on Women in Agriculture held on 13-15 March, 2012 at New Delhi provided the stakeholders a platform to understand the efforts made by national governments, UN agencies, research organizations and community based organizations to discuss gender issues at length and identify action points to improve the conditions of women in agriculture and suggest a way forward for global action.

The three day Conference was inaugurated by Smt. Sheila Dikshit, Chief Minister of Delhi as Chief Guest and Her Excellency, Smt. Margaret Alva, the Governor of Uttarakhand was the Chairperson in the Inaugural Session. Her Excellency Smt. Pratibha Devisingh Patil, the President of India was the Chief Guest in the Valedictory Session which was chaired by Shri Sharad Pawar, Union Minister of Agriculture and Food Processing Industries. The other components of the Conference were oral presentations, poster presentations and an Innovation Market Place. The oral presentation category, the conference had policy level discussions under Policy forum I & II, six parallel technical sessions on different theme areas and four on important areas involving experts from different countries. In the poster session, 243 posters in six different thematic areas were presented. The Innovation Market Place showcased the art, skill and knowledge of women from different parts of India and abroad in developing marketable products and good agricultural practices and demonstrated the rich cultural heritage of India.



The Conference brought out important recommendations for implementation by researchers, development practitioners and policy makers to reduce the gender gaps in agriculture and strengthen gender research in agriculture and the role of women through reforms in agricultural research, education and extension. This document gives a detailed account of session-wise deliberations and discussions on various themes and issues that should provide good understanding into gender perspectives around different research, development and policy related challenges facing agriculture.

(S Ayyappan)
Secretary, DARE & Director General
ICAR, New Delhi, India
Chair-IOC, GCWA

(R S Paroda)
Executive Secretary, APAARI
New Delhi, India
Co-Chair, IOC, GCWA

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ACKNOWLEDGEMENTS

THE Global Conference on Women in Agriculture (GCWA) held in March 2012 in New Delhi was a landmark event on many accounts. The Conference, for the first time, brought together the R&D stakeholders, institutions and partners from across the world and deliberated upon several issues influencing women in agriculture. The Conference also developed a consensus on the need for urgent action for addressing gender issues and empowering women for higher and sustainable growth of agriculture. Most importantly, by hosting the first ever Global Conference on Women in Agriculture, India has demonstrated the rest of the world of its readiness to play a larger role in addressing gender issues through gender sensitive R&D strategies and affirmed its commitment to collaborate work with other countries and organizations for empowering women in agriculture. Thus, the Conference became successful because of the contribution of many including researcher and policy makers.

It was a great privilege for the organizers and participants that Smt. Pratibha Devisingh Patil, Her Excellency; The President of India graced the Valedictory Function of the Conference and shared valuable thoughts on role of women in agriculture and the importance of empowering them. We express our deep sense of gratitude to The President of India for her gracious presence in the Global Conference and support for the cause of women in agriculture. We are highly grateful to Shri Sharad Pawar, Hon'ble Union Minister of Agriculture and Food Processing Industries for Chairing the Valedictory Function and also providing continued support for successful organization of the Conference. We are thankful to Smt. Margaret Alva, Her Excellency, the Governor of Uttarakhand, the Chairperson of the inaugural session and Smt. Sheila Dikshit, Hon'ble Chief Minister, National Capital Territory of Delhi, the Chief Guest of the inaugural session for gracing the occasion. We are grateful to Smt. D Purandeswari, Hon'ble Minister of State for Human Resource Development, Government of India for her gracious presence in the Conference. We are also grateful to Dr Charan Das Mahant, Minister of State for Agriculture and Food Processing Industries for his kind presence in the valedictory function. We express our deep sense of gratitude to Prof. M S Swaminathan for his continued guidance, intellectual and moral support for the cause of women in agriculture and especially his support for the conference. We are highly thankful to Dr. S. Ayyappan, the Secretary, DARE and DG, ICAR and Chair, International Organizing Committee of GCWA for his invaluable guidance in conceptualization, planning and organization of this Conference. We are grateful to Dr. R.S. Paroda, Executive Secretary, APAARI and Co-Chair,



International Organizing Committee (IOC) of GCWA for taking the major responsibility of planning and coordinating the Conference activities as well as getting the much needed support from National and International organizations for the Conference. We sincerely thank Dr. Mark Holderness, Executive Secretary, GFAR Secretariat (FAO). We extend our gratitude to members of Advisory Council and Programme Core Group for their continued counseling and sincere efforts in organization of the event.

On behalf of ICAR and APAARI, we extend sincere gratitude to all our national as well as international co-sponsors namely; Trust for Advancement of Agricultural Sciences (TAAS), Global Forum on Agricultural Research (GFAR), The World Bank, International Development Research Centre (IDRC), Asian Development Bank (ADB), UKaid, Australian Centre for International Agricultural Research (ACIAR), Australian Government Aid programme, United States Agency for International development (USAID), Consultative Group on International Agricultural Research (CGIAR), Bill and Melinda Gates Foundation (BMGF) and Research Association for Gender in Agriculture (RAGA) for actively supporting the Conference.

We extend our sincere thanks to the Chairs, Co-Chairs, panelists and speakers of different Sessions for their valuable contributions to the output of the Conference. We are thankful to the learned contributors in poster session, participants of Innovation Market Place and delegates from India and abroad for sharing their knowledge and insights under different thematic areas. Special appreciation is extended to the all the Chairs, Co-Chairs and Members of various Committees for their participation and organizing this Conference. We thank the Indian and foreign media and press for giving wide coverage and publicity to this Conference. We appreciate the Scientists and Staff of DRWA, Bhubaneswar and Agricultural Extension Division of ICAR for their support in coordinating the Conference activities. Scientists and students of Division of Agricultural Extension, IARI deserve appreciation for their involvement in organizing the Conference. At the end, we thank all the participants, delegates and organizations across the world for their participation and providing valuable inputs in this historical event thereby infusing greater momentum to women empowerment initiatives.

(Krishna Srinath)
Director, DRWA &
Organizing Secretary, GCWA

(K.D. Kokate)
Deputy Director General (Agril. Extn.)
ICAR and Chairman
National Organizing Committee, GCWA

ACRONYMS AND ABBREVIATIONS

AARINENA	Agricultural Research Institutions in the Near East and North Africa
ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AFA	Asian Farmers Association
AICRP	All India Coordinated Research Project
APAARI	Asia Pacific Association of Agricultural Research Institutions
AWARD	African Women in Agricultural Research and Development
BMGF	Bill and Melinda Gates Foundation
BARC	Bangladesh Agricultural Research Council
CCAFS	Climate Change, Agriculture and Food Security
CIFOR	Center for International Forestry Research
CGIAR	Consultative Group on International Agricultural Research
DARE	Department of Agricultural Research and Education (India)
DRWA	Directorate of Research on Women in Agriculture (India)
FARA	Forum for Agricultural Research in Africa
GCARD	Global Conference on Agricultural Research for Development
GCWA	Global Conference for Women in Agriculture
GFAR	Global Forum on Agricultural Research
GPI	Gender Parity Index
ICAR	India Council of Agricultural Research
ICARDA	International Centre for Agricultural Research in the Dry Areas
ICDS	Integrated Child Development Scheme (India)
ICMR	Indian Council of Medical Research
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDRC	International Development Research Centre (Canada)
IFPRI	International Food Policy Research Institute
IGNOU	Indira Gandhi National Open University (India)
ILRI	International Livestock Research Institute
IWMI	International Water Management Institute
IWSC	International Water and Sanitation Centre

JICA	Japan International Cooperation Agency
KARI	Kenya Agricultural Research Institute
KOICA	Korean International Cooperation Agency
MANAGE	National institute of Agricultural Extension Management (India)
MDGs	Millennium Development Goals
MUS	Multiple use Water Services
NAPA	National Area Protection Act (Congo)
NARSs	National Agricultural Research Systems
NCAER	National Council for Applied Economic Research (India)
NCDP	National Crop Diversification Project (funded by ADB in Bangladesh)
NDDB	National Dairy Development Board (India)
NIRD	National Institute of Rural Development (India)
NSSO	National Sample Survey Organization (India)
PLAR	Participatory Action Learning and Research
PPATE	Primary Participatory Agricultural Technology Evaluation
RAGA	Research Association for Gender in Agriculture (India)
RDA	Rural Development Academy (Bangladesh)
REDD	Reducing Emissions from Deforestation and forest Degradation
R-PIN	Readiness Plan Idea Note
R-PP	Readiness Preparation Proposal
SAMETI	State Agricultural Management & Extension Training Institute
SEWA	Self Employed Women's Association (India)
SFD	Social Fund for Development (Egypt)
SPATE	Secondary Participatory Agricultural Technology Evaluation
TAAS	Trust for Advancement of Agricultural Sciences
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WANA	West Asia North Africa
WB	World Bank
WDCLP	Women Dairy Cooperative Leadership Programme
WEAI	Women Empowerment in Agriculture Index
WEL	Women Economic Leadership
WFP	World Food Programme

BACKGROUND

Women farmers represent more than a quarter of the world's population. Women comprise, on an average, 43 per cent of the agricultural work force in developing countries, ranging from 20 per cent in Latin America to 50 per cent in Eastern Asia and Sub-Saharan Africa. Yet, women have less access than men to agriculture related assets, inputs and services. Had they enjoyed the same access to productive resources as men, women could boost yield by 20-30 per cent; raising the overall agricultural output in developing countries by two and a half to four per cent. This gain in production could lessen the number of hungry people in the world by 12-17 per cent, besides increasing women's income (FAO, 2011).

As farmers, agricultural workers and entrepreneurs, women form the backbone of agricultural rural economy in the developing countries, and yet, together with children, they remain one of the most vulnerable groups. With far less access to education and technology, a host of other socio-economic factors have had an adverse impact on the lives of women farmers in recent years. These include the accelerated pace of globalization and economic liberalization, commercialization of agriculture, rapid population growth and urbanization. Rural-urban migration, growing pressure on land, water and agrobiodiversity and natural disasters associated with climate change have been unfavourable to women in agriculture, and they have often not been able to take advantage of opportunities from new technologies, expanding markets and new form of access to markets like contract farming. The constraints and opportunities that women face in agriculture today vary across regions and countries, depending on the socio-cultural and agroecological contexts. Despite many policy reforms both at the macro and micro level, gender issues have not received the attention they deserve. Hence, the current situation has to urgently change.

Today, there is a growing realization and commitment of the global community to achieve more sustainable and broad-based agricultural growth by addressing gender related issues in agriculture through national, regional and global initiatives and partnerships. There is also greater convergence of initiatives undertaken by international institutions such as Food and Agriculture Organization of the United Nations, Global Forum on Agricultural Research (GFAR), Consultative Group on International Agricultural Research (CGIAR), regional fora and many National Agricultural Research Systems (NARS). The Road Map developed by the Global Conference on Agricultural Research for Development (GCARD) has called for a radical reorientation of the agricultural research agenda to overcome the existing gaps and to face the emerging challenges of sustainable development and livelihood of resource poor smallholders, especially women farmers.



It is, therefore, timely to undertake a stock taking exercise in a holistic manner by drawing on the existing evidence of the impact of policies, institutions and programs to empower farm women and to learn lessons for the future so as to ensure higher economic growth in agriculture sector. With changes sweeping agriculture and other sectors, gender issues have become more important and dynamic. Therefore, it has become necessary for researchers, policy makers, development professionals and civil society organizations to understand the issues in national, regional and global context and share their knowledge and experiences to design more focused action for enhancing and harnessing the capability of women who are an important human resource for agriculture in the developing countries.

Against this backdrop, the First Global Conference on Women in Agriculture (GCWA) was organized with participation of researchers, academicians, policy makers, women farmers and other stakeholders from different regions of the world.

INAUGURAL SESSION

The Conference was inaugurated by the Hon'ble Chief Minister of Delhi, Smt. Sheila Dikshit on 13 March, 2012 and Her Excellency, Smt. Margaret Alva, the Governor of Uttarakhand (India) was the Chairperson in the Inaugural Session.

Smt. Sheila Dikshit, Hon'ble Chief Minister of Delhi, while delivering her inaugural speech highlighted the important role of women in agriculture and said that there is a need to revisit and redesign our agriculture education, research and extension policies and programs. She appreciated women centered Self-Help Groups (SHGs) and said, "Now, we have to harness the full potential of these SHGs by channelizing all agricultural support services such as training, extension, information, credit, inputs, marketing, etc. through these groups. Women development must be viewed as part of the development of the total community, and it must be provided with adequate resources at all levels", she added.



Her Excellency the Governor of Uttarakhand, Smt Margaret Alva, in her address as Chairperson suggested that specially focused capacity building programmes for women in agriculture should be initiated to refine skills with appropriate technologies. Agricultural

tools and machines should be ergonomically designed to reduce drudgery of farm women and they have to be empowered with farm knowledge through distance education, community radio and other effective means. She further suggested that women should be acknowledged as the core food producers and processors and banks have to recognize them as entrepreneurs. Laws banning women from performing operations like stone breaking, pulling carts, spraying insecticides, carrying loads on the head etc. must be put in place together with social security and welfare measures. She said that



this Global Conference is a forum that can set the tone for change by empowering women for inclusive growth in agriculture. Ms. Alva and Ms. Dikshit also released important publications on the occasion.

Prof. M.S. Swaminathan, noted thinker, renowned agricultural scientist and Parliamentarian said that we are quite aware of the problems which women face at home and at farm. However, at this juncture, we require in-depth analysis of the problems followed by the appropriate actions for their solutions. Suitable technologies have to be delivered to the farm women for raising farm productivity and empowerment. Other practical steps should also be taken-up to help and support farm women. He suggested that a special fund should be created at the national level to address gender specific issues.

Prof. Monty Jones, Chair, GFAR emphasized the need for gender equality in agriculture and bridging the prevailing gender gap. He said that gender equality is on global development agenda and we need to design a gender policy for empowering women in agriculture as a means of improving the livelihoods of all.

Dr. Raj Paroda, Executive Secretary, APAARI and Co-Chair, International Organizing Committee (IOC) elaborated on the theme, objectives and agenda of the Conference which had the overarching goal of 'Empowering Women for Inclusive Growth in Agriculture' and expressed that Global Conference would spread three main messages; first, empowerment of farm women; second, attainment of inclusive growth in agriculture; and third, achievement of sustainable development in agriculture. Speaking on the expected outcomes, he emphasized that a network of global initiatives may be created for maintaining continuity of this Conference.

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR and Chair, International Organizing Committee welcomed the dignitaries and delegates and elaborated upon the important role of women in agriculture and allied professions. He also highlighted some of the initiatives of the ICAR for enhancing the role of women in agriculture. He hoped that the output of this Conference will provide valuable inputs for the stakeholders for designing and implementing a suitable action plan for the future.





In her video message, Ms. Michelle Bachelet, Head, UN-Women emphasized the need to prioritize gender equality and highlighted that farm women need policy interventions for economic empowerment. She further emphasized that women do not have equal access to education, training and technology, productive assets and national and International markets. There is a need to empower women in agriculture to remove the barriers of opportunities and minimize the intensity of hunger and poverty in the world.

Dr. K.D. Kokate, Deputy Director General (Agricultural Extension), ICAR and Chair, National Organizing Committee proposed a vote of thanks.

POLICY FORUM

Policy making for empowering women in agriculture has been a major challenge globally. The policy forum theme was prompted by the clear gap between policy and reforms in empowering women in agriculture, institutional changes for capacity building and fostering partnerships and the need to zip them together for greater impact. The two sub-themes of this session therefore, focused on unpacked policy challenges and possible strategic solutions for empowering women to achieve inclusive growth in agriculture.

Policy Forum I : Reforms in Empowering Women in Agriculture

Moderator : Uma Lele

Rapporteur: P. Amarsinghe

Uma Lele, moderator for the session, initiated the discussion citing various issues currently faced by women while working in agriculture sector and their linkage to policies and institutions. The major points flagged by her for the panelists were as follows.

1. Need for reallocation of agricultural resources within the household
2. Importance of education and the need for a revision of the curriculum of present education system to include gender,
3. Social norms in relation to gender identities and need to change them,
4. Ensuring involvement of women in research systems - as scientists and involving farm women in agricultural research,
5. Critical role of civil societies in influencing social and economic policies, and
6. Need for evidence on policies that have worked and those that have not worked.

Food security, child malnutrition, and child mortality rates are very important issues in Africa and South Asia. On these three indicators, the gender gap has been



measured by UNDP, World Economic Forum and Economic Intelligence Unit that enables region and country-wise comparisons. The indicators and comparisons show that gender gap and food insecurity are closely linked; wherever the gender gap is more, the food insecurity is more. The summaries of presentations made by panelists are given below:

Policy issues, challenges and gaps for women in Asia and Africa

Markus Goldstein said that when we go through the structure of world development, two points become important; labour markets and earnings and women face inequalities in both. These inequalities have an economic cost at different levels. So it is critical to reallocate agriculture resources within the households. He further observed that due to the inequalities, the gender gap in productions ranges from 40-70 per cent. When women have equal rights as men in their access to inputs, their production would be the same too. Men and women work in different parts of the economic sphere, and as a result, they have very different levels of productivity and earnings as workers, farmers or entrepreneurs, whether located in low, middle or high income countries. Gender gaps would disappear when access to productive inputs is equalized.

Markus further mentioned four components of economic opportunities in this regard: market, informal institutions, formal institutions and households. Since these opportunities have not created in agriculture, women face inequalities in each of the four components. To understand gender outcomes, there is a need to critically look at:

- Intra-household dynamics
- Functioning of markets and institutions for men and women
- Role of social norms
- Interaction among these factors

But markets and institutions (formal and informal) can sometimes work against gender perpetuate inequality. It is because of either of the following two reasons:

- (1) Sometimes there is a single channel of intervention for policy, which is complex and can be easily blocked. For example, maternal mortality results from a failure of institutions to deliver adequate maternal health services.
- (2) Women face multiple constraints of markets, institutions and households that combine to limit



overall progress. Gaps in the productivity and earnings, for example, are driven by deep seated gender differences in time use and in rights of ownership and control of resources.

Gender sensitive research and translating findings into actions

Wais Kabir pointed out that we need to look at the cultural constraints and blocks in empowering women. He cited the example of Bangladesh where earlier the focus of food security programs was on high yielding and pest resistant varieties and quality of food was never considered. However, today's situation has somewhat changed. In Bangladesh, women work more and eat less which reflects the improvement in food quality. More women professionals are coming forward both, in research and extension. We need to include more women researchers in the planning process so as to add value to research and also help rural women. Gender is absent in the education curriculum and it is time that gender is considered for inclusion. Institutionalization of research and extension services with participatory approaches and sharing of lessons will be important for addressing gender issues in agricultural R&D.

Constraints preventing women from taking a lead role in agriculture

Lynn Brown emphasized that the problem or issue is not just limited to agriculture, but beyond. When women enter agriculture, they are adults. So there is a need to look deeper into the question of gender identity. Gender identity comes about as we grow – from family, school, media, etc, thus there is a need to address the underlying cause(s) which starts from birth. Education is critically important. She cited the example of Bangladesh where now more girls are being educated but they get married and have children at an early age, and then as wives, have no decision making rights about many things. So, education is not enough, curriculum is very critical. Therefore, policy prescription is not the only issue in agriculture; the fundamental issue is how to develop gender identities of boys and girls.

Fundamental issues in addressing women

Nafis Sadik observed that rights of girls are pre-empted by the family and the society as it is believed that this is the way to protect them. Thus, there are pre-conceived ideas that predetermine girls' education. There are many aspects of women's lives that are not controlled by women themselves but predetermined by the society. The need is to make women's equal rights in decision making a social norm and this requires a change in the behavior of male members to consider women as equals. The world population will be 50 per cent more by 2050, so women and girls will play the key role in managing the crisis given their roles in agriculture. As South Asia has the largest number of poor, attainment of MDGs may not be possible if we fail to achieve the MDGs in South Asia. So there is an

urgent need to enlighten and empower the parents to put forth the right ideas to their girls and empower the girls in rural areas to work in agriculture sector.

Role of UN Women in alleviating constraints

Gulden Turkoz-Cosslett felt that there is now enough evidence of women's contribution in the agriculture sector and this gives room for policy interventions. These interventions must be made at all levels – global, regional, macro and micro. Broader policy environment needs to be more responsive to women's needs. The UN Women looks forward to inter-government cooperation and commitments to bring a change in the lives of women to achieve the goal of women empowerment in different countries.

Policy Forum II : Institutional Changes for Capacity Building and Partnerships

Moderator : Mark Holderness

Rapporteur: Ashok Kumar Singh

Mark Holderness, moderator for the session, opened the discussion by arguing how effective is the system to make the change appen in the existing environment and what is stopping the changes to happen. He emphasized that the new ways of working, the right ways of working, right ways of investment and the way of addressing the concerns are some of the pertinent issues in this context. Women have enormous traditional agricultural knowledge which needs to find appropriate place in the change process.

Fatima Mosseddaq made a brief presentation on the Beijing Platform for Action (1995) and a summary on key strategic options that can enhance women involvement in agriculture. She emphasized that each State must have a national mechanism/device responsible for the advancement of women, the main entity for coordination of national policies in agriculture.

Such mechanisms are essential to support integration of the gender dimension in all sectors and in all State entities. National institutions should have strong and clear mandates with the authority, resources and accountability mechanisms needed for the tasks set out in the Platform for Action. Their methods of operation should ensure efficient and effective implementation of the Platform. There should be a clear commitment to international norms and standards of equality between women and men as a basis for all actions.



Diagnosis of actual problems and their discussion on the right platform for action are very crucial. The impact of devices, mechanism of involvement, gender integration and gender sensitive budgeting are some of the important considerations. There are gaps in terms of lack of clear-cut and effective action, mostly following classic advisory and advocacy approaches, absence of strong institutional mandates, lack of expertise in gender mainstreaming, unorganized efforts and lack of will and political support. Adoption of a new strategic approach, gender awareness, more human and financial resources, reforms for gender integration at local level, institutional approach, sustainable involvement and economic empowerment are important issues for consideration. Other important areas to work upon are creation of institutional framework to accommodate voices of women in policy and decision making, use of women's indigenous knowledge, collection of disaggregated information and analysis of constraints in entrepreneurship and labour sector, creation of linkages and women's access to resources, etc.

Meera Shekar observed that linking women, agriculture and nutrition is the most vital ingredient of empowerment. She said that nutrition is a multi-sectoral problem and requires multi-sectoral solutions. However, agriculture is particularly important for nutrition. Access to food, health and improved health care need to be considered as basic requirements for child development. Women are primary care givers and their increased participation in agricultural activities reduces their time towards child care. Agricultural productivity depends on well nourished healthy people who form the human capital. Early malnutrition leads to permanent debility. Malnutrition, resultant anemia and hard work in pregnancy and low weight of child are interrelated. Differential treatment in caring boys and girls also causes unintentional negative consequences. Integration of nutrition in agriculture and food security projects, developing designs to minimize unintended negative consequences and addressing nutritional objectives with technical institutions are extremely vital.

Haven Ley in her remarks said that role of women in agriculture and related constraints deserve appropriate attention. Agriculture, nutrition and political will are very vital in the context of capacity building of women. Addressing human capital constraints and undertaking relevant researches are the effective options. Developing collective capacity of organizations, collective action, and creating space for women and organizations are the major issues which need to be addressed.

Participating in the deliberations, **Petra Bola Abdulsalam-Saghir** emphasized that institution building is very important for African nations. Inequality and disequilibrium in economic activity are the major issues to be tackled. Women are generally passive to change. As a result things move very slowly for them as well as for others. Women must have passion for life and work and should be proactive in influencing the policies and strongly lobbying for change. Pro-women measures are required to create conditions wherein women can realize and harness their potential.

Linley Chiwona Karlton emphasized the role of universities in training and the need for recasting the curriculum to address gender issues. She said that training of teachers right from kindergarten, primary, secondary and tertiary education is very important. Illustrations in class room about the green revolution, food and nutritional issues in real farm situations are important for educating young boys and girls. We need to go to the locations where the technology application, social change, etc. are happening and bring the experiences to class room. Revisiting curriculum is important for making meaningful impact on agriculture. Development of agricultural value chains is a great opportunity and it is most important to see the position of women in the value chain for meaningful change in qualitative and quantitative aspects. Food, nutrition and food safety need to be integrated. Conservation, preservation, quality and safety are the major domains of women and all these need to be brought in the curriculum. Recasting agricultural curriculum with orientation to agri-business is very crucial. This will add a new dimension to the efforts towards nutritional security. The important issue is to invest in tertiary agricultural education. By investing in women farmers, entrepreneurs and scientists, a positive change can be seen. Quality education, rigorous system, peer reviews and technology orientation are important to reach women through tertiary education. E-learning can provide access of women to institutions located at far off places.

Mark Holderness summed up the discussion with the following points. Change in the existing institutions, addressing organizational issues, demonstrating the change, conviction of changing the situation by individual attempts, collective action, equipping training institutions, and providing skills and opportunities may be important strategies for the capacity building and partnerships. Activist role of the state, bridging gap between lab and field, ability to lobby and advocate for policy change with evidence from empirical studies and communication in the language understood by the policy makers may influence in building a new environment congenial to change.



TECHNICAL SESSIONS

Session I : Parallel Sessions

Session 1.1 : Assessing women's empowerment in agriculture

Chair : Mina Swaminathan
Co-Chair : Beatriz Argimon
Rapporteur : Lon Badstue

In this session, seven presentations were made by the speakers on different aspects of women empowerment in agriculture including methodological developments for measuring empowerment, actions of organizations and innovations and approaches in empowering women in agriculture.

Ruth Meinzen-Dick in her presentation on Piloting and Development of Women's Empowerment in Agriculture Index (WEAI) discussed the index developed to monitor the progress of empowerment and the degree of inclusion of women in agricultural growth that occurs as a result of US Government intervention under the Feed the Future Initiative. WEAI is a survey-based index constructed using interviews of the primary male and primary female adults in the same household and its value ranges from zero to one. Higher values mean greater empowerment. The index has two parts: (1) Five domains of empowerment (5DE) - production, resources, income, leadership and time; each being given equal weight. It is intended to assess whether women are empowered in any or all of the 5 domains. A woman who has achieved 'adequacy' in 80 per cent or more of the weighted indicators is empowered; (2) Gender Parity Index (GPI) that reflects the percentage of women who are as empowered as the men in their households. She explained in detail the Gender Parity Index, 5 domains of empowerment with examples and the empowerment gap and presented cases with estimated WEAI values and empowerment gaps from countries like Guatemala, Uganda and Bangladesh and the extent to which women were empowered. She highlighted that the index is an innovation in the measurement and monitoring of women's empowerment in agriculture that could be applicable across countries and cultures.

R. Padmaja made a presentation on Empowerment of Women and Pathways to Development in the Semi-arid Tropics of India: Insights from Gender-based Social Analysis. Different strategies adopted by ICRISAT to integrate women into development process include prioritization of research themes using equity index, multidisciplinary gender analysis, women farmers' days in Asia and Africa, capacity building of farm men and women as well as of researchers, mainstreaming participatory research, gender and social

analysis in the crop improvement and NRM projects. Village level studies encompassing both individual man and woman, groups and institutions and adopting both qualitative and quantitative methods are important to understand the livelihood circumstances and devise strategies that will help empower men and women as well as reverse the trend of widespread poverty and food insecurity. Referring to studies conducted at two different points of time, the presentation covered the scenario of gender division of labour and feminization of certain activities like harvesting, planting weeding and fertilizer application highlighting the point that mechanization does not always empower women. Their study also showed that the structures of social networks were different for both men and women and networks were important assets for women. There is a need to enhance the agency of women through building capacity, skills and leadership and participation.

Krishna Srinath made a presentation on Empowering Farm Women: Role and Experience of Directorate of Research on Women in Agriculture (DRWA). She discussed the vision, objectives, mandate and achievements of DRWA under different thematic areas like drudgery assessment and reduction, technology assessment and refinement, food and nutrition security, resource management and gender sensitive extension models. These included tools tested and refined by DRWA to make them women friendly, empowerment of farm women in production of quality seeds and planting materials for production of vegetables and cropping models developed, value addition of underutilized natural fibre resources for enterprise development, utilization of degradable and non-degradable farm waste and other agro-processing technologies, technological, gender sensitive extension model. She touched upon the capacity building and knowledge sharing mechanisms of the Directorate and outlined the challenges in dissemination of information to the second level of stakeholders viz., state governments, development of market linkages particularly in the commercialization of drudgery reducing tools and equipment and equipping the farm level stakeholders in utilizing improved extension approaches such as ICT in empowerment of women. There is a need for (i) country specific data collected through exclusive surveys and national level data collection mechanisms such as the Census and the National Sample Survey Organization, (ii) engendering agricultural research by introducing a training module for the entry level agricultural scientists, (iii) ensuring inclusion of gender component in the research and education programmes, (iv) attracting youth for agriculture and motivating them to take up field level jobs in agriculture, (v) sensitizing the policy making bodies to include home scientists in field level jobs with suitable remuneration, and (vi) more investment to engender agricultural extensive services.

Esther Penunia in her presentation The Needs of Women Farmers to be More Empowered focused on empowering small women and men farmers in Asia deliberated upon the role of Asian Farmers Association (AFA) in sustainable development through promotion of model villages and micro-enterprises and Women Advanced Farmers' Federation in South Korea. She stressed upon the need for collective action to fight poverty and hunger in farming communities. AFA is engaged in spreading awareness,

enabling exchanges and exposure and bringing political empowerment by influencing and shaping policies and programmes through representation in consultative and decision making bodies. Economic empowerment of women is being promoted by improving access to and control over productive assets and natural resources, production and marketing decisions, information for higher incomes and more participation in value chains. Yet, there is a need to create an enabling environment through gender sensitization activities, capacity building, leadership training, learning and sharing and networking, and solidarity and support of men leaders in promoting gender equality.

Farmers' Organizations (FOs) have become vehicles of empowerment of women. In order to make them effective, they should be supported and involved in the planning, designing and implementing agriculture and rural development policies and programs through institutionalized processes. Appropriate legislation and regulatory frameworks should be enacted for FOs to provide them the rights and freedom to operate independently and build capacity of FOs in a sustained manner.

Anna Crole-Rees, in her presentation on Making Innovation Work Better for Women: A GAP Case Study' explained the Gender and Agriculture Partnership (GAP) initiative and its envisaged outcomes. She also discussed the methodology adopted in the case study conducted in Niger and important points that emerged from the study. Demand for innovations has gender orientation. For example, there is greater demand from women for income generating activities, capital-credit and labour saving technologies. Areas where the largest demand–supply gap exists between men and women are education, training and information, access to credit and income generating activities, whereas in the case of women, the supply-demand gap exists in the area of time and energy saving products and services. Many of the needed innovations exist in the country. But factors such as lack of awareness about gender inequality, inability of women to express specific demands and inability to dialogue in mixed groups, poor institutional capacity such as lack of facilitation competencies and leadership came in the way of accessing innovations by women. Specific needs of women empowerment as emerged from the case study are: (a) solving gender energy inequality paradox by way of making women's work visible, freeing time and energy from women's budget for resting and learning, and investing in social dialogue and outcome linked activities, (b) innovations for household work like closer water access, improved stove and small need based equipment for productive works, (c) two way information sharing with collective action, (d) valuing local knowledge of extension and research, and (e) leadership development of women.

Hanaa El Hilaly in her presentation 'The Egyptian social fund for development (SFD): Role in Women's Empowerment in Agriculture discussed the genesis and objectives of SFD which are creation of permanent job opportunities, alleviation of poverty and unemployment and mitigating the adverse effects of the economic reform program. SFD is funded mainly through loans and limited grants from the international donors' community. The status of women in Egypt is characterized by inequities in ownership of

land and assets due to customs and traditions and poor implementation of existing laws.

SFD offers integrated service packages in the fields of health and education and provides small and micro credit loans through banks and NGOs. In latter case, SFD targets female headed households, physically challenged women, active poor families, young farmers and jobless graduates to develop entrepreneurship among women. SFD created more than 3.4 million jobs since its existence and during 2011 it supported about 74,000 enterprises. She also presented success stories of women who have excelled as entrepreneurs in areas of carpet and rug making, cultivation and export of agric-products, fisheries production and export of edible and aromatic oils.

SFD adopts the strategy of developing women's capacities, skills and entrepreneurial behavior to enable them to become small entrepreneurs, feminizing the culture of self-employment and encourages female participation in micro-finance schemes for empowering women in agriculture. SFD's future plan is to expand business and establishing a technology incubator.

Maureen Miruka in her presentation 'Empowering Women in Agricultural Research Processes for Enhanced Food Security - Case Studies from Kenya' discussed two projects wherein systematic efforts were made to integrate gender in the research process. This was done in three ways- integrating gender in project implementation approaches, integrating gender into each research stream/component and undertaking specific research and interventions on gender.

Different approaches such as Farmer Field Schools, Mother-Baby Trials, Primary and Secondary Participatory Agricultural Technology Evaluation (PPATEs, SPATEs) and Participatory Action Learning and Research (PLAR) were used in the implementation process with focus on participation of men, women, and youth in technology selection, trials and technology evaluation and facilitating access to and control over resources and decision-making. Integration of gender into research streams was done to create an enabling environment for increased production that is in tandem with market development fostering small scale rural enterprises and enabling both poor men and women to access market opportunities and resources in order to move from subsistence agriculture to higher level in the value chains. Some specific areas of research that will be useful for empowering women in agricultural research process include assessing the impact of the projects on the natural assets of women and men such as land, financial, physical, social and human,, analysis of the intra-household decision making processes on selected value chains and their influence on household food security and nutrition, understanding gender roles, time use, power relations, labour allocation and analysis of the trade-offs between market orientation for selected crops and livestock and household nutrition.

At the end, the Chair and Co-chair with inputs from delegates added the following points:

- Women empowerment is one of the eight Millennium Development Goals (MDGs). But, it is linked to at least four more MDGs. Therefore, the subject should be high on development agenda. All Research and Development efforts should have gender perspective so that the benefits would be women inclusive.
- Empowerment of women is a multi-dimensional issue and economic empowerment is an essential but not the sufficient requirement. The other dimensions are socio-cultural, political and legal change for enhancing their overall ownership and control over resources and income and participation in decision making. For economic empowerment, it is important that farm women have access to productive resources, income flow and greater say in use of household decision making process. Measurement of empowerment should, therefore, consider all these aspects and this status women enjoy vis-a-vis their male counterparts.
- There are a number of indices developed by different organizations to measure progress of empowerment and gender equality. WEAI is an improved tool that duly considers multiple aspects that constitute women empowerment. Such indices should be used by R & D functionaries for collecting evidence to support women empowerment programmes.
- Extension services in agriculture are still a challenging area for women empowerment. Accelerated efforts are urgently required to address this issue by strengthening the institutional capacity.
- Women empowerment is both a process as well as an end. Despite all the good intentions and a number of programs, we are still a long way from making women empowered. Both technology and policy can play an important role in empowerment of women. Hence, research must focus on to make both policy and technology work for women in all the sectors including crop, livestock and fisheries.

Session 1.2: Agricultural innovations for reducing drudgery

Chair : Idah Sithol Niang

Co-Chair : P.Das

Rapporteur : Suman Singh

In this session seven presentations on technological needs, mechanization for reduction of drudgery, occupational health risks, access to technology and capacity to uptake innovations were made.

Tahseen Jafry in her presentation on Agricultural Innovations for Reducing Drudgery emphasized that the role of women are diverse and very often involve drudgery. Women are still struggling for activity-specific tools and equipments. Even after identification and dissemination of tools for drudgery reduction, there is uncertainty over technology

adoption by women. Ironically, whenever agriculture gets mechanized, women are the first ones to be marginalised. The basic reasons cited are lack of knowledge, support and networks. The question as to how the technology can be made available, accessible and affordable remains to be addressed. She further stressed upon identifying gender sensitive approaches and methodologies for reaching rural women as there is a huge mismatch between what is currently supplied by extension system and what is needed by women. Thus, extension programs should identify women as an integral part of their target audience and focus on promotion supply of women friendly tools and implements e.g. seeder, weeder, dibbler, sheller, thresher, winnower, sprayer and decorticators, to name a few, for reducing their workload.

Rehana Riyawala in her presentation on Reducing Drudgery Making Agriculture Sustainable made a case for reducing drudgery of women to make agriculture sustainable by citing the example of Self Employed Women's Association (SEWA) and its achievements. She narrated different situations that made women's life drudgery prone and vulnerable. Some of these are health risks due to toxicity of chemicals, occupational constraints, long working hours, difficulty in mobilizing resources, high transaction costs, poor quality services and market related constraints. Drudgery ridden life often compels women to take decisions that push them into indebtedness and trigger migration often landing them in more unfavourable situations and creating psychological unrest. How can we protect women against vulnerability and drudgery? Answer lies in creating institutions like SEWA in India which is an innovative model of empowering poor women. SEWA's basic philosophy is that the poor themselves are the planners, users, managers and owners of the programs meant for them. It involves a decentralized approach, which at the same time tends to reduce the vulnerability of its members in the long run. Such a model has not only brought about economic upliftment of poor women but also provided a very good work environment to realize their productivity. Rehana also described the Rural Distribution Network – An Initiative (RUDI) of SEWA's Agriculture Campaign intended to provide direct market access to small and marginal farmers and to the consumers. This has not only increased collective strength of farmers, but also strengthened the village economy by creating effective linkages involving government, strengthening the networks of farmers, occupation and social security mechanisms such as agriculture insurance, health care, development of tools for safety and increased productivity that would, in long run, create a more facilitating environment and ease the pressure on women.

R. Sumathi made a presentation on Technological Innovations to Meet the Needs of Women in Agriculture. She discussed Development of Human Action (DHAN) Foundation's working with farmers of rainfed agriculture and the drudgery involved in harvesting and post-harvest operations in little millet. Based on the study in different research sites, she said that, during heavy rains, lack of sunny days leads to problems of lodging, shattering of grains and blackening of grains and straw. Labour requirement for harvesting operation is high and women primarily bear this burden. Though mechanical

harvesting of little millet was tried at Jawadhu hills with minor alterations in paddy combine harvester, yet the results were not encouraging to the farmers because loss of grain and the straw was considerable. Traditional dehulling process of many of the small millets is tedious and time consuming. Health hazards such as wounds in hands and feet during threshing and itching and respiratory problems during winnowing were reported. It was one of the important reasons for drastic reduction of consumption of little millet in Jawadhu Hills. Hence, innovation for processing of millet and packing is needed to avoid spoilage of millet flour.

Therefore, identification of varieties that have ability to perform under adverse conditions can be helpful. Further research for improvising existing paddy harvester and refining dehulling machine to make them suitable for little millets, and introduction of small scale aspirators and de-stoners can be helpful in reducing drudgery of women to a large extent. She also suggested the promotion of farmers' and peoples' institutions to build synergy in leveraging technological innovations and setting up of new innovative prototype for processing of food grains on a cluster basis.

Pitam Chandra in his presentation on Technologies for Women in Agriculture: Experiences and Achievements of CIAE observed that modernization of agriculture is taking place at a faster pace; however, jobs attended by women remain more or less the same. He gave a detailed account of tools and equipment developed by CIAE, their advantages, ergonomic features and efficiency in the context of women farmers and emphasized that the moment a machine is introduced for a field operation; it is taken over by male workers. Hence, women have hardly benefited from these tools. As a result, an operation predominantly done by women workers becomes attractive to male workers. He also suggested that demonstrations and trainings be conducted for rural women on various improved tools/equipment. Farm women may be provided financial support from banks and help build up linkages with central and state departments, NGOs, banks, and other stakeholders to benefit from improved tools and equipments.

Nitin Maurya in his presentation on Redefining the Roles and Expanding Domains : Women in Agriculture and Beyond emphasized that they can be creators as well as users of innovations. Innumerable innovations are available at grass root level but these are out of public glare due to various reasons. He made a mention of the grass root innovations such as rice grain sorter, flameless seal maker, travel bag with seats, walker with adjustable legs, crutch with shock absorber, herbal pesticides against aphids and termites developed by women and girls across the states and have potential to reduce drudgery of women and change the lives of poor and the community. On the other hand, there are activities such as picking tea leaves and transplanting that are being practiced for ages and are drudgery prone. But, we have failed to develop innovations. Therefore, while there is a need for dissemination of potential innovations which are already available, it is also important to focus our research on developing innovations to make agricultural operations easier.

Ebba Augustin made a presentation on Reducing Women's Drudgery in Agriculture. She gave a brief idea about the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA) which is a platform for dialogue on agricultural research and knowledge transfer for fostering agricultural research, promoting experience exchange, strengthening national research capacities and networking in the region and assist in resource mobilization for agricultural research and innovation. She shared the outcomes of a study commissioned by AARINENA on Women Empowerment for Improved Research in Agricultural Development, Innovation and Knowledge Transfer in the West Asia/North Africa Region. This study concluded that women farmers are seriously undervalued and under-served, and continue to shoulder productive and reproductive work, often alone. These are the key factors contributing to rural women's drudgery and have serious implications for the economy and food-security of WANA countries.

Malika Abdelali-Martini made a presentation on Making of the Prestigious Traditional Qashabiya and Related Women's Ailments. She discussed the case of weaving industry in Algeria that has created considerable health related risks for women. Preparation of wool garments called *Qashabiya* is a traditional activity in the region and has a symbolic meaning for local communities. Gradually, the use of this garment has been commercialized because of the development of export markets and tourism. However, this development has been accompanied by incidences of respiratory diseases, arthritis, backache and poor eyesight in those women that affect their families and the industry. Unlimited working hours, bad light, unsuitable posture in hair and wool preparation and weaving and use of traditional equipment for carding and spinning, are some of the reasons for ailments. Importantly, home-based women weavers are not covered under health insurance. Therefore, technological interventions such as ergonomically designed looms, use of safety devices, awareness and information dissemination, etc. are necessary to ease women's working conditions. It is also important for policy-makers to include the ailments suffered by workers in the formal health insurance scheme, that may encourage younger generations to preserve this indigenous knowledge that holds high income prospects.

At the end, the Chair and Co-Chair summarized the discussions with inputs from speakers and audience, as follows:

- In spite of diverse roles played by women in agriculture, their work is less visible. They are less educated and cannot articulate their needs, requirements and aspirations for better livelihood. In addition, women have restricted access to resources and credit, information and capacity building inputs.
- Women farmers view hardship and drudgery as part of their life due to innate conservatism. This is due to lack of awareness and sensitization about drudgery and available solutions including cross pollination of ideas. Hence, it is important to raise their profile and contribution to agriculture and spread awareness and sensitization of gender in agricultural issues at political, policy and grass root

levels. The discussion highlighted the need-based selection of technology for drudgery reduction keeping in view the regional and cultural context.

- The critical success factors for reducing drudgery through agriculture innovations mentioned by the speakers were – adaptability, acceptability, applicability and scalability of the technologies as success factor; while prominent critical failure factors included lack of scaling up and scaling out of technologies in addition to lack of support networks, investment and incentives in promoting technologies.
- Success of agricultural innovations rests with access, availability and support. Hence, an overhaul of agricultural extension system supporting women and reducing their workload is the need of the hour.
- Viable socio-economic models for dissemination of drudgery reduction technologies need to be worked out. Establishing technology resource centres in rural areas is urgently required for making technologies available to women on a custom hiring basis.

Session 1.3 : Linking women to markets

Chair : Ganesh Balachander
Co-Chair : Fidelina Diaz Aquino
Rapporteur : Suresh Pal

In this session seven presentations on innovations and challenges in linking farm women to markets were presented.

W.M.H Jaim in his presentation on Market Linkages of Women Labour: Evidence from Bangladesh explained a scenario of women's participation in Asia and initiatives taken to link women to agri-markets. He said that involvement of women in marketing activities in case of field crops is very limited. Due to social, cultural and religious barriers, except in some women headed families, women rarely go to market places for selling outputs or buying inputs. Women mostly sell their products to the neighbors as well as to the retailers who buy the products from farmer's residence. In order to sell agricultural commodities produced at homestead, women sometimes contact the traders who have permanent space in the market places through mobile phones. However, women have a prominent role in preparing/ processing as well as sorting and grading of the agricultural products for marketing.

He also referred to Helen Keller International initiated Project on Homestead Food Production Program that has helped in developing group marketing for women farmers. Other schemes such as National Crop Diversification Project (NCDP) funded by Asian Development Bank; collaborative project with Government (Department of Agricultural Marketing) and NGOs also made provisions for women for marketing high value crops and vegetables. Rural Development Academy (RDA) with the funding of IFC, UKaid

and Norad developed Seed Villages which facilitated processing and marketing of quality seed of rice, potato and vegetables.

Based on experiences in Bangladesh, he said that linking women farmers to the markets and bringing them into the mainstream of marketing is a real challenge for the government and NGOs. As women in Bangladesh are involved mostly in post-harvest and processing activities, technologies should be developed for marketing their products. Moreover, home-based, post-harvest production and marketing activities should be supported by providing market information, linking them with local /distant traders, improving transportation and storage facilities, improving processing and packaging techniques and enhancing credit facilities.

Jemimah Njuki in her presentation on Linking Women Farmers to Markets: Patterns of Market Participation, Decision Making and Intra-household Income Management indicated the reasons for linking smallholder women farmers to market, approaches to linking women to market and research issues. There is evidence that income under the control of women is more likely to be used to improve



family welfare including family food consumption, education, child nutrition, etc. For example, an increase in women's income by USD 10 achieves the same level of health and nutrition benefits as is achieved with an increase in men's income by USD110. Women are significantly excluded from markets and opportunities for them to move from subsistence to market-oriented agriculture are much less. Therefore, linking women farmers to markets is a critical pathway to women's economic empowerment. However, their participation in markets does not always lead to economic empowerment of women. Approaches such as contract schemes, group based approaches, cooperatives, etc. have their advantages and disadvantages for women. The research issues delineated by her included types of markets accessed by women distributional impact of market linkages to different survey of produces participation in different livestock value chains, innovation for linking women farmers to markets. She also discussed the scenario of livestock ownership by women and their participation in marketing to highlight the prevailing inequalities. In Kenya, men owned 10 times more cattle than women; for every one goat owned by women, men owned four goats. In Tanzania, men owned 18 times more cattle than women; for every one goat owned by women, men owned 14 goats; men owned one and a half times more improved chicken than women.

There was high participation of women in the sale of eggs and milk, but very low participation in sale of livestock cattle, sheep, goats. Due to poor access of women to markets, constraints in time, mobility and transport, they more often sold their products

at farm gate resulting in lower prices but higher share in income as compared to when sold at village markets or delivered to traders. Women's share in income and income management depended on who sold the products and the total income from the sale. In Tanzania, income share of women was lower for high value products and higher in case of low value products. In Malawi, it was shown that participation in income management by women declined as the enterprise earned more money. The approaches to link women to markets which are:

- Build capacity of women farmers to understand markets-financial literacy, negotiation skills, access to inputs, information and supportive policies,
- Avoid engaging women's time in non-profitable enterprises,
- Address women's specific constraints and opportunities e.g. access to credit, inputs and outputs markets, etc,
- Open multiple types of markets, formal or informal, even away from farm gate to allow greater choice and new opportunities,
- Engage men and women to achieve broader changes in gender relations,
- Build on collectives that ensure benefits to women.

Sally Baden in her presentation on Promoting Women's Economic Leadership in Agricultural Markets: Challenges and Learning from Oxfam's Experience focused on Women Economic Leadership (WEL) and collective action for linking women to agriculture markets. She began by differentiating between rural women's projects that only improve production and income generation and trap women in low-value/ low-growth products; and agricultural markets and enterprise that focus only on business viability and on exceptional women rather promoting women inclusive business models. Oxfam's experience, suggests that women's engagement in agricultural markets has limited impact on women's incomes and does not strengthen their assets and decision-making capacity. What is required is promoting women's economic leadership in agricultural markets. By increasing the visibility of poor women and promoting them into new roles and leadership positions in viable agricultural markets, women's income and well being can be improved and facilitate their wider economic and social empowerment facilitated.

This approach has advantages as it identifies sectors, products and markets which 'work for women' and are economically sustainable, focuses on opportunities for change in gender roles in markets and on 'how change happens'. The approach further facilitates commitment to WEL by market actors, supports effectively different forms of collective action for women-by mixed as well as women-only groups, address risks and integrate advocacy to change policies, beliefs and practices among market actors/ service providers. What's new in this approach is an explicit understanding of how agricultural market institutions and services can reinforce gender inequalities in roles and ingrained beliefs about appropriate roles for men and women. Changes in market systems can be a significant lever for longer-term change in gender relations, sparking wider changes at community

and household levels. Rather than focusing on barriers, the starting point should be an explicit process to identify market opportunities for women producers to gain new roles and power in agricultural market chains. Enabling such significant changes in approach requires the engagement of different stakeholders in the value chain that Oxfam has been doing.

A Gendered Market Selection Matrix in Tanzania describes the level of women's participation at different levels of market demand of crop and livestock produces/products. Such analysis can also be enlightening for grassroot actors and also helps to make visible women's economic contributions. High level of women's participation and market demand was observed in the case of local chicken, rice, groundnut, chickpea and sunflower. Similarly, according to gendered market mapping: in sesame sector in Ethiopia, women constituted only 6 per cent of the members in the federations and their presence in trading and processing was negligible. There is a need for getting commitment from market actors. Producer groups should change the by-laws to promote dual membership (in Ethiopia) and increase proportion of women leaders (Mali). Companies should adapt business models in ways that benefit women producers on the pattern of Unilever, Alpina (Colombia) and Katani (Tanzania) and Ambrosia (Ethiopia). Thus, there is clearly a scope to integrate WEL approach into cooperative and enterprise development programmes at a wider scale and women's collective action should be promoted bringing wider changes in policy and institutional set ups.

Yvonne Pinto in her presentation on World Food Programme (WFP) Purchase for Progress (P4P): A Case Study and Implications for Gender Mainstreaming discussed the P4P program that is being implemented in 21 countries in five regions, its modalities and the scope for bringing women into its fold. The program is basically intended for creating opportunities for low-income farmers (smallholder producers) to become competitive players in agricultural markets in a sustainable way; expanding procurement of food from smallholder farmers to promote agricultural market development to ensure stability of future provision of food for WFP programmes and actively build longer-term resilience and food security for many poor producers. The WFP P4P make use of new forms of procurement, such as competitive purchases through emerging commodity exchanges, direct contracts with farmers' organizations (FOs), warehouse receipt systems and forward contracts to procure food from farmers. It also works with partners to strengthen farmers' capacity to increase quantity and quality of crops and to improve farmers' knowledge of markets; to reduce post-harvest losses as well as to strengthen the institutional capacity of FOs and adopts a comprehensive monitoring and evaluation (M&E) system engaging a wide range of stakeholders in the process.

She raised questions such as how can women have lasting access to markets, and become empowered and what are the meaningful, and realistic ways of achieving this through P4P, ensuring that efficiency and cost-effectiveness is maintained. P4P aims to reach at least 500,000 smallholder farmers, 50 per cent of whom are women, increasing

their incomes by at least US\$50 a year within 5 years.

The study also revealed that;

- Women often feel more comfortable and safe in women-only groups (participation/collective action) and do not meet the criteria that often define smallholder farmers,
- Most women are unpaid family workers and work on the family farm, irrespective of crop, and women who engage in the production and trading of cash crops are a minority and belong mostly to female-headed households.
- There are certain crops whose production process is totally controlled by women, but in the majority of the countries where P4P operates, the program does not procure crops/ foodstuffs whose production is more likely to be controlled by women.
- Women's roles vary from context to context. In order to plan and implement gender activities, a local level assessment of gender relations is imperative to suggest practical action adopting a holistic approach to gender

Some of the weaknesses of WFP P4P are that most women are not smallholder farmers, the P4P food basket is limited and focus is on procurement with emphasis on the man (who is the smallholder farmer) and there is weak commitment to addressing food and nutrition challenges

What is required is to increase the well-being of women smallholder farmers, and wage labourers' through promoting and facilitating their access to agricultural markets, in an economically and socially sustainable way. There is a need for increased understanding of the importance of gender relations based on equity, within FOs and supply side partners; increase opportunities for women to participate in groups and decision-making; increase the ability of rural women to access, control and manage resources and agricultural services and diversify livelihood opportunities for women in income-generating agro-activities by promoting and encouraging the procurement of crops and foodstuffs whose production is controlled by them.

Sangram Chaudhary in his presentation on Women Empowerment - The Milky Way ... Story of the White Revolution Connecting Women Dairy Farmers to the Market gave an account of the historical perspective of Operation Flood and Anand model of dairy development that could successfully link women dairy farmers to market through cooperatives. A significant part of the success of Operation Flood could be attributed to women's participation in dairy development that was made possible through two important programmes; Women Dairy Cooperative Leadership Program (WDCLP) to promote women leaders and Enhancing Women Involvement in Dairy Cooperatives (EWIC) that aimed to support milk unions efforts to increase women membership and enhance role of women in dairy cooperatives.

Under WDCLP, potential women leaders are identified and groomed to participate as members and subsequently in governance of dairy cooperatives. Focus is on the formation of thrift and credit groups for income generating activities. Under EWIC programme attention is given to increasing women members on management committees of dairy cooperatives and on Milk Union Board of Directors. Activities include male sensitization programmes, women education and self help group formation. Sangram further said that innovation in dairy development has allowed vertical mobility of women from a milk entrepreneur to a member of village dairy cooperative society or Secretary at the dairy cooperative to a management committee member running the village level institution and finally to a milk union board member with participation in governance of dairy cooperative societies.

Milk production rose to a 116.2 million tonnes in 2010-11 from a meager 30 million tonnes in 1980. A large number of dairy cooperative societies with participation of more than four million women members have come up giving strength to the cooperative dairy movement in India. Yet, there is a need for capacity building among women dairy farmers on the latest technologies for improving animal productivity and optimizing production costs and preparing more women members to take up leadership and governance role through empowerment. Research must focus on developing less labour-intensive techniques for animal husbandry.

Judith A. Francis made a presentation on Linking Women to Markets: Moving Beyond the Rhetoric. She raised a few pertinent issues in the context of linking women to markets. What markets are under consideration –product/labour, local/national/regional/international? Are markets easily accessible to women? What are the barriers to entry? Can these barriers be broken? if yes, how?

Based on research conducted in African countries, she cited several barriers in produce and product markets that prevented women from participating in these markets. Lack of a level playing field, weak market information systems, weak technical know-how and marketing basics, lack of commercial outlets, market requirements/ standards (international), instability in prices of commodities / products, failing infrastructure including storage, warehouse and transport and absence of or limited credit and insurance facilities are some to cite. Judith also presented a case study from Kenya on enhancing food safety and market access for farmers that focused on providing training to extension providers, developing manuals, building capacity of farmers groups and raising awareness at national level that could make farmers produce fit for European market confirming to their standards and regulations.

There are some known solutions to improve market access. These are minimizing uncertainty in production and markets, encouraging innovation and uptake of inputs such as technological, facilitating access to credit various forms, improving knowledge and skills in production, processing and marketing, improving access to market information,

investing in infrastructure (e.g. markets), research and increasing involvement of women in policy and programme formulation and implementation. Among barriers to entry in labour market are limited role models, mentors and networking, poor leadership, training and negotiation skills and lack of enabling policy and institutional framework.

Enabling policy and institutional framework, enlightened leadership, increased access to education and research opportunities, networking, mentorship schemes, opportunities for sharing best practice – showing how women are making a difference. Investment in targeted interventions which lead to sustainability and in market infrastructure and creation of market opportunities, increase in national funding for tertiary education, training, and research are required for strengthening market linkages for women producers.

Elizabeth. Isu. Rava discussed the Lus Frut Mama Scheme in Papua New Guinea. The scheme is a marketing innovation that enabled the mamas(women) to earn income and share the benefits in oil palm. Under the scheme, women collect loose fruits of oil palm and sell using a special Mama Harvest Card that assures good market and price. Mama Lus Frut Scheme offers advantages of ownership and decision making by women on their earnings. The scheme has considerably reduced rotting of loose fruit and created income for women. The impact of the scheme has been quite positive as it enabled women to build canteen, purchase sewing machines, utilities and building their houses. However, the programme needs monitoring, managing and servicing because of the risk of taking over Mama's Harvest Card and Mama's Bank Card by men, poor quality of loose fruit, poor road infrastructure, natural disaster and family disputes. She emphasized that the importance of scheme would grow as there is increased participation of women. According to her, the card payment system should be tried in other cash crops as well.

At the end, the Chair and Co-chair with inputs from presenters and delegates summarized the proceedings as follows:

- Empowerment of women is a multi-dimensional issue and economic empowerment is an essential but not the sufficient requirement. The other dimensions are socio-cultural, political and legal change for enhancing their overall, ownership and control and participation in decision making. For economic empowerment, it is important that farm women have access to productive resources, income flow and greater say in the use of household income. In this context, access to agricultural markets, both input and output assumes significance.
- The present status is that women have important role in income generating activities of agriculture, but have little control over income. They are largely engaged in small scale activities and have better access to local market, often at a price discount. The challenge is to aggregate their small-scale production and improve the access to markets. This needs capacity development for access of women to technology, financial services and markets.

- A large part of the developing world lacks basic marketing infrastructure. Market development should be followed by institutional changes to aggregate the small-scale production and increase access of women producers to the markets. Collective actions by women can help achieve this objective. These actions could be in the form of local, informational groups as in Asia and Africa, or cooperative on the pattern of Amul in India.
- Socio-cultural and family responsibilities are the most important factors limiting women's mobility and access to market in developing countries. Therefore their reach is limited to local markets only, which do not offer remunerative prices to them. Women's participation in labour market is also restricted due to poor mobility. Women have limited understanding of agricultural markets because of lack of information, education and exposure.

Session 1.4: Role of women in household food and nutrition security

Chair : Meera Shekar

Rapporteur : Savita Singhal

In the session, eight presentations were made on agriculture and nutrition linkage, aquaculture and food security, processing and value addition and community monitoring of nutrition programmes .

J.V. Meenakshi made a presentation on Agriculture and Nutrition Linkages in India. She highlighted two paradoxes. First, there is apparently no clear-cut relationship between income and energy intakes, i.e. increase in income does not necessarily reflects in an increase in energy intake. Second, there seems to have no relationship between energy intake and nutrition security, i.e. increase in energy intake may not reflect in increased nutritional security. On the other hand, there is a clear relationship between hygiene, sanitation, infectious diseases, malnutrition and mortality.



Approaches to tackle malnutrition during the XII Five Year Plan are; convergence between livelihoods and access to food, ecosystem and human health, improved agricultural technology to enhance rural incomes and focus on increasing availability of locally-produced foods and effective government health interventions and promotion of nutritional security through millets. She completed her presentation by posing a few researchable issues such as relationship between agricultural growth and nutritional outcomes, diversification of agriculture and diets, primary drivers of nutritional outcomes, gender and nutrition sensitive agricultural technologies and scope of convergence between ICMR and ICAR.

Ranjitha Puskur made a presentation on Promoting Women's Engagement in Aquaculture Production: Does it Always Lead to Household Food and Nutrition Security? She highlighted the point that food availability is not the same as food security and food security is not the same as nutrition security. While good nutrition depends on food, care, health and knowledge; nutrition outcomes depend on household income and expenditure patterns, care giver income, care giver time and work load, decisions on intra-household dietary allocation and intake. Promoting aquaculture with women's involvement would contribute to household food and nutrition security through different pathways - consumption of fish a relatively cheaper source of protein and micronutrients; access to other foods through increasing purchasing power; economic empowerment of women and participation in decision making which have positive effect on access to health services. She also presented a framework to better understand and explain the process through which food availability affects nutritional status and suggested interventions such as nutrition education and technology dissemination to women.

N.B. Yenagi spoke on Promotion of Home Based Food Processing Micro-enterprises through Technological Empowerment of Rural Women for household and nutritional security. She emphasized on processing, value addition and marketing of local cereals and millets as a strategy for nutritional security of people and advocated promotion of home based food processing micro-enterprises through technological empowerment of women. She cited the examples of nutritionally rich ethnic foods and value added products that can be prepared from *dicoccum* wheat and small millets such as foxtail millet, finger millet (ragi) and little millet. She suggested that initiation of food processing activities as home industries with utilization of locally available food crops that would contribute to health and nutrition, biodiversity conservation and preserving traditional culture. Organizing nutrition education programs, encouraging women SHGs to participate in school feeding programs and linking them to different organizations and markets could be the strategies to create nutrition and health awareness within community and bring in nutrition and economic security.

Emily Hillenbrand in her presentation Nutrition-centered Agriculture: Toward a Gender-transformative Approach emphasized on nutrition-centered agriculture and discussed its gender transformative potential. This model propounded by Hellen Keller International calls for diversification of nation's agricultural production strategies giving value and visibility to subsistence agriculture so that agriculture can meet nutritional ends. This approach embodies social meaning, relationships, values around food and care. Significantly it tends to revalue women's contributions in terms of caring, feeding and farming while recognizing and supporting men's role therein. With the goal of increasing production and consumption of micronutrient-rich foods, this approach has community-based extension targeting poor women for nutrition outreach, horticultural training, poultry support and nutrition education as integral elements in it and strongly advocates leveraging male household support.

Madhur Gautam made a presentation on Agriculture, Gender and Nutrition-some Empirical Findings. He highlighted gender related differences in household and farm endowment, agricultural practices, cropping patterns as well as productivity and efficiency of men and women in agriculture. Referring to a NCAER survey, he said that asset base of men and women with respect to value of consumer durables, business assets, livestock, mechanized and non-mechanized assets improved during 1999 and 2007. He discussed some empirical findings to show that size (borrowing limit) of informal credit, credit from rural development banks, nationalized banks and cooperatives increased. As to sources of income, there was no change in share of crops to women's income during the period while in case of men it increased. The period witnessed sharp increase in consumption of cereals both in case of men and women while consumption of pulses and livestock products registered a decline. This very fact highlights the nutritional scenario during the period. He also mentioned that empowerment of women did affect input adoption, area allocation to crops, and consumption patterns. During the period profits from agriculture, value of outputs increased for women headed households and was higher than that of male headed households. Similarly female households did better in terms of extent of input use. There was widening male female wage rate. This along with crop choices had linkage to the nutrition of households.

Crop choice-nutrition links are important and there is need to correct cereals-bias in technology and services. Widening male-female casual wage differential is a cause of concern despite comparable agricultural productivity between men and women. This is mostly due to discrimination that has also implications for nutrition security.

Biraj Swain in her presentation on Monitoring of Community Based Programs for Better Nutrition Outcomes talked about the multipronged approach to break the vicious cycle of malnutrition and poverty, multi-dimensional nature of malnutrition, access handicaps at household level based on case studies in Andhra Pradesh and Madhya Pradesh of India. She discussed the functioning of ICDS in a district in AP and the role Oxfam has played in educating the people about the programme and monitoring it. Lack of awareness of feeding and caring practices among majority of people was an important factor for poor delivery of the programs on demand side. Therefore, a multi-pronged approach combining better sanitation, improving education, close monitoring and better targeting can enhance effectiveness of nutrition programs with better outcomes. It is, therefore, worth investing in community monitoring of nutrition programmes.

Rita Singh Raghuvanshi spoke on Household Nutritional Security: Issues and Challenges. She said that agriculture research and technology development in India have dramatically increased food production and aggregate food availability. But on the other hand, there has not been much improvement in nutrition scenario. India is also facing a rising trend of obesity and related metabolic disorders. Nutritional deficiencies have devastating consequences for well being and future of the Indian population in terms of productivity losses and loss in GDP. In India, nutrition security seems to be farfetched

goal because a large population is malnourished. As per NFHS-3, about 43 per cent of children (0-3 years) were underweight, 38 per cent were stunted and 19 per cent were wasted. Thirty nine per cent of rural women suffer from chronic energy deficiency and 58 per cent are anemic. Future scenario depends on how agriculture is reoriented to meet the nutrition goals. A suitable approach to address problems of malnutrition is to strengthen both, food system and health system in the country. As regards food system, increasing production and consumption of small millets would ensure nutrition security. Pulse and oilseeds production should get priority over cereals. Local fruits, vegetables, herbs and spices are good sources of micronutrients and these should receive attention. Apart from producing quality and safe foods, food delivery system should be made efficient. Under health system, nutrition education and coordinated nutrition care along with provisions of hygienic conditions and sanitation are important. Nutrition research should receive priority to generate strong evidence to support programmes and policies for better nutritional outcomes and impact.

S.D. Kulkarni made a presentation on Involvement of Women in Household Food and Nutrition Security through Agro-processing. He highlighted the role of women in both primary and secondary processing of cereal pulse, spice, oilseed and vegetable to supplement family income. He described different equipment such as cleaners, dryers, sheller and bamboo stick making machine that can be used by women for income generation. Detailed account of different soy based products and their costs, nutritional features and available equipment and plants for processing was given.

Soybean processing by women even at household level has good scope for income generation for women. Soybean with its high productivity and protein content can make a fourfold impact on malnutrition as compared to pulses. It is the most appropriate options for India as it can be made available at an affordable price to the poorer section of the population. Processed soybean has several health benefits. It lowers blood cholesterol, relaxes constipation, beneficial in diabetics prevents cardio-vascular diseases, promotes general health, helpful in menopause and osteoporosis, prevents cancer and benefits those who suffer from lactose intolerance. Therefore, it is important to include processed soy as a part of daily diet. Several processed products such as soy flour, soy flakes, soy snacks, soy based bakery products and soy dairy analogs have been developed for market. More importantly, protocol has been developed to prepare the products at household level with the involvement of women. Creating awareness about processing of soybean and soy foods at household level, proper demonstration and training of soybean processing for dietary purposes, should form part of a broader strategy of fighting malnutrition. Considering the nutritive value of soybean, many state governments in India have included processed soybean in mid day meal scheme and ICDS. Vast scope also exists for establishment of soy food and agro processing enterprises by women with technical and financial support. Such a move will go a long way in contributing to food and nutrition security of households and communities.

At the end, the chair and co-chair, based on presentations and inputs from audience, made the following observations.

There are many research and policy related questions in the context of women and nutrition that need to be answered.

- Who is responsible for nutrition security? Does agricultural growth translates into better nutritional outcomes?
- What are the primary drivers of nutritional outcome – Sanitation? Income? Better food? Women’s empowerment?
- What defines gender, nutrition and gender sensitive agricultural technologies?
- How to overcome existing constraints - economic (income, credit etc.), infrastructural (electricity, transportation and markets) human capital (education, knowledge and awareness)
- How to bring transformational changes for women’s empowerment i.e., intra household power disparities, biases, attitudes, habits, norms, role division, etc

Suggested actions

- Capacity building of community through nutrition education and awareness programmes; changing societal roles and norms by leveraging men’s support, especially in nutrition security and caring roles; investing in public audits of community programs like ICDS and exploring possibility of making ICT available to women to facilitate community monitoring should receive due attention.
- Defining indicators for measuring nutrition security (like energy, protein, micro-nutrients, etc.)
- Development and application of methodology to generate evidences and databases on multiple pathways for nutrition security; creating a nutrition umbrella involving stakeholders identifying successful institutional models for mainstreaming citizens’ participation in nutrition and agriculture flagship programmes are urgently required
- Establishing food processing micro-enterprises and entrepreneurship through comprehensive technical trainings of self help groups and promoting use of locally available foods including soy foods can contribute greatly to address malnutrition in rural areas

Session 1.5 : Access to assets, resources and knowledge: Policies and services

Chair	:	Lourdes Adriano
Co-Chair	:	Shantanu Mathur
Rapporteur	:	Premlata Singh

In this session, eight presentations were made on access and entitlements of women to agricultural assets, wealth, knowledge, water and extension services.

Ann Dela Apekey in her presentation on Promoting Women's Access to Knowledge and Resources; Focus on Empowering Women Extension Service Providers highlighted the fact that due to lower access of women to extension services, they have less adoption rate of technologies and lower farm productivity than men. Even female agricultural extension services providers face a number of challenges arising out of tradition, cultural barriers to educational advancements, mobility barriers and gender insensitivity of agri-extension systems. Though there has been an increase in female enrolment into agricultural institutions over the past two decades, few women can be found in leadership/ top managerial positions or high levels of decision-making. She stressed upon the need to promote women's leadership and participation at all levels of agriculture and environment activities, motivation of professional women who can serve as stronger advocates for gender sensitive policies and programs, institutional funding and partnership incentive fund for gender sensitive activities and innovative approaches for involving more women scientists in agriculture. She also suggested regular gender trainings, replication of best practices available in extension systems, generation and sharing of gender disaggregated data among institutions to facilitate translation into national and institutional human resource planning, scaling up advocacy and creation of a platform for knowledge sharing among institutions.

Hema Swaminathan made a presentation on Gender Asset and Wealth Gap in Ecuador, Ghana and India. She discussed gender gaps in incidence of asset ownership, distribution of asset ownership and distribution of gross asset worth and asset acquisition pattern. On ownership of residence, in Karnataka of India, 64 per cent of residences are owned by individual male, 23 per cent by individual female and 4 per cent by principal couple. In Ghana, individual male owned about 50 per cent residences while individual female and principal couple owned 25 per cent and 11 per cent of residences respectively. Interestingly, in Ecuador individual female and principal couple owned 30 per cent and 40 per cent respectively of principal residences thus indicating that women are much better in Ecuador as far ownership of principal residence is concerned.

Similarly, large gap exists in the ownership of agricultural land in Karnataka of India and Ghana with individual male owning large share of agriculture land. But, in Ecuador, the situation is just the reverse. While individual male owns about 25 per cent of agricultural land, individual female owns 30 per cent, and couple owns 36 per cent of agriculture land. Regarding incidence of real estate ownership, situation in Ecuador is more equitable with 34 per cent of men and 36 per cent of women being owners of real estate. On gender share in household wealth, in Ecuador 52 per cent wealth is owned by men and 48 per cent by women. In other two countries, the situation is quite different. In Karnataka of India, 81 per cent of wealth is owned by men and 19 per cent by women, while in Ghana, men own 70 per cent of household wealth and women own 30 per cent. She also

discussed the mode of acquisition by men and women owners of principal residence and agricultural land both in rural areas in Karnataka which are mostly through natal inheritance and self-acquired in case of men owners; inheritance from deceased spouse, natal inheritance from spouse and self-acquired for principal residence. She also suggested collection of gender disaggregated assets data and providing equal opportunities for asset accumulation by reviewing marital regime and inheritance laws and changing attitudes of both men and women.

Govind Kelkar made a presentation on *The Cliff at the Door: Women's Entitlement to Agricultural Land in Asia* wherein she discussed linking gender equality with agricultural productivity, asset endowments and policy framework. Quoting FAO, she said that if input use differences between women and men could be overcome, women farmers would achieve the same yields as or more than men farmers. Studies suggest that when women have command over productive assets and their own earnings, households allocate more income to food, health care, clothing and education of children. Lack of ownership of land resources by women is reflected in higher gender inequality in South Asia as measured by various indices. Moreover, the productivity implications of gender asset inequality in the fast-growing economies of Asia are enormous. An appropriate policy framework is required to generate broad based support for reforms that can ensure asset rights to women. Such a change would provide windows of opportunity for women's advancement and decision making.

P. Amerasinghe in her presentation on *Women's Access to Multiple-use Water Services (MUS): An Agenda for African and South Asian Countries* discussed the crucial role of water in the context of women, MUS projects and possible policy initiatives required to address women's needs in access to and management of water resources. Amerasinghe highlighted that five of eight MDGs can achieve progress with water development through multiple roles of women. Water has multiple productive uses for household needs including drinking, maintenance of hygiene and sanitation, cooking, laundry, general cleaning and income generation enterprises such as agriculture, brick making, livestock rearing, fisheries, pottery, car washing, ice making and food processing. She mentioned some important chronological developments starting from 2002 World Summit on Sustainable Development that have finally taken the shape of MUS projects. MUS project is a participatory, integrated and poverty reduction focused approach in poor rural and peri-urban areas, which takes people's multiple water needs as a starting point for providing integrated services, moving beyond the conventional sectoral barriers of the domestic and productive sectors'. She highlighted the need to collect evidence on MUS by understanding MUS models at 30 sites in 8 countries, developing a water ladder for understanding the requirements and organizing stakeholder platforms to discuss people-centred needs for efficient management. The monitoring and impact assessment of MUS projects should include costs and benefits, water productivity, gender and equity implications, institutional requirements, financial issues such as ability and willingness to

pay and incremental cost of meeting multiple needs, health and hygiene issues, water quantity and quality. She also suggested that women should be included in water infrastructure development and management; regular capacity building and training programmes on water technologies and joint titling of land and water rights.

Deena Ledger made a presentation on Secure Land Rights for Women. Based on the experience of LANDESA (formerly, Rural Development Institute), she said that securing land rights for women would create a positive impact on agricultural production, family income, investment behaviour, educational attainment of women and other areas as well. She emphasized that access and control over land should be legitimate and granted for an extended period unaffected by changes in social status. She also discussed the status of women's land rights in different countries. In India, ownership is being transferred to women either through joint titling or titling in the name of woman, while in China, a woman can get her name in ownership documents (contracts and certificates) for 30 years use rights. She suggested that creation of women's land rights facilitation centres, training of women community resource person on solving land rights issues, education, and legal reforms are some of the steps that can gradually secure land rights to women that are considered as a critical elements of women empowerment.

Regina Birner spoke on Access to Assets, Resources and Knowledge: Lessons from India, Ethiopia and Ghana. She said that there are many challenges in agricultural development and rural service provision, namely, market failure in agricultural development, lack of incentives for private service providers, high transaction costs to reach the rural poor, etc.; challenges for the public sector to supervise services in rural areas, capturing of opportunities by the elite and social exclusion, perception bias against women. All these limit women's access to critical services in rural areas. Hence, there is a need for enforcing accountability and developing strategies to make services gender-sensitive. She discussed some of strategies such as quota for women in local councils that provide space to women for decision making. But female representation in Gram Panchayats does not necessarily result in better service provision outcomes. She cited the example of Karnataka where Gram Panchayat members have to bargain for the resources to be spent in public works program. Similarly, villages represented by women from scheduled castes get significantly fewer resources. She suggested firming up of community based organizations by awarding leadership positions to women and making service provision more gender-responsive. The public administration more should be made gender-responsive by increasing the share of female frontline service providers and promoting women in community-based organizations.

Virginia R. Cardenas in her presentation on Access to Assets, Resources, and Knowledge among Women in the Asia-Pacific: What Lies Ahead? talked about the persisting gender inequality in access to assets, resources and knowledge among women in Asia-Pacific and its manifestations; important ones being limited access to agro-support services, fewer opportunities for livelihood and income sources and limited decision-making

participation and control over resources. She identified the missing elements in the approach so far taken by many countries. She contended that while global efforts have created observable impacts in health and education, it is not so in agriculture. As most interventions are project-based and externally funded, little effort was made to institutionalize the project gains into organizational structures. Moreover, with impacts of interventions varying from one country to another, scope for generalization of results has been limited and many of the activity-based interventions lacked the strategic element to create a real change in the lives of women (largely limited to awareness raising). Other significant factors that are perpetuating inequality in accessing resources and services by women are limited awareness of new platforms, frameworks, tools and techniques and skills in undertaking gender-based participatory methodologies among important stakeholders. Unsustainability of technical, institution-related interventions aimed at reducing gender inequalities, limited fund allocation to gender focused programs and lack of commitment from local leaders are some of the other reasons

Kirit Patel made a presentation on Does Male Labour Out-migration Empower Women? A Case of the Women Left Behind in Rural Nepal, wherein he discussed the changes in decision making and participation profile of women in the event of outmigration of men. Male labour out-migration changes household composition and so women's living arrangement. In general, male labour outmigration increases women's participation in agriculture. The degree and scale of participation however differs according to the type of living as characterized by group membership, land entitlement, control over resources, mobility and decision-making by women. In Nepal, women from 67 per cent households are SHG members, 17 per cent of women have leadership position, and the rest are general members. Regarding land entitlement, 68 per cent of lands are owned by men, 20 per cent by women and 12 per cent by both.

Group membership increases women's access to outside world and freedom, however, not necessarily reflected at household level. Women's empowerment is subject to their socio-cultural context and living condition. Women as *de facto* household heads have higher decision making power, control over resources and mobility as compared to those who stay with their in-laws. Thus, many women are not effectively empowered to participate in important decision making processes. We may need a mechanism that also addresses men so that they would value women's empowerment. Integrated approach was suggested to address the socio-cultural complexity so that men can value women's empowerment and create space for them.

The chair and co-chair summed up the proceedings with the following points:

- We need to deepen our understanding about status of women by demystifying some stylized facts about women.
- Gender gaps are real, but the nature and extent of gender gaps vary across categories of households, communities, regions and countries. The nature of

women's productive work in agriculture and the unorganized and informal sector, and the productivity implications of gender asset inequality in the growing economies of Asia are also changing. There is thus a need for context-specific policy changes to secure women's rights to land and other productive assets.

- A persistent challenge is how to break the traditional socio-cultural norms that predominantly ensure male domination at household, local, and national levels. Such norms have been deeply entrenched through generations by formal and informal institutions. It also appears that the prevalence of these norms is much more visible in Sub-Sahara and South Asian economies, but in varying ways. For example, in Sub-Sahara Africa, women extension workers face multiple challenges of having to work in environments that are traditional and male-dominated organizations. Formidable cultural barriers to women's education advancement, and control over women's mobility affects their career advancement.
- The long-term agenda of action would be improving the productivity of women through access to inputs and advisory services, continuous capacity building and education through more access to ICT. Greater command over productive assets and their own earnings by women would ensure allocation of more income to food, health care, clothing and education of children. This would create multiplier effects bringing attitudinal changes and mind set in young generations..

Session 1.6: Climate change related risks and uncertainties : Their impact

Chair : R.B. Singh

Co-Chair : B. Meena Kumari

Rapporteur : B.N. Sadangi

Six presentations on climate change scenario and possible impact on crops, livelihoods, gender role; adaptation strategies and women's participation in climate change related decision making were made in this session.

Pramod Aggarwal in his presentation on Preparing South Asian Rural Women for Climate Change discussed the socio-economic, nutrition and climatic scenario of South Asia and projected climatic impacts.

Climatic stresses are common in South Asia. Some of the climatic changes are variation in rainfall in many places; frequent droughts, frost in northern regions, frequent floods and cyclones in several regions, temperature rise and sea level rise. Global studies on projected impacts of climate change on agriculture in South Asia suggest 10-50 per cent loss in agriculture by 2100; mean productivity of most crops to remain either unaffected or marginally decrease by 2030; increase in CO₂ (550 ppm) would increase yields of most C3 crops by 10-20 per cent. A 1°C increase in temperature may reduce yields of some crops by 0-7 per cent and much higher losses at higher temperatures. Increased droughts,

floods, and heat events will increase production variability. On the other hand, climate change may also provide new opportunities in agriculture such as reduced loss in potato; mustard and vegetables in north-western parts due to reduced frost damage, possibly some improvement in yields of winter maize, sorghum and millets and new areas may become suitable for crop production. Overall impacts of climate change could be negative with adverse climate change impacts on crop yields of wheat in India. However, adaptation strategy such as making full use of current technology and simple agronomic options including change in sowing dates, improving irrigation and fertilizer efficiency and varietal selection can help in reducing the risk.

We should think of climate smart agricultural activities, even developing climate smart village and farm for managing risks. The components of climate smart agriculture include the following:

- Weather smart : Seasonal weather forecasts, ICT based ago-advisories, index based insurance and climate analogue
- Water smart : Aquifer recharge, community management of water, laser leveling, on-farm water management
- Carbon smart : Agroforestry, conservation tillage, land use systems, livestock management
- Nitrogen smart : Site specific nutrient management, precision fertilizer, catch cropping of legumes
- Energy smart : Biofuels, fuel efficient engines, residue management and minimum tillage
- Knowledge smart : Farmer to farmer learning, farmer networks on adaptation technologies, seed and fodder banks, market info

The challenge is to prioritize and demonstrate the key elements of adaptation by working with rural communities and providing science driven actions to address overall goals of development. At the same time, we must look at gendered impacts of climate change as it entails differential cost for men and women. Higher temperature could make women more vulnerable as compared to men. Loss in crop yield may leave less to eat, less milk yield would mean lesser income for women, greater stress in harvesting, grain processing and other activities together with more work would mean more work to supplement income. Therefore, adaptation strategy for agriculture must focus on women, awareness campaign, leadership and human capital development to better prepare them for the job.

Thelma Paris spoke on Changing Climate, Livelihoods and Gender Roles in Based Production Systems in Asia. She discussed various factors constraining production. Some of these are ecosystem-inherent weaknesses e.g. drought and soil erosion in uplands, problems arising due to new emerging issues such as water and labour shortages, increasing

cost of food and production inputs, crippled transfer of technology mechanisms, policy failures and seasonal uncertainties/shocks leading to sudden rise/drop in temperature, floods, droughts and introgression of sea water .

She cited examples of how agriculture is affected with changing climatic conditions based on observations from the field. Flower drop in pigeon/pea during flowering and poor seed setting in maize due to extreme cold, shrinking of grains in wheat due to high temperature and poor grain filling in wheat due to early rise in temperature are some evidences of climate included stress. Similarly, she discussed how early flood during 2008 and delayed monsoon during 2009-10 affected rice transplanting, consequences of increasing soil health problems including salinity and iron toxicity and long spell of water stress and how sand deposition and erosion affected area under rice, pulses and oilseeds. Such changes have had consequences for men and women. There was more pressure on women to look for alternate source of income and to borrow from informal sources and find ways to repay debts. The situation triggered increasing male migration causing additional work burden and women's responsibilities and chores inside and outside the household. There was also increase in women *de facto* heads of households and farm managers.

Under these circumstances, people had to adapt many coping mechanisms. Changing cropping patterns and crop varieties, use of indigenous knowledge and practices, migration by men and increased involvement of women in off-farm and cost-saving activities and greater involvement of women in anticipatory strategies such as conservation, preservation (collecting and storing fuel, storing seeds), taking care of small animals and poultry were some strategies that farmers in drought affected areas resorted to. In Lakhimpur of Assam (India), farmers cultivated short duration early summer rice varieties to escape flood havoc. A few farmers followed *sanda* method of transplanting with older seedlings and harvested a good crop. When rice could not be transplanted due to prolonged drought, farmers went for an early crop of oilseeds, pulses and potato and then cultivated wheat as usual to make up losses in kharif.

The changing climatic conditions and accompanying events also created new opportunities for research. Scientists could discover abiotic stress tolerance genes; *Sub 1* : (*Submergence tolerance*) and *Saltol* (*Salt tolerance*) to develop salt resistant rice varieties. Research also led to development of photo thermo-insensitive genotypes in pulses, heat tolerant varieties in wheat, single cross maize hybrids tolerant to terminal heat and some new agronomic practices such as zero-till sowing, drum seeding, Kalam / Sanda method and application of microbes such as *Trichoderma* and *Pseudomonas* that serve not only as bio-fertilizers and bio-pesticides, but also enhance tolerance to abiotic stresses like drought and salinity.

There were also exciting experiences with farmers who discovered that some varieties had good degree of stress tolerance; for example, Kalanamak 3131 and 3119 for drought

tolerance, Swarna Sub1, NDR 8002 for submergence tolerance, Usar Dhan 3 and CSR 36 salt tolerance in India. The studies suggest that selection of varieties and crop establishment methods need to be based on much better understanding of the individual farm-plot ecology and greater attention should be given in developing a research agenda in favor of climate resilient technologies.

Patti Kristjanson made a presentation on Women-smart Agriculture? Some CCAFS Gender and Climate Change Research Results and Implications wherein she discussed some of the results from their work in Bihar. She began the discussion with climate smart agriculture which is more about improved soil, crop, tree, livestock and water management practices that enhance resilience to climate change and food security. Climate change would cause higher average temperatures, more variability and possibly more severe climate events. Therefore, research should bring out the technologies and practices that are ‘women smart’ and eventually will benefit women as well as men.

The research tried to find answers to some of the questions connected to climate change such as how innovative are households? How many and what kind of changes farming households have been making? In Bihar State of India, there was quite a bit of variation across and within sites. In some places, a lot more adaptations are taking place than others. For example, in Bihta district about 40 per cent of households reported virtually no changes whatsoever in their farm management practices in the last 10 years, while in areas of Piro, Nautan, Pusa, Madhepura and Katihar more than 80 per cent households reported changes in agricultural practices. Evidence shows that the least food secure households are also those that are not making any changes in their practices. There is also variation in food security across seven sites in Bihar State. While most sites show a large percentage of households not having to worry about food security (e.g. Piro and Madhepura), districts including Bihta, Nautan, Pusa and Katihar have more than 20 per cent of households who are not food secure round the year.

In order to mainstream women’s participation in climate resilient agriculture, we need to answer some of the questions such as, which practices are women-smart? What interventions help stimulate them and how do they benefit women? Some mechanisms such as index-based livestock insurance, innovative ways in sharing information with women and improved weather information can help women better cope with changing climate through informed decision making.

Tyhra Carolyn Kumasi made a presentation on Climate Change Adaptation and Ecological Restoration in Northern Highlands of Tigray Region, Ethiopia Role of Females based on a study conducted to assess collective mobilization of the rural people in Tigray highlands for soil and water projects, woodlots and grazing lands management; Perception of climate change in the Tigray region; Establish the command structure and modus operandi of community mobilization in the different communities for collective action and determine the role and responsibilities of females and males in the community

mobilization for ecological restoration. The study was premised on the theory of New Institutional Economics (NIE) which focuses on the social and legal norms and rules underlying economic activity.

Tigray region in northern Ethiopia is known for its devastating land degradation where average estimates of productivity loss due to land degradation is projected to be 2-3 per cent annually and very high proportion of people being vulnerable to food insecurity. The region has been experiencing climate change as established from people's response during the study. About 98 per cent of farmers had observed changes in the climate during their life time and attributed it to deforestation (54%), agriculture (20%), and natural causes (26%). As to the consequences, 62 per cent reported increased incidence of drought and 90 per cent reported rise in the temperature as changes observed in their lifetime. Coping strategies included intercropping (18%), cultivation of different crops (18%), introduction of new crop varieties (17%) and irrigation (16%). Almost all the farmers (99.6%) had participated in compulsory free labour in activities such as soil and water conservation (61%), irrigational projects (20%), and construction of public infrastructure (19%) for restoration of the ecology, improvement in their livelihood, and increase in food crop production and possible increase in ground water availability.

An estimated 31 per cent males and 23 per cent females participated in mobilizing the community for work in their respective developmental groups. There was no difference in the pattern of gender division of labour and both men and women tended to be equally involved in sensitization, community mobilization, planning and scheduling work, conflict resolution, and sharing of community products. According to Tyhra, higher literacy levels amongst the respondents in Tigray could increase understanding of the concept of conservation for increased productivity. Homogeneity in the community in ethnicity and religion played a major role in ensuring group cohesion. The community was experiencing diminishing agriculture productive due to diminishing soil fertility and thus prompted voluntary commitment to increase the land productivity with environment conservation. Institutional structures at the community level played a vital role in mobilizing members for compulsory free labour.

The broad adaptation strategies to climate the change should include empowering local communities, particularly women, to rehabilitate, adapt and improve their natural resource base for continued productivity, and giving them the appropriate legal backing and capacity support. Elements in the strategy could include crop selection and management practices such as changing the planting dates and densities, techniques in fertilizer and pesticide application, improved tillage practices, change in the pastoral system etc. Water management through use of water harvesting techniques, improving or rehabilitating terraces and watering sites in pastoral areas; livelihood diversification and pooling of community resources to restore and preserve homestead mountain forests, rangelands, grazing restrictions, soil erosion prevention programmes, community water harvesting and irrigation.

She also suggested increased investments in research on women in agriculture. Available localized adaptation strategies commonly used and mostly preferred by female farmers should be scaled-up to ensure environmental sustainability and food security.

Esther Mwangi made a presentation on Forests: Gender and Climate Change in which she discussed the gender participation in REDD+ decision making based on the study in two countries viz Congo and Vietnam. The research questions sought to be addressed through the study are;

- Is there gender differentiation in participation in REDD+ decision making?
- How is women's participation treated in REDD+ policies and legal frameworks?
- How are women involved in decision-making related to climate change or REDD+?
- How can equity and fairness concerns be addressed in design and implementation of such policies?

Reducing Emissions from Deforestation and Forest Degradation (REDD) is an approach to slow down the pace of climate change. REDD+ adds three strategic areas to the original two set out in Bali. All five aim to reduce emissions from deforestation and forest degradation in developing countries. The two original REDD actions are: reduce emissions from deforestation and forest degradation. The plus sign adds strategies to reduce emissions through: the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. This broader definition allows more countries to take part. Many parties with different national circumstances can be included in a future framework.

In Congo basin, there was limited female participation in government institutions in general. Gender departments were not a part of development of National Areas Protection Act (NAPA), Readiness Plan Idea Note (R-PIN), Readiness Preparation Proposal (R-PP) and National Commission on Climate Change. There was limited participation from private sector and civil society and limited local involvement in climate change meetings. Hence there was a need for establishment of a Thematic Coordination Group to address barriers of participation of women in REDD+ process and streamline gender dimensions in forest management and benefit distribution.

In Vietnam, on the other hand, gender equity was mentioned in national laws and REDD strategies, gender equity widely viewed as essential requirement for REDD+ success. However, no guidance for gender integration was suggested. Three of all five REDD technical working groups are chaired by women (in Vietnam); but did not have adequate representations of women and only 2 out of 54 organizations had gender experts in their REDD team.

Esther suggested incorporation of gender in government and non-government institutions on climatic change and REDD+ planning, wider sharing of good practices

and process, involvement of formal and informal women's groups, equitable benefit sharing between men and women and explicit mention of gender based needs and interest in agendas, budgets and institutions and gender sensitive campaign and facilitation to address women's agency concerns and integrating gender for local authorities/national agencies related to training and capacity-building.

Sonali Bisht in her presentation on Gender and Climate Change; Gender Risks and Hopes discussed the environment and climate related changes in Hindu Kush Himalayan (HKH) region. She briefly described the profile of the region. Hindu Kush Himalayan region spreads from Afghanistan to west Myanmar in the east covering eight very diverse political and economic systems and is the source of major river systems including 10 river basins that offer vital ecological services to both upland and low land populations of about 150 million people. The region has been experiencing changes in environment as characterised by temperature rise, too much and too little water, floods, droughts, changes in ecosystems, vegetation, biodiversity etc. These changes can have potential impacts on people in the HKH, including 1.3 billion women and men downstream.

Geological fragility, extreme weather conditions (floods, avalanches), less arable land and fragmented land holdings with subsistence economies based on agriculture, livestock rearing, management of natural resources and income generation through small scale enterprises characterize the region. The problem of climate change is complex due to exacerbating ongoing forces of change such as industrialization, urbanization, privatisation and globalization wherein women and men disproportionately feel the impact as women's voices, rights and experiences are not a part of discussions or proposed policy solutions or institutions. Peoples' concerns are increasing day by day with increase in women's work loads, marginalization in terms of inequitable access to resources and sharing of benefits and opportunities.

Research initiatives in gender issues in areas such as climate changes, water availability, ecosystem services, food security, vulnerability and adaptation to support mountain women and men are being undertaken. Special care is taken to integrate gender analysis across the project components. The efforts have resulted in positive adaptations including the use of indigenous knowledge, adoption of agricultural and NRM practices for soil protection prevention of erosion and reducing risks through preparedness and awareness raising. Culturally appropriate gender sensitive and labour saving technologies, conservation of natural resources and ecosystems such as forests, water springs, landslide affected areas and biodiversity and collective action through self-help groups, cooperatives, CBOs, NGOs, networks, alliances, etc also form part of positive adaptation. However, there are negative adaptations also due to climate change. Migration to marginal lands and to crowded urban centres, women covering even greater distances to access water, fodder, fuel wood, medicinal plants/herbs and food, increased workloads and health risks, less time for income generation, limited or no access of women and girls to development, natural resources

and social services as well as vulnerabilities to trafficking and gender-based violence in aftermath of disasters are a few to mention.

Credible research based on rigorous gender analysis, strong components of both social and biophysical sciences, trans-disciplinary team and integrated approach with gender focus is critical for holistic understanding of the ongoing and future changes and developing action plan to mitigate the adverse impacts.

At the end, the chair and co-chair with inputs from audience summarized the proceedings with following points:

- Climate change and variability, especially extreme temperature increased absolute precipitation and heavy precipitation days, adversely impacting the ecological, environmental, economic, social and biological settings in the world.
- Climate change may decrease food and agriculture production by about 20-25 per cent by the end of the century. While the humanity at large will be adversely impacted by the climate shift and variability, the hungry and the poor will be hit the hardest. The impact will be severest in the agriculture-based countries, especially the low-income food-deficit ones in South Asia. One third of the total population where productivity in rice, livestock and fish may deteriorate. Although both men and women suffer from the climate change related stresses, women tend to suffer more when faced with extreme weather events.
- Feminization of agriculture is increasing and the climate change will further intensify this process as men would increasingly migrate from rural to urban areas in search of alternative means of livelihood, and women would get engaged in more anticipatory strategies and coping mechanisms. But, so far gender considerations have not been internalized in assessing the consequences of climate change and in adopting measures to increase resilience to change and volatilities. Often donor-driven, the programs and plans on adapting to climate change are by and large gender insensitive and more of compilation of 'technical fixes'.
- In general, the process of women empowerment for adopting climate smart agriculture suffers from poorly understood uptake pathways and dearth of professionally documented best practices for climate resilient agriculture.
- Although most of the presentations and much of the discussion were around crops, the Session emphasized that agriculture should be considered in a comprehensive sense to include not only crops but also livestock, poultry, fishery, agroforestry, forestry and the natural resources. It is this totality which should be considered for understanding the impact of climate change in agriculture and vice-versa.

SESSION II : Recommendations of the parallel sessions and general discussion

Chair : Monty Jones
Co-Chair : Jacqueline Ashby
Rapporteur : Shashi Paroda

In his introductory remarks, Monty Jones emphasized the need for developing an action plan for implementation of key recommendations emerging from this Global Conference. He opined that policy is good only when it is implemented. Hence, there is urgency for action to address the existing gender gap. We see this to be the most opportune time since policy makers globally are more sensitive to the needs of addressing gender issues in agriculture.

The recommendations and key action points emerging from all the six technical sessions were presented by the respective Chairs/Rapporteurs.

Comments from the Audience

- Advisory services are essential to transfer the benefits to women in agriculture.
- Large percentage of women in agriculture are invisible because either they have very small or no land holdings. Issues relating to these women need to be addressed.
- There is a need to identify agencies that shall be responsible for taking action on such issues.
- Access to market information including commercial intelligence and farm gate prices is important to harness the benefits to women in agriculture.
- The asymmetry of information delivery has been addressed to some extent by the private sector through ICT and increased access to mobile phones.
- Opportunities to the landless and resource poor farm women exist especially in post-harvest processing and value addition. Hence, processing centres need to be set up at the village level, with appropriate remuneration to the workers need to be ensured.
- Statistics regarding involvement of women has to be disaggregated sector-wise, e.g. crops, animals, fisheries, poultry, etc.



- Contract farming, where most contracts are given to men, and women are marginalized, needs to be given a fresh look considering the needs of farmwomen

Action Plan

The deliberations in the Conference clearly reflected that there is a window of opportunity for action. Hence, we need to move forward and act on key issues.

1) Ensure visibility

There is a need to increase awareness about the role, contribution and importance of women in agriculture and ensure that voices of women are heard. It is now essential to push for a change at different levels and in scales of operation in agriculture. Hence it is essential to ensure more representation of women in all the spheres so as to allow them to participate in larger decision making process.

2) Provide information and evidence

There is a need to generate gender disaggregated data through focused and context specific research, and provide convincing evidence on women's needs in science and technology, education and capacity development, business and marketing, etc.; and how gender issues and priorities have been changing in different social, economic, technological, agro-ecological and policy environments, for better designing and targeting of interventions based on informed knowledge.

3) Develop collective action and leadership

Gender issues are complex and multidimensional. They also have local, national, regional and global perspective; hence require multi-pronged intervention through institutional convergence. It is therefore critical to mobilize the needed support at national, regional and global level for collective action and build the required capability including leadership development for creating an enabling environment wherein women can realize improved efficiency and productivity in agriculture.

4) Establish rights for needed growth

Rights to land ownership, equal pay and wages, and access to credit, technology, knowledge, ICT, markets and services are urgent issues that need to be addressed on priority to empower farm women for harnessing their strength for inclusive growth and development.

5) Institutional mechanisms

Institutional support and mechanisms, specifically aiming at the needs of women in agriculture and their coordination, convergence and partnership at the national, regional and global level need urgent attention to ensure faster progress.

Session III : Strengthening Capacity Building and Partnerships

Chair : Simon Hearn
Co-chair : Ibrahim Hamdan
Rapporteur : K Vijayaraghavan

In this session, discussions were held on the various dimensions of the capacity building of various stakeholders for the sensitization and empowerment of women especially in rural and agricultural sectors. Five presentations were made in this session. At the outset the Chair gave a brief introduction about the session and stressed upon the significance of capacity building and partnerships in today's world.

Sara Ahmed in her presentation on Building Partnerships: Engendering Research on Agriculture and Food Security discussed the role of IDRC and CRDI in Supporting researchers in the developing world to find practical and long-term solutions to social, economic, and environmental problems through funding of applied, participatory, interdisciplinary research projects; building research capacity ; influencing policy and facilitating partnerships. The Canadian International Food Security Research Fund (CIFSRF), a new program between CIDA and IDRC has been created to facilitate partnerships between Canada and developing countries for environmentally sustainable food security for poor people with a focus on poor women and women farmers through applied research.

Some of the key aspects of the approach are; innovative partnerships across sectors and countries and focus on gender responsive technologies, Social and gender analysis to identify options and understand context and opportunities. Special attention is paid to women's specific needs in design of research, participation of women in research, potential impacts of research on women, strategy for communicating research to women. Adequate attention is also given to build up capacity of research teams to build synergy among actors and partners.

K.D. Kokate in his presentation Capacity Building and Institutional Partnership shared the Indian experience of capacity building and institutional partnerships in agricultural research and development involving stakeholders from farmwomen to professionals and stressed the need for gender perspective in research, advocacy, extension, education and training. In India there is a three tier institutional structure at district, state and national level to cater to requirements of capacity building in agriculture and allied sectors. There are ICAR institutes (97) including DRWA, MANAGE, NIRD, IGNOU, etc national level; Agricultural Universities (DEE), ZPDs, SAMETIs, SIRDs etc. at state level and KVKs, ATMA, Agricultural Schools and Polytechnics, NGOs and Private institutions at district level. Krishi Vigyan Kendras (KVKs) at district level serve as a research knowledge hub and are engaged in technology assessment and refinement, development of competencies of farmers and women organizations through collaboration other agencies at district level. Despite the existence of an array of institutions for capacity

building, there are a number of gaps and concerns. Some of these are absence of a well-stated HRD Policy, lack of training database at all levels, training in ‘business as usual’ approach to meet target numbers, training components’ of the Central Schemes, Centrally Sponsored Schemes and State Schemes overlap and are diffused, non-existent of accreditation of training institutions’ and ‘Certification of trainers’, inadequate ‘training of trainers’ and lack of incentives to attract best talent to training profession and poor reach and coverage of the activities. For greater effectiveness of capacity building programmes, these gaps need to be plugged and some priority areas should be identified for capacity building at different level.

Irene Annor-Frempong in her presentation on Building the Capacity Pyramid for Agricultural Research and Development in Africa discussed the role of Forum for Agricultural Research in Africa (FARA) in capacity development, partnerships and prioritized areas for capacity building. FARA which is a technical arm on agricultural research and development leads the comprehensive Africa Agricultural Development Program (CAADP). FARA operates in 54 African countries and engaged with civil societies, organizations, universities etc. through networking for policy advocacy, access to knowledge and technology, participation, strategic alliance and capacity building. Irene informed Africa’s population will double by 2050 which would mean agricultural productivity has to increase by 6% to feed the growing population. Two things - women’s participation in agriculture and efficiency of the system would determine the progress towards the goal.

Against the backdrop of large gender gap at various levels of research and extension and under representation of women in management positions, she described a human capacity pyramid involving different actors at different level which is essential for development of African agriculture. At the base of the pyramid are the small-holders and farmers who need to be empowered with opportunities and knowledge. They should be engaged with research and technology generation process. At second level are rural technicians and artisans for technical and vocational training, at third level are extension workers/change agents to impart training in soft /personal mastery skills; at fourth level are entrepreneurs, traders, processors, wholesalers and those who interface with producers and business people, and finally at the top are the policy makers, scientists, researchers who should study in the wider contexts of economic development, security, world trade, climate change etc. What is most important in the context of the pyramid is to build complementary capacities at each level to make the pyramid more balanced and stable. FARA has been focusing on context specific training, improving training methods and advocating policies for internalizing curriculum to strengthen gender. Some of the modalities adopted for gender mainstreaming are by creating equal opportunities, identifying gender focal points and criteria for selecting participants for training and workshops, identifying women role models, developing institutional capacity, integrating communication and documentation and empowering rural communities. Women are involved in all levels of project cycle to build the necessary critical mass of women’s capacity for agriculture.

Mark Holderness in his presentation on New Capacities for a Women-centred Agriculture discussed the role of GFAR in transforming and strengthening agricultural innovation systems through advocacy, adopting futuristic approaches to agricultural research, extension and education, inter-regional learning, effective use of knowledge and Agriculture Partnerships.

GCARD Roadmap clearly mentions to inclusively define priorities and actions driven by development needs; invest in equitable partnership and accountability among all stakeholders; achieve increased investments to meet development needs; develop the required human and institutional capacities; embed innovation in development programs and policies and involve stakeholders in M&E and reporting of outcomes. He opined that our institutions are gender blind and most agricultural research, education and extension institutions are geared around increasing agricultural production. There are also institutional divides between food science and agricultural science; research, extension and education; and crop science and social science which reinforce the gender blindness and perpetuate gap in access to knowledge, resources inputs, communication and cross learning. It is important to reframe agriculture and rural development considering women as primary producers and their role in household food security, post-harvest processing and storage and off-farm income. In this context we need to develop capacities needed to empower women for individual change, institutional change, accessing and using knowledge and changing their lives.

There are many institutional and policy challenges. National mechanisms for gender equality face constraints and challenges in implementing their mandate due to inadequate human and financial resources, weak capacities for coordination, monitoring and accountability and lack of political support. Hence identifying and addressing constraints in human capacities, using collective actions to benefit and empower women, individual training schemes that mentor and empower young professional women, and mutual commitments of individual actions towards shared goals are some of the ideas that can create an environment for partnership to flourish and innovations to come through.

Cathy McGowan in her presentation discussed about capacity building and empowerment problems of women in agriculture and some the solutions to overcome these problems based on her experience in Australia and few other countries. She said that there is a huge gap between agricultural research and access by women to the results of research due to lack of connection between research and women's needs. Many of the things that are going on are not simply relevant to women. Hence it is urgently required to include women's need in our overall research framework. Secondly, there are many policies and institutions. But these are not properly working for the cause of women. Even professional women in agriculture are not respected and their performance and contribution are not recognized in work culture which is dominated by male workers. All these are undermining the capacity building requirements of women which are so critical for them to move ahead. To overcome the vices of a biased system, an organization

Australian Women in Agriculture (AWiA) was created to promote the advancement of women in agriculture by addressing rural and agricultural inequalities. The organization has been spearheading initiatives to mobilize and organize women working in different fields at regional, local levels, and has been successful in creating networks of women in dairy, sugar, fisheries, forestry etc. The organization is engaged in lobbying and advocacy and involves government officials and political leaders in dialogue to increase the stake of women in different spheres of development. Every year, women organizations meet to gather and share information and plan programmes for betterment of women in agriculture and professionals. Under the impact of AWiA, similar apex women in agriculture organization has also been created in Papua New Guinea that has several affiliated organizations and is actively supporting capacity building, leadership and partnership development. Cathy suggested developing a web based women in agriculture network at global level through with the help of google to share best practices, scientific information and women's achievements.

Lazizakhon Gafurova in her presentation on Capacity Building and Strengthening Partnerships in CAC first provided an overview of agriculture in the region, status of women in agriculture and domains of women's involvement. She informed that there are more than 40 universities and research organisations in 8 CAC countries that are working on agricultural research, education, extension, training and capacity strengthening for development. In education sector about 50% of specialists with higher and secondary specialist education and 37% of scientists are women. CAC have well developed mechanisms for capacity building of stakeholders at different level. Given the higher level of participation of women and men in agriculture, the issue of training of highly skilled specialists for the countryside has received attention of CAC Governments. CAC State Agrarian Universities have training and methodological centres for agricultural higher schools among countries. Training of scientific and pedagogical personnel is carried out in full time, and in correspondence with post-graduate training courses and residency training units. Universities collaborate with several international organisations (FAO, UNDP, EU, USAID, JICA, KOICA, etc.)

In CAC big attention is paid to the integration of the education, science and production, capacity building, improvement of a quality of agrarian education, improvement of the access of women to scientific achievements and innovations through workshops, trainings, consulting centers, techno parks, Farmers' Field Days, fairs and other events where all research institutes and universities of the republic and international research centres participate.

Association of Women Scientists 'Olima', is another institutional arrangement that is actively promoting professionalism among women scientists, effective use of their knowledge and abilities, access to the new fields of knowledge and Cooperation with international organizations.

Collaborative research activities by National Research Institutions (NARS) universities, farmers' organizations and NGO's with International Centers and institutes of CGIAR also contribute to capacity strengthening of professionals. Thus strong and elaborate mechanisms and networks have been put in place in CAC for capacity strengthening of R & D professionals and women.

The major issues identified were: (a) inadequate capacity building activities for grass-root level women, (b) absence of HRD policy specifically for enhancing capacity of women in agriculture (c) lack of data base related to capacity building, (d) poor grass-root level infrastructure for training (e) absence of partnership, collective action and mutual commitment.(f) lack of gender perspective in technological as well as institutional innovation despite high contribution of women work force in agriculture.



Important suggestions that emerged are as follows:

- Use of e-extension methods to disseminate the appropriate technological issue, networking of women groups in different sectors such as fishery and dairy providing access to innovation and stakeholders.
- Provision needs to be made for greater investment in capacity building for rural women.
- There is a need to initiate projects specifically targeted at training, education and capacity-building for rural women and women's organizations
- Need for strengthening Krishi Vigyan Kendras (Farm Science Centers) as knowledge and resource empowerment centres to address the gender related capacity building in agriculture. There is also an urgent need to address the human resource development for women at central, state and district levels.
- Need for launching a 'National Mission on Farm Women Capacity Building' to reduce the gender gap in the agricultural sector.
- Building the human capacity pyramid to support agricultural research and development a different level may adopting differential approaches
- Contextualizing the training and skill development through reorienting the curriculum, improved pedagogical approach, for development of women centric agriculture.
- Development of public-private partnership and networking of different institutions and leadership development for effective capacity building. and institutional partnerships to effectively reach out to stakeholders.

Session IV : Need Assessment and Future Strategies

GROUP I : RESEARCH

Chair : Jacqueline Ashby
Co-Chair : H.S. Gupta
Rapporteur : Malvika Dadlani

After a briefing by Jacqueline Ashby, the participants divided themselves into six sub-groups based on their specific interest areas. After inter and intra-group deliberations, the sub-groups presented their views on identifying the major challenges and key strategies for engendering research, key indicators and critical factors for measuring success or failure of approaches and devising the strategic action points which are expected to bring desired change.



It was observed that there was no standardized tools and indices for uniform adoption in collection and utilization of gender disaggregated qualitative and quantitative data. The points emerged from the discussions are presented below.

1.1 Assessing women's empowerment in agriculture

- Appropriate assessment of technological needs is a pre-requisite for developing relevant technologies for women. This should be done at local, regional and global level involving community's concern. To achieve the above, capacity building of researchers through gender sensitive approaches is urgently required.
- The methodologies tools and indices for assessment need to be harmonized for uniform adoption and application.
- At present sufficient data/evidence on empowerment of women and engendering of R&D systems are lacking.

1.2 Agricultural innovations for reducing drudgery

- Consideration of local and regional factors is important for identification and assessment of drudgery reducing options. Strategies for dissemination and wider adoption of drudgery reducing technologies should be a prior concern for research and extension professionals.

- For better understanding of the needs of farmwomen, a framework should be developed for continuous interaction between research system and end users to evaluate the performance of drudgery reducing interventions and refine them.

1.3 Linking women to markets

- To empower women in agriculture, it is necessary to assess what policy or technology interventions have worked or failed. There is a need to explore a set of indicators to judge the impact of policies and technologies in linking women to markets.
- Understanding the market dynamics is crucial to identify the key opportunities and needs for women.
- The drivers and factors influencing women's choices including options available, linkages with traders, region specific demands and opportunities, collective group actions etc. need to be identified.
- Role of men in enabling women at community level needs to be defined and issues related to women's personal safety should be given serious attention.

1.4 Role of women in household food and nutrition security

- Huge quantitative and qualitative post-harvest losses are a universal concern. Women need to be empowered to play a more vital role in reducing these losses through simple and accessible post-harvest interventions.
- There is a need for sustained campaign to spread nutrition awareness among women. Science and technology based innovation need to be developed to address nutrition related issues at community level involving women groups,
- Local contexts including agriculture situation and gender issues should go into developing micro level and regional policies for food and nutritional security.
- Policies on food and nutritional security at national, regional and global levels to be defined to support engendering women.

1.5 Access to assets, resources and knowledge: policies and services

Success in addressing many of the issues discussed under previous sections is likely to be influenced by the access to assets, resources, policies and services. The following points are therefore important to Major concerns are as follows:

- Effective indicators need be developed to measure women's actual access to assets including information and knowledge.
- Action research is most appropriate in understanding the needs and priorities of farmwomen and hence a multidisciplinary approach with stakeholder participation be made mandatory in research and policy advocacy for women in agriculture.

- Research outputs must be given sufficient back-up to influence policies for mainstreaming women.
- Empowerment Index needs to be made comprehensive to include major dimensions and variables that affect women's lives in the overall context of their work profile.

1.6 Climate change related risks and uncertainties: their impact

- Adequate Information on assessment of agricultural vulnerability, identifying hot spots and impact on women are lacking both globally and locally. Immediate action is needed, to generate such information.
- Local strategies practiced by different communities to cope with the impact of climate change in different countries need to be collected, documented and validated for wider dissemination.
- Appropriate policy to support availability of clean energy and water needs to be in place and some kind of incentives may be proposed to be attached to promote such policies, in line with C-credits.
- Research to develop mitigation and adaptation strategies in the context of climate change should receive priority along with capacity building of women.

Some common areas of action

- Research on human behavior to support engendering agriculture
- Advocacy Groups to influence policies to empower women in agriculture
- Policy analysis to provide alternatives and choices to women
- Establishing gender assessment and monitoring units in R &D organizations

GROUP II : EDUCATION

Chair : Christian Hoste

Co-chair : Arvind Kumar

Rapporteur : Shielah Vergara

Education plays a critical role in building individual and collective capacities especially in empowering women and promoting gender equality in agricultural endeavours. Education is closely linked with research and extension in such a way that each of these components contributes to the successes and failures of the other.



A key to ensuring that education benefits women in agriculture is to make women's voice heard and considered in all aspects of the decision making processes at all levels.

Tasks of the group

The following topics, which emerged as a result of the synthesis of the outcomes of the previous day's six parallel groups, were considered important:

- Make women/gender in agriculture more visible
- Collect more evidence and knowledge to address gender issues in agriculture
- Encourage collective action and leadership of women in order to take advantage of opportunities and eliminate gender discrimination
- Enable establishing women's rights and promote women's ownership and control

The participants expressed their personal experiences and knowledge on these topics presented. The Chair asked the participants to link these topics to education and come up with critical challenges to address this. Participants' responses were mostly centered on lack of women's visibility and the need for disaggregated data to collect evidence.

Three areas were identified for participants for discussion on education. These were course curricula, skills and legal framework to be discussed within the following framework.

1. Strategies to deal with the challenges in engendering the education process
2. Mechanism to influence decision makers to engender the processes and institutions
3. Key targets and indicators for the difference to be made
4. Critical factors for success and failure
5. Three most strategic actions for moving the agenda forward and its drivers

Participants were divided into three sub-groups and each group was assigned a topic for deliberation. The following suggestions emerged:

Topic	Strategies	Mechanism	Targets & Indicators	Critical Factors	Strategic Actions
Curricula	Need based and well structured gender courses for R&D stakeholders that focuses on: <ul style="list-style-type: none"> ● Gender sensitization, creating awareness and breaking stereotypes, ● Imparting knowledge for addressing agricultural issues 	Using ICT tools, introducing e-courses for sensitization and increasing awareness Leveraging power of mass media to promote gender mainstreaming at different levels Introduction of specialized diploma and degree courses	Gender disaggregated data on enrollment and retention Improving performance of gender educated personnel Number of gender educated professionals and gender based actions	Effective use of resources including infrastructure and human resources Knowledge of regional/ socio-cultural issues and agro production systems Gender sensitive work culture	Making gender based courses/ subjects compulsory to some extent for all the students and professionals

Topic	Strategies	Mechanism	Targets & Indicators	Critical Factors	Strategic Actions
	<ul style="list-style-type: none"> • Advocacy for women empowerment and gender mainstreaming • Entrepreneurship development 	Mentoring through institutions and organizing special programmes for professional and entrepreneurship development	initiated/ supported Number of women entrepreneurs and extent of market linkage	Policy and institutional support for women	Making special provisions for gender oriented and sensitive professionals Undertaking large scale campaign to identify potential women entrepreneurs
Skill development	A framework for training of professionals for promoting knowledge and skills to create gender responsive agricultural system Creating cadre of gender leaders/ experts at local, national, regional and global level who can carry forward the mission	Train, mentor, and capacitate professionals in agriculture to become role models for promoting education and skills Identifying and encouraging potential women to become resource persons on gender Establishment of a monitoring and reporting system	Representation and participation of women in programmes Number of institutions covered under the programmes and changes observed in the functioning of the system Number of women resource persons created at different level	Positive mindset of men and women to the change process Identifying core areas of competency development Balance between different roles of women	Design and implementation of capacity development programmes on mission mode to create capacities at different levels Create a network of institutions having expertise in the relevant areas to act as resource agencies
Skills Legal framework	Change education policies to include gender in agriculture Develop framework to encourage inter-departmental and governmental collaboration Law to promote collaboration between private	Stock taking exercises at regular intervals to identify gaps and new challenges Creating a special fund for women's informal education & empowerment Exchange of ideas, good practices and identification of common goals for creating synergy	Women's representation in carrier advancement and decision-making Number of collaboration and their outcomes Upward mobility of women and their participation in socio economic development	Political commitment Evidence to educate/Influence policy makers and political leaders Incorporation of gendered goals at organizational level Legal provisions to support women's cause	Including gender in the agenda of government Initiate inter-ministerial dialogue to create women friendly provisions Adequate provision of funds

Topic	Strategies	Mechanism	Targets & Indicators	Critical Factors	Strategic Actions
	<p>and public sector to educate women and address gender issues</p> <p>Ensure access to and control by women over resources and technologies</p>				<p>Promoting institutional innovations and partnerships</p> <p>Differential treatment of women to offer them a level playing field</p>

GROUP III: EXTENSION

Chair : Sanne Chipeta
 Co-chair : Harry Palmier
 Rapporteur : Nandita Pathak

Challenges for extension

- Ineffective extension systems in dealing with emerging issues faced by women
- Low female representation at all levels of extension
- Low gender awareness amongst extension professionals
- Low educational status and capacity of women
- Lack of land and property security
- Insufficient reliable data on women's involvement in farming and the extension needs

Strategies

- Reorientation of extension systems for greater responsiveness and accountability to women's aspirations and needs
- Greater representation of women in extension systems
- Towards facilitation of linkages and networks
- Strengthening women's organizations at grassroot level to overcome supply and demand side constraints of extension



- Gender based targets and indicators in program development
- Effective monitoring and evaluation for learning and accountability
- Emphasis on education and capacity building at all levels of the extension delivery systems (University, colleges and schools as well as informal education of farmer to farmer advisers)
- Media campaign to increase the visibility of women's roles in agriculture

Targets and indicators

Access to knowledge services and technologies, extent of participation, increase in income ownership of assets, and control over resources are some of the indicators that can be used from measuring progress. Creating a gender sensitive extension system and assessment of the changes using women empowerment development Indices are required to impart resilience into the system.

Critical factors for success

- Reorientation and strengthening of extension education and gender sensitization
- Public awareness about gender issues and their implications
- Creating village level institutions involving women and men
- Policy support for organizational change

Session V : Towards Effective Joint Action

Chair : Raj Paroda

Facilitator : Jurgen Hagmann

The Chair of the session, Raj Paroda welcomed the participants to the session and introduced the panelists. Recommendations of the three working groups on research, education and extension on need assessment and future strategy were presented followed by responses from the panelists.

Haven Ley

Haven Ley stressed on the need for specificity in the issues in women and agriculture. The experiences of being women, the feelings of gender discrimination, being a farmer and the experiences generated from working in different social-economical and psychological context is very location and situation specific,. The presentations covering research, education, and extension are much aggregated and location specific. However, the aggregation shows a wide range of needs, deficiencies, and gaps both in research, and institutional linkages and goals. There has been a gap in human capital development and

more specifically in how women in agriculture can influence research agenda to incorporate women farmer's needs systematically. Therefore, action points should revolve around solutions that could address the existing gaps. There already exist different approaches in addressing the plights of women in agriculture. For example:



AWARD, which is a development model funded by USAID and it is working in Sub-Saharan Africa that enhances logical and soft skills of scientists and ensures prioritization of the role of African women in agriculture through different institutions and introduction of household approach that can improve both the nutritional and agricultural outcomes.

Therefore, the focus should be on what we know context specific that has worked and can be enhanced or improved to address some of the gaps and challenges. Moreover, an institutional arrangement for taking up gender based interventions and a coordination mechanism should form important part of global framework for action.

S. Ayyappan

S. Ayyappan in his remarks appreciated the efforts of the participants for bringing out recommendations and said that there is a need to make our research and extension systems gender sensitive. Gender implications of research findings must be properly understood to benefit women and this will require gendered approach to make use of the research results. He emphasized that an appropriate policy framework, capacity development, database and cross learning are important for empowering women in agriculture. With respect to education, he informed that during the last 10 years a significant change has taken place in the scenario of girls' enrolment in agricultural education in India. The share of girls in total enrolment in state agricultural universities in India on an average 36 per cent and in some agricultural universities girls' enrolment is even up to 55-60 per cent. Therefore, there is a necessity for a specific approach to address specific concerns of girl students. Home science colleges are being strengthened and expanded and being given real agriculture flavour so that they contribute more and more to development of women in agriculture. He further mentioned that India has a unique system called All India Coordinated Research Project (AICRP) for evaluating tools, technologies, practices and approaches in farm and home across agro-ecosystems. In next five years, this system will be further strengthened so as to make them more effective and useful in development of agriculture and women.

Farm science centres (KVK) are spread across the country and efforts are on to make them gender sensitive. Gender assessment and monitoring cells will be set to study women's contribution and work changes in different districts. He emphasized that access to good quality water, sanitation facilities and small tools are three most felt needs of women. ICAR will be working with other ministries and departments of the government such as ministry of Women and Child Development, Rural Development and Health to find simple solutions to the problems faced by women. Women SHGs have emerged as powerful instrument for socio-economic development of rural areas. Today, there is a need to find out customized solutions to the needs of women SHGs at micro and macro levels. He expressed concern about fading popularity of agricultural education in our society and called for spreading societal awareness about agricultural education so as to make agriculture an attractive sector. He further informed that ICAR would be happy to lead a Gender in Agriculture Partnership (GAP) and work towards institutionalizing gender in agricultural research to contribute to larger societal goal.

William Hammink

USAID in collaboration with IFPRI and Oxford Poverty and Development Initiative has been engaging for the last 6 months putting together the Women Empowerment in Agriculture Index. The index was formally launched recently. The USA government plans to use the index in all the countries where there is a major investment in agriculture through the Feed the Future initiative. There are already 19 countries which are expected to generate qualitative data using the index. The five domain of empowerment in the index, already highlighted by speakers, are production, resources, income, leadership and time.

USAID plans to make available all the qualitative data that will be generated through this index with the stakeholders in the partnering countries. It is also an opportunity that all the partners, stakeholders, and countries should make use of this index to analyze the improvement in women's status and examine if it meets their individual needs.

Eija Pehu

Eija Pehu mentioned that it is wonderful to see that the CGIAR and all the development partners are taking this initiative seriously for mainstreaming gender into the Common Research Programmes. The following actions should be considered.

- There are already quite a number of researches that are gender relevant in different contexts. What is needed is an inventory of the different research outputs and technologies, and building on what already exists.
- Gender is a professional dimension. Therefore capacity building of the international centres and partners should receive greater attention for successful global collective action.

- The empowerment index developed by the USAID and other partners is a very rewarding intervention that would prove very useful in monitoring the progress towards empowerment under different programmes being implemented by the USA and its partners.
- We are facing a R&D dilemma as uptake of research outputs by end users is very slow and it is a major concern for us is. Hence analytical models should be developed to undertake studies to generate evidence on contribution of research to end users.
- There is a need to look at the possibilities of entering into contract farming and access to local markets to address gender issue. There is need to jointly develop dynamic agenda around markets. Also, there is need to go beyond productivity and look at issues in nutrition that calls for joint consideration of nutrition and agronomy.
- There is lack of well articulated agenda for addressing gender issues in climate mitigation and environmental issues.
- For knowledge intensive agriculture, it is important to develop adequate capacities of women right from local level.
- There is a need for a strong public-private partnership for addressing gender issues in agriculture.
- Use of ICT as a tool for accessing information by women should be explored by all stakeholders.

Monty Jones

Monty Jones opined that the ultimate goal for every individual is to contribute to the growth of the respective countries irrespective of gender. Agriculture is about food and nutritional productivity thus there is a need to improve productivity of women in agriculture. The following areas need urgent attention:

- Linking agricultural production to markets.
- Improving the infrastructure.
- Improving incomes of women in agriculture
- Addressing specific needs of women in agriculture

He suggested the following actions to address the above key areas.

- There is a need to guard against fragmentation and duplication of the efforts through joint and collaborative action as working in silos has produced islands of success,
- There is a need to think in terms of individual communities and how to bring them together to exercise value for money, increase income and translate that success into economic gains,

- Education and information generated should be translated into knowledge that should be used to increase productivity,
- Changing of mindsets of men needs to be given due attention. With men's support women's productivity and their income in agriculture will be enhanced. In addition, women will have increased income.
- Finding the innovative financing system for women that can contribute to income generation with opportunity to own bank accounts
- A Framework for Global Action clearly delineating country level, regional and global programmes and partners.

Lourdes Adriano

Lourdes Adriano said that the Conference has put forward a global flavour. However the ideas should be flexible enough to be locally and contextually applicable. We need to know appropriate and achievable business models, specific value additions/characteristics that have potential for upscaling and the approaches and interventions that can be effectively utilized. He suggested some areas of actions which are as follows:

- Development of data based value chain clearly outlining what has worked, what has not worked and what can be done differently to achieve the target.
- Identification of models and interventions that worked and did not work in enhancing extension services to women and trying out new approaches
- Market access improved through the use of ICT e.g. the use of mobile phones to access markets needs upscaling,
- Development of Indicators for identification of progress made in women empowerment in agriculture,
- Identification of inter-ministerial variable that defines gender in agriculture
- ADB would like to work with countries to develop concrete programmes for women in agriculture.

Reactions and clarifications from the participants

The conference has been comprehensive. We may have enough food for thought for every body. But how will get the fuel? Women drudgery and work load should be looked at closely especially with regard to health risk and safety requirements. There is need to emphasize possible ways of bridging the gender gaps in different spheres of life.

POSTER SESSION

In the poster session, 243 posters were presented under different thematic areas as given below:

Sessions	No. of posters
Session 1.1 : Assessing women's empowerment in agriculture	79
Session 1.2 : Agricultural innovations for reducing drudgery	38
Session 1.3 : Linking women to markets	26
Session 1.4 : Role of women in household food and nutrition security	41
Session 1.5 : Access to assets, resources and knowledge : Policies and services	43
Session 1.6 : Climate change related risks and uncertainties : Their impact	16

In Session 1.1 on assessing women's empowerment in agriculture, the posters were presented on aspects such as role and participation of women in different crops, livestock and marine activities, networks for women empowerment, methodologies for assessing women empowerment and impact of technologies on women's empowerment. Some of posters touched upon capacity building and technological interventions for economic empowerment of women.

In Session 1.2 on agricultural innovations on reducing drudgery, some posters discussed drudgery in different activities in kitchen, home and work environment including production and post production and extent of drudgery as measured by ergonomical parameters. Some posters described the technologies to reduce drudgery at home and in field operations including energy efficient tools and innovations having good impact on women's life. There were also case studies on impact of technologies on drudgery reduction and entrepreneurship development for making available drudgery reducing tools to women.



In Session 1.3 on linking women to markets, different approaches, methods and innovations and policy interventions were discussed. Good number of successful cases of linking women to markets through product diversification, value addition and institutional mechanisms were presented. These were in the areas of jute, flower, livestock, organic farming, etc. Importantly, regional perspective in the presentations was available in the session for cross learning.

In Session 1.4 on role of women in household food and nutrition security, a good number of posters from different parts of India discussed success of nutritional gardens and their impact on family nutrition thus highlighting importance of utilization of backyard. Some posters focused on traditional practices to enrich and preserve food for better nutrition, value addition of locally available material, utilization of produces at household level, agro-models, role of women in food and nutritional security, weaning food and nutri-mixes using locally available produces for children. A number of case studies on role of women SHGs in bringing nutritional security and impact of interventions were also presented.

In Session 1.5 on access to assets, resources and knowledge: policies and services, wide ranging topics on role of electronic media in dissemination of information, awareness; constraints, means and extent of access to assets, resources and extension services by women; approaches in providing services; innovations and convergence of services for development of women; role of microfinance, etc. were presented. Some posters discussed the importance of technology resource centres, ICT, role and dynamics of policy issues in providing access to inputs and services. Differential gender access to resources and knowledge was also highlighted.

In Session 1.6 on climate change related risks and uncertainties : Their impact, some posters discussed the aspects of climate changes in different parts of the globe, their consequences on health, women's work, agriculture, water availability, labour and migration. Action plan to protect the environment, role of women and strategies to face climate changes, adoption of climate resilient technologies and farm level innovations and practices and women's wisdom were highlighted in various case studies to mitigate the adverse impact of climate change.

VALEDICTORY SESSION

Her Excellency, the President of India, Smt. Pratibha Devisingh Patil, in her valedictory address emphasized the need to empower women with new knowledge and skills to bring women into the mainstream of agricultural development and reduce gender disparity. Her Excellency said that today much of the scientific knowledge and technologies do not reach rural women for various reasons. Research systems must also seek the inputs of women, as they have historically been the source of traditional knowledge and grassroot level innovations.. While appreciating the efforts of the National Agricultural Research System for bringing women to the fore front of agricultural research and development, President of India suggested forming of *Mahila Kisan Mandals* in every village to educate women on different aspects of agriculture and related activities. “I also believe that tapping the potential of rainfed and dry land farming is necessary. In present situation, water management would be a crucial area where the role of women is vital and needs to be supported” Her Excellency added. The President of India hoped that the outcomes of this Conference will contribute to enhancing agricultural production, and bring about transformation in the lives of women engaged in this sector. President of India conferred three best poster awards and two best exhibition stall awards. Her Excellency also released important publications brought out on the occasion and also visited the Innovation Market Place.

Sri Sharad Pawar, Hon’ble Union Minister of Agriculture and Food Processing Industries and the Chair of the Valedictory Function expressed satisfaction over the



increasing participation of women in agriculture. However, the Minister expressed concern over poor accessibility of land holdings and other assets to women farmers. He opined that assertive interventions by various governments are required to ensure that more and more women get access to the land holdings. ‘A gender in agriculture platform for Gender

in Agriculture Partnership (GAP) is required to be set up with hubs in different countries to work in this direction. The ICAR should take lead and address gender concerns through such a platform', he added.

Sri Pawar appreciated the role of ICAR in technological empowerment of women in agriculture which has enabled the policy makers to take high level policy initiatives in this sector. The research efforts at the ICAR Institutes have focused on reducing women's drudgery in agriculture by providing time and labour saving tools. Vocational trainings are also being conducted to impart skills to undertake different enterprises. In extension activities, women are now the central point and activities are being planned keeping their needs in view. He hoped that these efforts will change the way the agriculture is practiced in India.

Dr Charan Das Mahant, Union Minister of State for Agriculture and Food Processing Industries also graced the occasion.

Dr. Raj Paroda, Executive Secretary, APAARI and Co-Chair, International Organizing Committee presented a glimpse of synthesis report based on the deliberations held during the Conference. He elaborated upon the important action points; enhanced visibility for role of women, generation of knowledge and evidence for support, contextualization of global issues to suit local needs, more policy support and institutional mechanisms for empowerment of women in agriculture. He said that collective action for empowerment of women is required so that they come together on a single platform to march further. Dr. Paroda informed the audience that second GCWA will be held in 2015 in Africa.

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR and the Chair, International Organizing Committee welcomed the dignitaries and highlighted the focal points of the Conference. He informed that 760 delegates from 50 countries participated in the conference in which approximately 150 were from abroad. While elaborating upon key initiatives of the ICAR for empowerment of women in agriculture, he informed that 36 per cent girl students are studying in various courses of State Agricultural Universities. Women have made a difference in agriculture and the time has now come that agriculture should make a difference in the lives of women, he added.

At the end Dr. K.D. Kokate, Deputy Director General (Agricultural Extension) and Chair, National Organizing Committee, proposed the vote of thanks and expressed his gratitude to the Hon'ble President of India. Other dignitaries and the delegates.



INNOVATION MARKET PLACE

An unique feature of GCWA was an Innovation Market Place that was organized to showcase the successes in linking farm women to markets. About 300 participants covering 26 different States and three Union Territories of India including farm innovators, entrepreneurs, scientists of All India Coordinated Research Project (AICRP) on Home Science and Krishi Vigyan Kendras, ICAR Institutes and

NGOs participated. International participants included GFAR, FARA, AWARD, IDRC, ICARDA, IFPRI, APAARI and BMGF.

The Market Place was organized in a traditional setup of an Indian village starting with the life size sculptures of women involved in drudgery prone activities in agriculture followed by showcasing of tools and protective clothing developed to reduce their drudgery and give protection to the body. There were 40 national and 8 international stalls and 6 huts of AICRP on Home Science followed by live demonstrations of value added products by entrepreneurs in the following areas:

1. Women in agriculture : Drudgery reduction
2. Women in agriculture: protective clothing
3. Value addition of horticultural produces
4. Value addition to minor crops
5. Ergonomic interventions : A boon to bamboo craft women



6. Bead making : Conventional versus improved tools
7. Assam handloom: Weaving dreams
8. Utilization of fibre: Lighting the road to success for women empowerment
 - Utilization of bhimal fibre
 - Utilization of sisal fibre
 - Utilization of waste fibre
9. Sustainable employment- revival of traditional embroideries
 - Phulkari : the needle craft of Punjab
 - Chained magic: arhi work
 - Kasuti: mother of embroideries
10. Bandhani - a resist dyeing technique
11. Natural sources for dying of fabrics
12. Light your world: candle making - A small scale enterprise

The international organizations depicted various activities and projects supported by them. The idea behind organizing the event was to highlight the linking of innovations generated through research, disseminated through extension to the market. The concept was a successful first ever attempt in this direction.



Her Excellency Smt. Pratibha Devisingh Patil, President of India, Sri Sharad Pawar, Union Minister of Agriculture and Food Processing Industries, Dr Charan Das Mahant, Union Minister of State for Agriculture and Food Processing Industries and Dr M.S. Swaminathan, Member of Parliament visited and appreciated the exhibition. The innovation market place was open to educational institutions, women self help groups and the farmers and it immensely benefited diverse types of visitors.

RECOMMENDATIONS OF THE GLOBAL CONFERENCE

Addressing gender issues is of utmost importance for ensuring inclusive growth and agricultural development. The recent estimate indicates that 20-30 per cent crop yields and farm income can easily be increased by increasing the access of women to resources. Besides, participation of women in household decision making can substantially improve nutrition and overall welfare of the family. Therefore, empowerment of women deserves high priority in any development agenda. Also, it is clear that not all rural women are farmers. Accordingly, issues concerning access to rights, innovations, capacity development, institutional needs shall vary with the target women groups and all these are to be addressed henceforth on priority. Main GCWA recommendations that emerged were:

1. As a first step in addressing the gender disparity in agriculture, we urgently need to generate, document and share country specific gender disaggregated data on the contribution of farm women, existing gender disparities and the success of on-going development programs in addressing gender related concerns.
2. There are strong linkages among agriculture, nutrition and empowerment of women, which need to be fully acknowledged while addressing the concerns of gender disparity. Control of women over household income is invariably linked with improved nutrition, health and education of children. Therefore, efforts are needed to harness the socio-economic benefits. These should entail: (a) improving effectiveness of government investments by making them gender sensitive and through effective participation of rural women in prioritization and monitoring, (b) building capacity of women community groups for creating awareness, asserting their rights, articulating their needs and enhanced role in program planning, implementation, monitoring, and (c) enhanced role of scientific institutions in production of nutrition rich food and better post-harvest processing and value addition.
3. Since nutritional insecurity is a complex issue and involves a multi-sectoral agenda, straight jacketed solutions may not always yield sustainable solutions. While it is important to define more comprehensive indicators for measuring household nutrition security, the organizations associated with nutrition and women empowerment should form a 'nutrition umbrella base,' which can help develop an integrated strategy for greater effectiveness. These efforts should be supplemented by those of micro-enterprises and women self-help groups for production and distribution of nutrition rich foods. The researchers should develop and use better methodology to generate required evidence and databases on the status of malnutrition and multiple pathways leading to nutritional security.

4. In order to address such a complex issue as gender, individual and isolated line of action would not mean much. Hence, efforts should be made to build and strengthen coalitions by providing an enabling environment for the development of innovative networks (that breakdown silos between stakeholders, institutions, sectors and disciplines) and partnerships involving public and private sector, civil society, grassroots organizations, and bilateral and multilateral development organizations. Such networks can be developed at the regional, national and local levels, and can help generate credible evidence on economic and social impacts especially when role of women is not included in the development process.
5. One of the most significant socio-economic changes taking place in the developing countries during the last decade or so is the phenomenal growth of women SHGs that promise to play a pivotal role in the empowerment of women and transformation of rural areas. Hence, this is the time when we harness full potential of these SHGs by supporting fully the capacity building and leadership development initiatives. Channelizing agricultural support services such as extension, information, credit, inputs, marketing through these SHGs and providing them adequate resources for entrepreneurship development, through vocational training would help raise income of farm women. A special fund, 'Women Empowerment Fund' must be created at the national level to support gender specific welfare associated programs.
6. A 'must do now' for all is to ensure effective control of women on productive assets and income is securing property rights like land rights for women. This needs: (i) revisiting of laws on marriage and inheritance of property, and work on those which can be feasibly be amended and enforced; (ii) working with local and national governments to ensure secure land rights to women, (iii) recognition of customary systems, capacity building/education, and initiative of activities that lead scaling up (e.g., China's case for including women's names on ownership documents or inheritance through daughters as in the Philippines); and (iv) enforcement of laws to ensure women's access to and control over assets. These property rights should also be supplemented with building capacity and knowledge of women to take full benefits of these rights.
7. Agricultural markets are also changing rapidly and women are at risk because of their limited access to markets and price volatility. The new business models focus more on financial viability and often ignore gender issues. As a result, women fail to take advantage of emerging market opportunities and remain mostly as wage earners or non-paid farm workers. Therefore, appropriate commodity based models such as "mama Lus fruit scheme" of New Papua Guinea should be promoted and women should be encouraged to become members of producers and marketing associations. These efforts should be backed by overall strategy to improve the

- market access through development of market infrastructure and better information flow by use of information communication technology (ICT).
8. Agricultural research should be reoriented to make it more gender sensitive with emphasis on issues that lead to empowerment of farm women. Steps are required to induct more women scientists in the national agricultural research system (NARS) to enhance their role in policy, research planning and technology transfer. For this, there is a need to revisit agricultural education system and to revise course curricula to make it more gender sensitive. Also emphasis on enhanced enrolment of girl students in agricultural universities will be desirable.
 9. AR4D systems have invariably come out with innovations which can increase work efficiency of women and reduce their drudgery in various farm operations. Some of these innovations need outscaling for greater impact. Therefore, major efforts are needed for systematic documentation, dissemination, and adoption of relevant innovations. At the same time, efforts are needed to address safety, health and risk related issues concerning farm women so as to increase their efficiency.
 10. Climate change and weather related risks are likely to influence rural livelihoods and affect adversely the agricultural productivity. The strategy to deal with this challenge should also include assessing vulnerability of farm women to climate related risks, pathways to participate in the positive opportunities, if any, both for adaptation and mitigation options. Management of risk, access to technologies to make climate resilient agriculture, capacity building for anticipating the risk and its management through appropriate farm practices also deserve special attention. Climate change related policy such as REDD+ must have clear gender perspective and should encourage women participation both during planning and implementation stage. While providing compensation for environmental services, farm women should also be the beneficiary for their role.
 11. Gender issues are dynamic and so are both agricultural and socio-economic environment. This underscores the need for concerted efforts to understand diversity and severity of gender issues across the globe on a continuous basis. Researchers, policy makers, development agencies, regional and global fora, civil society organizations (CSOs) and women groups should come together to understand better the gender issues and share their experiences as to what works and what does not for the empowerment of women in agriculture. The global conference on women in agriculture (GCWA) has proved to be an important platform to meet these objectives. Therefore, this conference should henceforth be organized on regular basis once in every three years. Forum for Agricultural Research in Africa (FARA) readily agreed to host GCWA2 in Africa in 2015.

12. Considering the urgency of addressing all gender related issues in agriculture across the world, a global partnership program called “Gender in Agriculture Partnership (GAP)” must be launched involving partnership of research and development organizations, national governments, regional and global fora, multilateral development agencies and donors. This platform should provide space for both policy research and policy advocacy on gender related issues in agriculture. GAP can also provide much needed technical backstopping and guide on future investments in programs relating to gender in agriculture. It will also facilitate effective networking and collaboration amongst active partners engaged in empowerment of farm women so as to attain desired inclusive growth in agriculture.

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Deputy Director General (Agricultural Extension)
ICAR, New Delhi, India – Chair

Bhag Mal

Consultant, APAARI
New Delhi, India

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Senior Partnership Expert, GFAR

Krishna Srinath

Director, DRWA & Organizing Secretary, GCWA
Bhubaneswar, India

N N Singh

Secretary, TAAS
New Delhi, India

Ruth Meinzen-Dick

Senior Research Fellow, IFPRI
Washington, DC, USA

Uma Lele

Former Fellow, Agricultural & Applied Economics Association
Former Senior Economist & Advisor, World Bank

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Innovation Market Place	Chair	
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PROGRAMME

Inaugural Session	
Welcome	S. Ayyappan, Secretary DARE and Director General, ICAR
Brief Remarks APAARI	Raj Paroda, Executive Secretary, APAARI
	Monty Jones, Chairman, GFAR
Felicitation	
Video Message	Michelle Bachelet, Head, UN-Women (introduced by GuldenTurkoz-Cosslett, UN-Women)
Special Address	M.S. Swaminathan, Member of Parliament
Address by Chair	Margaret Alva, Governor, Uttarakhand
Release of Publications	
Address by Chief Guest	Sheila Dikshit, Chief Minister, Delhi
Vote of Thanks	K.D. Kokate, Chairman, National Organizing Committee
About the Conference	Jurgen Hagmann, PICOTEAM
Policy Forum I : Reforms in Empowering Women in Agriculture	
Moderator	Uma Lele, Independent Scholar
Rapporteur	P. Amerasinghe, IWMI
Panelists	Markus Goldstein, The World Bank
	Wais Kabir, BARC
	Lynn Brown, World Food Program
	Nafis Sadik, Office of UN secretary-General
	Gulden Turkoz- Cosslett, UN Women
Policy Forum II: Institutional Changes for Capacity Building and Partnerships	
Moderator	Mark Holderness, GFAR
Rapporteur	Ashok Kumar Singh, ICAR
Panelists	Fatima Mosseddaq, Institute Agronomique et Beterinaire Hassan, Morocco
	Meera Shekar, The World Bank
	Haven Ley, Bill and Melinda Gates Foundation
	Petra Bola Abdulsalam-Saghir, Federal College on Agriculture, Kenya
	Linley Chiwona Kartun, Swedish University of Agricultural Sciences

Session 1.1: Assessing women's empowerment in agriculture	
Chair	Mina Swaminathan, MSSRF
Co-chair	Beatriz Argimon, Uruguay
Rapporteur	Lone Badstue, CIMMYT
Speakers	Topics
Ruth Meinzen-Dick, IFPRI	Piloting and Development of the Women's Empowerment in Agriculture Index
M.C.S. Bantilan and R. Padmaja, ICRISAT	Empowerment of Women and Pathways to Development in the Semi-Arid Tropics of India: Insights from Gender-based Social Analysis
Krishna Srinath, DRWA	Empowering Farm Women : Role and Experience of DRWA
Esther Penunia, AFA	The Needs of Women Farmers to be more Empowered
Anna Crole-Rees, CRC4Change	Making Innovation Work Better for Women: A GAP Case Study
Hanaa el Hilaly, IC&PG, SFD	The Egyptian Social Fund for Development: Role in Women's Empowerment in Agriculture
Maureen Miruka, KARI	Empowering Women in Agricultural Research Processes for Enhanced Food Security-Case studies from Kenya
Session 1.2: Agricultural innovations for reducing drudgery	
Chair	Idah Silthole- Niang, AARF
Co-Chair	P. Das, ITSL
Rapporteur	Suman Singh, MPUA&T
Speakers	Topics
Tahseen Jafry, Glasgow Caledonian University	Agricultural Innovations for Reducing Drudgery
Rehana Riyawala, SEWA	Reducing Drudgery: Making Agriculture Sustainable
R. Sumathi, DHAN Foundation	Technological Innovations to Meet the Needs of Women in Agriculture: Leads for Action Research – Experience from Rainfed Farming Development Program
Pitam Chandra and L.P. Gite, CIAE	Technologies for Women in Agriculture-Experience and Achievements of CIAE
Nitin Maurya, National Innovation Foundation	Redefining Roles, Expanding Domains: Women in Agriculture and Beyond
Ebba Augustin, SAANED	Reducing Women's Drudgery in Agriculture
Malika Abdelali-Martini, ICARDA	Making of the Prestigious Traditional Qashabiya and Related Women's Ailments
Session 1.3: Linking women to markets	
Chair	Ganesan Balachander, CGIAR
Co-chair	Fidelina Diaz Aquino, INIA
Rapporteur	Suresh Pal, IARI

Speakers	Topics
W M H Jaim, BRAC	Market Linkages of Women Labour: Evidence from Bangladesh
Jemimah Njuki, ILRI	Linking Women Farmers to Markets: Patterns of Market Participation, Decision Making and Intra-household Income Management
Sally Baden, Oxfam	Promoting Women's Economic Leadership in Agricultural Markets: Challenges and Learning from Oxfam's Experience
Yvonne Pinto, IDS	WFP Purchase for Progress (P4P): A Case Study and Implications for Gender Mainstreaming
Sangram Chaudhary, NDDDB	Women Empowerment-the Milky way ...Story of the White Revolution Connecting Women Dairy Farmers to the Market
Judith-Ann Francis, CTA	Linking Women to Markets: Moving Beyond the Rhetoric
Elizabeth. Isu. Rava, Papua New Guinea	Lus Frut Mama Scheme, Papua New Guinea
Session 1.4: Role of women in households and nutrition security	
Chair	Meera Shekar, The World Bank
Co-Chair	--
Rapporteur	Savita Singal, CCSHAU
Speakers	Topics
J.V. Meenakshi	Agriculture and Nutrition Linkages in India
Ranjitha Puskar, WC	Promoting Women's Engagement in Aquaculture Production: Does it Always Lead to Household Food and Nutrition Security?
N.B. Yenagi, UAS, Dharwad	Promotion of Home Based Food Processing Micro-enterprises through Technological Empowerment of Rural Women for Household and Nutritional Security
Emily Hillenbrand, HKIASP	Nutrition-Centered Agriculture: Toward a Gender-Transformative Approach
Madhur Gautam and Sudhir Singh, The World Bank	Agriculture, Gender and Nutrition: Some Empirical Findings
Biraj Swain, Oxfam India	Monitoring of Community based Programmes for Better Nutrition outcomes
Rita Singh Raghuvanshi, GBPUA&T	Household Nutritional Security: Issues and Challenges
S.D. Kulkarni, CIAE	Involvement of Women in Household Food and Nutrition Security through Agro Processing
Session 1.5: Access to assets, resources, and knowledge: Policies and services	
Chair	Lourdes Adriano, ADB
Co-Chair	Shantanu Mathur, IFAD
Rapporteur	Premlata Singh, IARI

Speakers	Topics
Ann Dela Apekey, FARA	Promoting Women's Access to Knowledge and Resources; Focus on Empowering Women Extension Service Providers
Hema Swaminathan, IIM	Gender Asset and Wealth Gap in Ecuador, Ghana and Karnataka, India
Govind Kelkar, UN Women	The Cliff at the Door: Women's Entitlement to Agricultural Land in Asia
P Amerasinghe and B. van Koppen, IWMI	Women's Access to Multiple-use Water Services (MUS): An agenda for African and South Asian Countries
Deena Ledger, LANDESA	Secure Land Rights for Women
Regina Birner, University of Hohenheim	Access to Assets, Resources and Knowledge Lessons from India, Ethiopia and Ghana
Virginia R. Cardenas, University of Philippines	Access to Assets, Resources, and Knowledge among Women in the Asia-pacific: What Lies Ahead
Hom Gartaula and Kirit Patel, UMCMU	Does Male Labour Out-migration Empower Women? A Case of the Women Left Behind in Rural Nepal
Session 1.6: Climate change related risks and uncertainties: Their impacts	
Chair	R.B. Singh, NAAS
Co-Chair	B. Meenakumari, ICAR
Rapporteur	B.N. Sadangi, CRRRI
Speakers	Topics
P.K. Aggarwal and Gopal Bhatta, IWMI	Preparing South Asian Rural Women for Climate Change
Thelma Paris, IRRI	Changing Climate, livelihoods and gender roles in based production Systems in Asia
Patti Kristijanson, AFC	Women-smart Agriculture? Some CCAFS Hender and Climate Change Research Results and Implication
Suman Sahai, Gene Campaign	
Tyhra Kumasi, IWSC Triple-S Project	Climate Change Adaptation and Ecological Restoration in Northern Highlands of Tigray Region, Ethiopia: the Role of Females
Anne Larson, Carolyn Peach Brown, Esther Mwangi, Hoang Yen Mai, Maria Brockhaus, Thuy Thu Pha, CIFOR	Forests: Gender and climate change
Asun St. Clair, Ritu Singh and Sonali Bisht	Gender and Climate Change; Gender Risks and hopes

Session II: Recommendations of the parallel sessions followed by general discussion	
Chair	Monty Jones , Forum for Agricultural Research in Africa
Co-Chair	Jacqueline Ashby , CGIAR
Rapporteur	Shashi Paroda , CCS Haryana Agricultural University, India
Session III: Strengthening Capacity Building and Partnerships	
Chair	Simon Hearn , Australian Centre for International Agricultural Research
Co-Chair	Ibrahim Hamdan , Association of Agricultural Research Institutions in the Near East and North Africa
Rapporteur	K. Vijayaragavan , IARI, New Delhi
Panelists	
Sara Ahmed, IDRC	Building Partnerships: Engendering Research on Agricultural and Food Security
K.D. Kokate, ICAR	Capacity Building and Institutional Partnership
Irene Annor-Frempong, FARA Africa	Building the Capacity Pyramid for Agricultural Research and Development in Africa
Mark Holderness, GFAR	New Capacities for a Woman Centred Agriculture
Cathy McGowan, Community Rural Consultant, Australia	Capacity Building of Women: Problems and Solutions
Lazizakhon Gafurova, National University of Uzbekistan	Capacity Building and Strengthening Partnerships in CACI
Session IV: Need Assessment and Future Strategies	
Group-I: Research	
Chair	Jacqueline Ashby, CGIAR
Co-Chair	H.S. Gupta, IARI
Rapporteur	Malavika Dadlani, IARI
Group-II : Education	
Chair	Christian Hoste, EFARD
Co-Chair	Arvind Kumar, ICAR
Rapporteur	Sheilah S. Vergara, IIRR, Phillipines
Group-III : Extension	
Chair	Sanne Chipeta, KCA, Denmark
Co-Chair	Harry Palmier, GFAR
Rapporteur	Nandita Pathak, DDRI

Session V: Towards Effective Joint Action	
Chair	Raj Paroda, AAPARI
Facilitator	Jurgen Haggmann, PICOTEAM
Panelists	Monty Jones, GFAR
	Haven Ley, BMGF
	William Hammink, USAID
	Eija Pehu, The World Bank
	Lourdes Adriano, ADB
	S. Ayyappan, ICAR
Valedictory Session	
National Anthem	
Welcome Remarks by Chair, IOC	S. Ayyappan, Indian Council of Agricultural Research
Conference Outcomes by Co-Chair, IOC	Raj Paroda, Asia-Pacific Association of Agricultural Research Institutions
Felicitation	
Guests of Honour	Dr. Charan Das Mahant, Hon'ble Minister of State for Agriculture and Food Processing Industries
Release of Publications and Speech by the Chair	Shri Sharad Pawar, Hon'ble Minister of Agriculture & Food Processing Industries
Presentation of Awards	Her Excellency Smt. Pratibha Devisingh Patil, President of India
Valedictory Address by Chief Guest	Her Excellency Smt. Pratibha Devisingh Patil, President of India
Vote of Thanks by Chair, NOC	K.D. Kokate, Indian Council of Agricultural Research
National Anthem	

