



***Feminization of agriculture in rapid changing rural China:
policy implication and alternatives for an equitable growth and
sustainable development***

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Abstract

Feminization of agriculture is a multiple caused phenomenon which is complex and difficult to address. Yet, we consider the nub of the matter is that feminization of agriculture is a policy area in which value count. So the general purpose of this paper is to explore the causes, affects of the phenomenon and possible solutions in order to draw potential attention and efforts for policy making and action taking. This paper presents the research results of gender study in agricultural and natural resource management in South-west China. Gender was looked at within a broad agrarian changing process with both quantitative and qualitative methods. The research led to a rich multileveled and multiaspected field results.

The key findings are; 1) the subsistence farming in China are experiencing transformation or crises, agricultural income become less and less percentage in rural household income, farmers are losing interest in farming, feminization and ageing of agricultural labor is severe and increasing, women and old people have become the key agricultural cultivators. 2). Under these changes gender inequalities is deepening, in terms of resource and opportunity access, reinforced by conservative cultural norms and existing institutional systems, and intensified by impact of forces including globalization and marketization. 3). Another important research finding is that the gender mutual policies like land tenure etc and gender insensitive supporting services like extension and credit have affected women's equal employment in and benefit from the economic growth. 4). Fortunately our in-depth case study of a women empowerment action research demonstrated that farming women can be organized into effective women groups for technology development and market linkage with appropriate support from public research and extension agencies. Such intervention could greatly empower women and increase their access to technology, credit and market in a sustainable way.

We are acquiring that farming women urgently need support for their empowerment and equal development. Without appropriate gender sensitive policies and public supporting services for farming women, we can expect that there will be continuous deterioration in rural women's statuses and further marginalization and biases in the globalization process. This, in turn, will have negative impacts on the well-being of rural households, especially those women headed and poor ones that rely on agriculture for their livelihoods, and negatively affect poverty reduction, food security and sustainable agricultural development in China.

Key words: Feminization of agriculture, gender analysis, China

I. Introduction

The term "feminisation of agriculture" is first used by Boserup in 1970. Since then, the trend has been increased rapidly which is mainly linked to the expansion of wage employment that accompanies economic development and globalisation. (Ashiby, 1985, Jiggins, 1998, Price, 1999, Song, 1998). As we consider the nub of the matter is that feminization of agriculture is a policy area in which value count. So the general purpose of this paper is to explore the major changes, trends and the effects of the phenomenon and to draw potential attention and efforts for policy making and action taking. Particular attention will be given to the roles of government and the appropriate ways that public agricultural research and extension services and institutions could contribute and meet the needs and interests of the farming women in marginal and unfavorable areas in developing countries.

This paper is based on the field data of an Social Analysis and Gender Analysis (SAGA) research, which was built on and analysed in 4 existing rural development action research projects in SW China in the past decade. The authors of this paper have involved in both the action researches and SAGA research directly as project leaders and rural actionists in the research areas for years. The SAGA research has followed a social and gender analysis approach and used a comprehensive research methodology by combining both quantitative and qualitative research methods. Based on the updated and rich field data, the paper will illustrate the changes and impacts and will also show that public research and extension services with participatory approach and methods could meet rural women's needs and support them substantively for adapting the confronted changes and challenges.

The paper is structured in six sections. After this introduction section, it's the problem statement section where the feminisation of agriculture phenomenon in China and the related policy issues and research gaps will be reviewed and discussed. The third section is a presentation of the research framework and methods of the SAGA research, which provided updated qualitative and quantitative field data for the paper. The fourth section is a description of the major research findings, offering a vivid and present-day picture of the change process underway in rural China, the livelihood coping strategies that people are deploying, such as male migration, as well as the impacts of the increasing feminization and aging of agriculture. Then the fifth section present an action oriented policy research to support women farmers in Guangxi, one of three researched provinces. Finally policy implication will be discussed and synthesized with fields evidences and findings for policy recommendations in the last section.

II. Research on feminization of agriculture in China

China is experiencing major changes in its economy, paralleled by transformations in society and large-scale environmental impacts. China's entry into the World Trade Organization marked an important event in this period of change and has hastened the speed of the process. The opening up of the country's economy to foreign enterprises and investments and its closer integration with the global economy are undoubtedly having profound consequences for the entire population. However, we expect that the reform will have different socio-economic impacts on different groups of people depending on the productive sector in which they work, their geographic location, and factors such as gender and age. How these changes impact on the most vulnerable groups, such as poor farmers, especially women farmers, and what the implications are for policy making has become increasingly a concern for policy makers. They have shown interest in these questions, and some demand is emerging for useful knowledge and advises. Especially in the recent few years, the Central government has made fairness and justice, including gender equality, an important part of its efforts to build a harmonious socialist society.

Out-migration from rural area to cities is one of the most important areas drawn attention from policy makers and researchers. As there has been an overall increase in out-migration from rural to urban areas, especially from the poorer areas like the western and southwestern China, in the last two decades. A recent study revealed that the total number of rural migrants in 2007 is 280 millions including 140 millions permanent migrants and 140 millions seasonal migrants. The total migrants compose 56% of the total rural labor of 500 million in 2007 (Scoute.....etc2007). This is an rapid and significant transfer from agricultural to non-agricultural employment.

However, the gender dimension of this transfer and the impacts on farming women, rural livelihood security, poverty and food security have not received sufficient concern and attention. Although a series of studies have continuously shown that women's out-migration is far below that of men in terms of magnitude, time periods, and increase over time in both permanent migration and seasonal migration. This has resulted in an increasing feminization of agriculture in the last two decades in rural China, especially in the poor Western areas (Gao, Song and Jiggins 2000 and 2002, Zuo and Song 2002; UNDP 2003). Some researchers and activities from China and international programs recognized the research needs and conducted some related researches in the last decade. These studies have provided evidences of the existing increasing feminization of agriculture and also raised some related policy issues and suggestions (IFAD 2004, Song and Zhang 2005, WB and ADB 2006, All China Women Federation Research Report 2007 etc). Yet, these initiatives and

research results are still not generalised to policy thinking and government project design and implementation despite of the central government's intension to address inequalities and build up harmonious society. Then, the question arise as: why and what are the reasons behind this neglect? How could we draw more attentions and efforts to reverse it and win the due for women in particular and for a sustainable agricultural and rural development as general?

We are arguing that there are two existing gaps which behind the neglect and have constrained the actions. One is with research and another is with policy making and both are deeply rooted with traditional patriarchal ideology. As there are still some researchers making statements that there is few empirical evidences supporting the existence of feminization of agriculture and what they take into account is only the women proportion in permanent migration to cities with much attention to daily rural livelihood and changes. However, in reality more and more policy makers and government officers have realized the phenomenon. They made an popular statement that the current farming labor is actually an army entitled "38, 61, 99", which represent women, children and old people. Even so they see no points that they should worry about this, this is true even for government poverty alleviation officers. They take it as granted that "women internal world and men for the external world".

Concerning the definition and phenomenon of feminization of agriculture in China, we think two crucial factors have to be taken into account. One is age and marital status of migrants. As the majority of rural migrant women are young and unmarried, therefore what is associated with the feminization of agriculture has more to do with the married rural women who stay behind with agriculture when their husbands go away to work. Another factor is migrant status in terms of time staying away and distance so called permanent migrants and seasonal migrants. They mainly mean two major types of migration occurring in different areas, i.e. migration from marginal rural areas to distant booming cities, and migration from agriculture to local industries and other non-farming activities. Most young people, including boys and girls, are permanent migrants although the rate of boys is higher than girls. While married people, mainly husbands, are seasonal migrants. As results, men constitute the majority of migrants especially as seasonal migrants, married women and old people become the main agricultural laborers.

Some researches have shown that feminization of agriculture phenomenon has been occurred increasingly with aging agriculture as indicated in the following;

- 2004 (IFAD Gender Assessment in in 3 provinces)
- 62% were factual women-headed households
 - average of household head, is 42.7 years and av education is only 2.5 years

- 2006 (All China Women Federation's Research in 10 provinces)
 - Women labor force composed 74.7 of the total agricultural labor force

- 2008 (IDRC supported SAGA project in 3 SW China provinces)
 - Women labor force is 78% of the total agricultural laborers
 - Average age of acting laborers is about 50 years old

To make things worse, the access of these farming women to basic and natural resources and institutional services, such as credit, market information, training and extension services, has been limited to a large extent. Men still dominate the access to the resources and are still the main target of institutional services. For instance, most women in the mountainous areas in the South-West obtain access to new technologies and market information through men's second "hand-over." The current technology extension system provides more opportunity to men than to women, consciously or unconsciously (Wang and Xue 2002). Meanwhile, women's access to credit is limited too due to their low amounts of social capital and limited ownership of resources.

Despite of the government's great efforts in poverty reduction and some achievements already made, poverty still persistent in many remote rural areas in China. This is especially true in the remote and poor area of western and south-western China where are resided by the majority of the nation's 100 millions of poor people who live under the poverty line of 1 dollar per day. And this includes 30 millions of the extreme poor living below the nation's poverty line of \$0.5 per day (NSBC, 2004). They are mainly small subsistence farmers in resource-constrained remote areas that are agro-ecologically diverse, resource poor, and risk-prone. Women and women-headed households represent a disproportionate share of the poor farmers in these regions. (IFAD China mission reports, 2002, 2004, 2006, 2007, 2008.....).

Meanwhile, the environment and natural resources in those poor regions have been experiencing a rapid degradation as result of over-exploitation and inappropriate interventions of the top down transferred green revolution technologies and marketisation. Without compensating measures and appropriate supporting policies for women by the government, we can expect that there will be deterioration in rural women's economic, social and family statuses. At the same time, there will be a continuous degradation of the environment and the natural resources. This, in turn, will have negative impacts on the well-being of rural households, especially those that rely on agriculture and natural resources for their livelihoods, and negatively effect sustainable agricultural and rural development in China.

A sound understanding of social and gender differences is needed to answer questions of what are the characteristics and trends of the feminization of agriculture now, how those changes affected the livelihood of the poor and women with agriculture in the remote rural areas, what are their major livelihood pattern and coping strategies, what are their needs and interests in technologies and marketing, any existing initiatives which could effectively support those women in meeting their needs and coping the changes, what are the policy implication of all these happenings? It is important to clarify these questions in order to better reveal the relationship between gender and poverty, which both are considered as complex and multi-dimensional phenomena, and better understand women's needs and interests in order to draw real attention and appropriate efforts from policy makers and actionists.

To better answer these questions require a systematic research and integration into some continuous action research (intervention) process especially if the aim is to support gender equality and poverty reduction through policy influence and action taking. However so far there are few studies which could address all these questions in a systematic way, and there are even fewer cases that could address the action research questions which require integration with certain interventions in a continuous action research process over a relatively long period of time.

Fortunately this become possible through an social analysis and gender analysis (SAGA) initiative conducted and committed by a group of local action researchers supported by IDRC in the last 4 years in 3 provinces in SW China i.e. Guangxi, Guizhou and Yunan. The following sections are the presentation of the main research framework and data collection methods and process.

III. SAGA Research in SW China: Research Approaches, Questions and Methods

1. Introduction

The SAGA research was built on a network of 4 existing participatory rural development action research projects in 3 South-western China Provinces. The four on-going projects are as follows;

- *“Rural Livelihood Security and Policy Change--Enhancing Community-based Crop Development, Natural Resource Management and Farmer Empowerment in Guangxi, South-West China”* implemented by the Center for Chinese Agricultural Policy, Chinese Academy of Science since 2000.

- “*Community-based Natural Resource Management in Mountainous Areas of Guizhou Province*” implemented by Guizhou Academy of Agricultural Sciences (GAAS) since 1998
- “*Poverty Reduction through Participatory Technology Dissemination,*” is implemented by Yunnan University since 2000 in Yunnan..
- “*Enhancing the Livelihoods of Agro-pastoralists in NW Yunnan*” implemented by the Center for biodiversity and Indigenous Knowledge (CBIK) since 2000

Based on their experiences and achievements and confronting the common issues and challenges described previously, the four on-going rural development and poverty alleviation action research projects, from the three South-Western provinces, aim to link community-based research results to policy making processes more strategically, by joining forces in doing gender research and analysis in their projects through networking at the community, regional and national levels.

The SAGA research, which was built on the above 4 existing rural development action research projects, was designed and implemented by the leaders of the 4 projects and they are also the authors of this paper. The SAGA research has followed a comprehensive social and gender analysis approach and used a common research framework, combining both quantitative and qualitative research methods, which will be described in the next section.

2. Main Research Questions

Based on the agreed objective and approaches, 5 major types of questions were raised for guiding the SAGA research field study as follows;

1. What are trends of agrarian changes, (2 decades, in project Vs and Non-project Vs)
 - (i) population and labor changes
 - (ii) structure of agriculture and income, NR(land, biodiversity etc)
2. agriculture feminization and aging?
 - (i). The extent and trends of agriculture feminization and aging agriculture?
 - labor force participation,
 - agricultural activity,
 - allocational priorities
- 3 What are impacts of these trends on women’ s access to technology?
 - (i) gender division of labour in HH and community
 - (ii) decision making at HH and community
 - (iii)ways of women and men obtaining technology

- (iv) new technical needs between women and men
- (v) The project Interventions in response to the issues confronted women

4. What are the major livelihood pattern and strategies in those communities?

5. What are the major results and impact of the 4 action research projects implemented in the last 8-10 years respectively?

3. Data Collection Methods

In order to catch an complete picture of the changing realities we decided to use both qualitative and quantitative methods for field studies and data collection like random sample surveys, in-depth case study, life history and comparison and etc. Fortunately as this gender research is built up on the on-going action researches, so major activities/interventions and their impacts on women had been studied and evaluated in this study too. This has greatly enriched the field information by bringing up some real life show case for policy making and action taking. So accordingly there are 3 major types of data collection methods used in this study and they were all conducted in the 4 projects sites located in the 3 SW provinces (refer to map 1 bellow);

a) Quantitative research

A common quantitative research framework had been developed for village and household survey for all the four projects. The survey aims at finding out the current situation of farming structural, socio-economic changes, feminizations of agriculture(degree and trend), the gender role and relation changes(division of labor and decision making) and regional heterogeneity and trend of these changes in the last 15 years. The survey was conducted in the 4 project in 3 provinces started from the late 2007 to early 2008. Multi-stage, stratified sampling method was introduced to select interviewees. Total sample was 464 households selected randomly in 27villages from 8 projects' counties of the provinces. Among the 27 sample villages, 14 were project villages and 13 non-project villages selected on purpose from the neighboring villages for comparison. Given the fact that the 4 action research projects have been implemented in the past 10 to 15 years respectively. A historical comparative study was also combined in the survey by asking retrospective questions and by reflecting back the baseline data of the projects.

Map 1. Research sites of the three southwest provinces – Guizhou, Yunnan and Guangxi



b) Qualitative research

Qualitative research was used in complementation to the quantitative survey and aims to find out the coping strategies, livelihood patterns, gender roles and relations and women’s access to productive assets and their constraints etc. A common research framework and interview check list were also developed for using in all the 4 project sites. Qualitative methods, like key informants interviews, focus group discussions, participatory observation, life history etc were used for qualitative data collection in all the 27 selected villages(including non-project and project villages) from the 4 project sites in the 3 SW provinces during the year of 2008.

c) Participatory action research and evaluation:

Participatory action research is the key approach followed by all the 4 projects although they have different entry points and focus areas as described in the introduction of this section. In order to understand the action research activities and their impacts in addressing those confronted changes and challenges for women,

participatory evaluation method was used in one of the 4 projects i.e. “*Rural Livelihood Security and Policy Change--Enhancing Community-based Crop Development, Natural Resource Management and Farmer Empowerment in Guangxi*” implemented since 2000. The evaluation was conducted by the researchers together with farmers in 8 villages in Guangxi in 2008.

IV. Research findings and Discussion: providing a present-day picture of the change process underway and impacts on women

1. Main research findings

The main research findings are presented in this section by answering the 5 key research questions one by one with sound quantitative and qualitative data from the 3 provinces studied.

a) What are trends of agrarian changes?

There is little increase of total population and labor force, some remote villages even experienced decreases in population in the last 15 years. A remote mountainous project village in Guangxi has even ceased due to the migration of young people and passing away of old people. The following table 1 shows that the population increase is quite limited and a few even experienced decreases during the period between 1995 to 2007 in the 6 research villages in Guizhou. At same time the average household size reduced from 4.92 persons in 1995 to 4.36 persons in 2007. Similar situation were noticed in the research villages in other two provinces.

Table 1: Population Changes in the 6 villages in Guizhou (1995-2007)

Village	1995	2000	2007	1995-2000	2000-2007
Dabuyang	303	305	302	2	-3
Xiaozhai	117	120	124	3	4
Caushan	270	280	281	10	-1
Dongkou	245	250	260	5	10
Xinrou	176	178	182	2	4
Dazong	70	82	78	12	-4

Data source: SAGA research in Guizhou 2008

There is an overall increase of per capita annual income in all the 27 studied villages in the 3 provinces. In most of the cases the incomes have doubled and a few have even tripled in the period between 1995 to 2007 shown in the following table 2;

Table 2: Per capita income increase in the researched sites

Research sites:	Year:	1995	2000	2007
		RMB	RMB	RMB
Guizhou		550	1083	1708
West Yunan		592	723	1025
North-east Yunan				1365
Guangxi		822	1083	1552

Data source: SAGA-China field research

With the overall increase of per capita income in all the villages of all the 3 provinces, the income structure have changed significantly at same time too. The proportion of migration income (remittance) has increased more than two times, while both the crop and livestock income percentage have decreased in comparison with those in 1995 as indicated in the following table 3;

Table 3: Income structure changes during the last 12 years in the SW provinces

Year:	Crop income			Livestock income			Migration income(1)		
	1995	2000	2007	1995	2000	2007	1995	2000	2007
	%	%	%	%	%	%	%	%	%
Sites									
Guizhou	52	45	38	32	30	25	15	30	40
Guangxi									
Northwest Yunan									

Data source: SAGA-China field research

Nevertheless, the income gaps become larger among households within a village and across villages, counties and regions in the last decade. The following table 4 from 4 counties in Guangxi shows that within a county the income gap between the highest and lowest groups are about 10 times. Among counties the income gaps in average and highest are also doubled or tripled, yet the lowest income group is more or less same across the 4 counties. The income source contribute to the income gaps is non-farming income form remittance, local industries or non-farming income generation activities.

Table 4: Household Income differentiation in 4 counties in Guangxi province 2007

Household income	County 1	County 2	County 3	County 4
	RMB	RMB	RMB	RMB
Average	28363	17625	27394	36991
Highest	62000	32550	61000	128900
Lowest	4000	4130	9260	5000

At same time, agriculture related natural resources in our case biodiversity and land have experienced decrease in most of the villages in the 3 provinces. As indicated in the following table 5 in the 90s the coverage of maize and rice landraces was around 80 to 100 percent of the total growing area. Yet, there were no any landraces in both the rain-fed growing area of rice and irrigated area of maize in the 2007. However, maize landraces was still dominant in rain-fed area where farmers take maize as their staple food and they were trying to maintain and rely on these self seed saving landraces for their livelihood (this was revealed by our qualitative study).

Table 5. Biodiversity Changes in terms of rice and maize landraces coverage(1)

		1990	1995	2000	2007
		%	%	%	%
Rice	Irrigated area	80	10	5	5(2)
	Rain-fed area	80	10	5	0
Maize	Irrigated area	80	60	30	0
	Rain-fed area	100	90	80	70

Notes: 1).the data are estimation of the local farmers through survey and key informant interview
 2). The 5% landraces are local waxy rice varieties

b) What are the extent and trends of feminization of agriculture and aging agriculture?

The research result of Guangxi province shows that the average age of the acting farmers is around 50 years old and 76% of them are women as indicated in the following table 6.

Table 6: Gender and Age situation of acting farmers in 10 villages in Guangxi

	Average age	Percentage(%)	Number/person
Male	49.587 years old	24	138
Female	49.55 years old	76	180

Data source: SAGA research in Guangxi 2008

The result of Guizhou province indicates that the average age of staying farmers is 46 years old which is more than 10 years older than the migrants which including both permanent and seasonal migrants shown in table 7. Meanwhile, the following table 8 shows that the permanent migrants in the same 6 villages are mainly young people with an average age of only 26 years old.

Table 7: Gender and Age Differences of the acting farmers of 6 villages in Guizhou

Farming time	Gender/Age (years old)		Average
	Men	Women	
Farming more than half year	47.15	44.90	46.03
Farming less than half year	36.26	35.29	35.78

Data source: SAGA research in Guizhou 2008

Table 8: Ages of permanent migrants of 6 villages in Guizhou

Village	Male	Female	Average Age
Dabuyang	25.9	24.8	25.4
Xiaozhai	25.3	25.1	25.2
Caushan	27.1	24.6	25.9
Dongkou	27.8	27.6	27.7
Xinrou	27.4	22.9	25.2
Dazong	32.0	29.0	30.5
Average	27.6	25.7	26.6

Data source: SAGA research in Guizhou 2008

The above tables in this section showed that the current rural labor force is aged and female across the 4 research sites at different degrees varied from site to site. Our complementary qualitative research illustrated the trends of increasing aged and female dominant labor force in the last 15 years in all the 4 research sites. The following table 9 summarized the migration situation over the last 12 years in 6 very remote villages in Northwestern Yunan;

Table 9: Migration Situation in 6 Villages in NW Yunan, 1995-2007

Items:	Total migrants	Permanent Migrants	Seasonal migrants	Permanent women migrants	Seasonal women migrants
year	person	Person	person	Person	Person
1995	34	12	22	5	7
2000	47	15	32	6	10
2007	68	25	43	9	18

As the above table shows that over the last 12 years migrants had doubled, yet women migration is less in number and slower in speed comparing to men. This is typical situation representing all the 4 research cases.

c) What are impacts of these trends on women in farming and their access to technology?

The following table 10 shows that women are pre-dominant prioritized laborers in most of the farming activities even in farming machinery use.

Table 10. Labor input and priority given in framing activities by gender

Farming activities		Researched	Priority labor given	
		Households	Male (No)	Female
		Number	person	person
Crops	Food crop	124	49	75
	Cash crop	120	42	78
	Fruit tree	96	57	39
	vegetable	87	3	84
livestock	pig	102	9	93
	cattle	110	1	79
	poultry	85	7	78
other	mushroom	13	4	9
	Farming Machine use	25	17	8

DATA Source: SAGA research in 6 villages in Guizhou

The decision-making at the household in farming activities has also changed in an interesting way that men are decision makers of so called “big” things, women are for “small” things. However, for women, agriculture is still a big thing which should be decided by men. Yet for men, their priorities are income generation from non-farming activities and agriculture become “low valued” small things. As result, women are major decision makers of agriculture in most cases in terms of times and contents. The following table shows that women made more decisions than men in most of the crop especially food crop and vegetables.

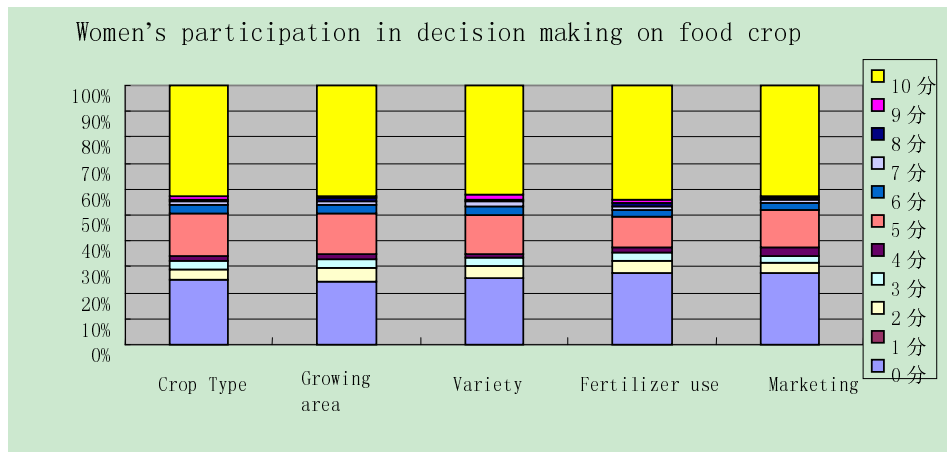
Table 11: Situation of farming decision making by gender

Farming Activity	Farming choose		Variety use		Quantity of farming/raising		fertilizer use		Product sale		
	men	wome n	men	wome n	men	wome n	men	women	men	women	
crop	Food crop	4.94	5.06	5.02	4.98	4.87	5.14	5.74	4.09	5.44	4.56
	Cash crop	4.03	5.98	3.87	6.13	4.35	5.65	5.29	4.71	4.99	5.01
	Fruit tree	5.09	4.91	5.00	5.00	5.39	4.61	5.46	4.54	4.65	5.35
	Vegetable	2.62	7.38	2.12	7.89	2.32	7.68	2.71	7.29	2.93	7.75
Live stock	Pig	5.35	4.65	6.03	3.97	4.41	5.58	2.88	7.12	5.54	4.47
	cattle	5.67	4.33	6.59	3.35	5.48	4.52	4.03	5.98	6.85	3.15

Source: SAGA-Guizhou

It is significantly found out that women are dominant decision makers in food crops concerning type of crop cultivated, growing area, variety and fertilizer used, and marketing. This is clearly shown by the following figure 1 with the yellow bars presenting women's participation in decision making.

Figure 1: Women's participation in decision making on food crops at household level



However, men are still dominant decision makers in public affairs at community level, although women's participation has been increased than before.

Women's access to technology and related resources:

Despite of women's increasing dominant roles in the division of labor and decision making in agriculture, Women are facing difficulties in technonogy, credit and market information access due to their limited social and human capitals comparing with men. Some internal and external constraints and issues confronted by women have been revealed by the research as bellow;

Internally

- Having lower education narrows women' s channels of obtaining technology
- Traditional male being HH decision maker weakens women' s ability of applying technology on their own initiatives.
- Male control over key points of technology use barriers women applying technology to complete their production roles efficiently at the absence of men.

Externally

- The public support services are male bias and gender mutual, for example it's difficult for women to make credit and receive technical servives etc

d) What are the major livelihood patterns and strategies in those communities?

Given that survey data on averages might hide diversity of coping strategies by rural people themselves, some qualitative studies have been carried out, through group discussion and in-depth case study and interview, to find out the major livelihood patterns. The qualitative research revealed a great diversity in experiences depending on opportunities, life cycle, assets for their coping strategies. According to their dependency on farming, 4 major types of livelihood patterns are existing in the studied villages described as bellow;

- **Traditional subsistence farming** livelihood pattern composes of 10-25% of the total households which are staying and live on farming primarily for their household income (more than 50%). Men are still the main decision makers of agriculture by following traditional norm that men doing and deciding big things and women the small things. Men are doing some non-farming works but with limited income. This type also include some old couples with their grandchildren maintaining their land and farming while their children, young couples, are in cities and no intention to work in agriculture (refer to type 4).
- **Transforming Subsistence farming** is the dominant livelihood pattern now which include 55-70% of the total households in the research areas. These rural households are experiencing a transition period with a diverse livelihood with more income from non-farming activities. The non-farming income of this type of households exceeded over 50% of their total household income. In these households men are dominated in non-farming activities searching for new opportunities for the households, whereas women undertake most of the farming activities for land maintenance and household food supply. In those households usually men are seasonal migrants and come back during sowing and harvesting season, women become everyday farmers and do most of the decisions concerning agriculture. As in this case, farming become small things comparing with non-farming activities with higher income.
- **Professional farming** with specialized households is a type of livelihood pattern has emerged increasingly in the last decade. They come up about 3-8% of the total households depending on the economic situation and opportunities of the communities e.g. easy access to market and cities. These households are specialized on certain agricultural commodities (cash crops and livestock etc) with relatively larger scale of land rented from relatives and other villagers. It's interesting to find out that there are more and more women headed specialized households coming out, although there are still more men-headed ones in general.
- There is a type of non-farm livelihood pattern (3-10%), they have migrated already to the urban areas and to non-farming professions leaving their land to their relatives and their children to their parents in some cases. However they are still considered as rural households with land title and "Hukou" in their villages.

e) What are the major activities and impacts of the 4 action research projects?

Projects' actions to address the issues and support women

As described in the first chapter, the four case studies all use a community-based action research approach, working with local people over a long period of time to address livelihood needs; two of the four cases were conducted for a period that lasted more than ten years. The main approaches followed and activities carried out could be summarized as following;

- 1). CBNRM and PPB approach, and related activities
 - CBNRM activities, biodiversity and TK enhancement in field with farmers
 - PPB and PVS field trials with farmers, breeders and extensionists together,
 - PPB seed production by women farmers groups with supports from breeders
- 2). Training (Gender and leadership etc)
 - Participatory approaches and tools training for local coordinators and facilitators, who were grass-root public extensionists
 - Gender training for government officers and services providers
 - Women Leadership training for active women farmers and local coordinators
- 3). Technology training & services
 - Biodiversity and plant breeding training
 - Organic farming training for farmers
 - Extension services based on farmers' needs and interests
- 4). Market information and linkages
 - Value adding to TK and local products through niche market exploration,
 - Ecological and organic farming and marketing through direct producers and consumers interaction
- 5). Women led farmer organization and association strengthening for women collection action and empowerment.

In terms of the approaches and process of supporting women for their empowerment, an in-depth action case study of supporting women group for PPB seed production and marketing, from the same project in Guangxi, provides a concrete case and illustrate the supporting process and results in the next section.

V. An in-depth Case Study for Illustrating Participatory Approaches and Good Practices to Support Women Farmers

This section focuses on an in-depth qualitative case study of an innovative action initiative to support women farmers. The action supporting case was implemented by the Center for Chinese Agricultural Policy (CCAP) and built on an existing PPB research project (Song et al. 2005). The case study was carried out in two villages in the beginning then expanded to 6 villages in Guangxi with full participation of women farmer groups and local extensionists in the past 6 years.

1. Women Empowerment through Seed Production and Marketing

Action objectives: the proposed agenda

Given that the main concern of the action is women farmers' empowerment, therefore the key research question raised is: what kind of action-oriented activities can empower women farmers? Based on a series of discussions within the team and with the women farmers in the project villages, Open-Pollinated Variety maize seed production had been identified as an entry action to add value to women farmers' traditional knowledge and the local process. Through women farmers' involvement in the seed market system the project aims to empower them economically and politically. Specifically, it set out to encourage and enable women farmers to be involved in seed production and marketing, aiming at developing the capacities of women farmers and enhancing the local seed system and indigenous networks.

Participatory planning process

Firstly, a small planning workshop was organized in the beginning of July 2002 with participation of women farmers, from the two selected trial villages, and the corresponding extensionists and breeders. The women farmers were active and enthusiastic in the planning process. They reiterated that they see action on OPV seed production and marketing as a crucial entry point to empower themselves economically and politically. They are happy and proud to be the starters and main actors of the action. They made some innovative suggestions for the improvement of the initial plan. These included: Women farmers work as group in the seed production villages for both social and technical reasons; the first seed production trials would target four OPV varieties, for more options for different users; and a farmer seed fair would be organized in one of the seed villages. This is the first planning workshop, after that every year there was an annual planning by women groups themselves at village level to decide what they were going to do and how to do it in the coming year.

Major Field Activities:

- **Seed production and related training:** Normally varieties for seed production were identified and trial fields were selected by the women farmer groups with assistance of the local extensionists and breeders in the spring sowing season. Selection of right varieties for seed production are very important for marketing. Normally women groups select quality local varieties and PPB varieties for local and potential market. Seed production training for the groups was carried out in the field by experienced women farmer breeders, local extensionists and formal breeders.
- The first Farmer Seed Fair was organized in the beginning of 2003, and it is a new innovative way in China and a good start to encourage and enable women farmers to enter the market and further strengthen, formalize and legalize the existing local process of farmers' seed marketing. The farmers, especially women like such seed fair very much and very proud to share their seed and knowledge with others. They organize, with assistance from the project, farmer seed fair every year and gradually integrated into more local culture and knowledge in it.
- The farmer produced seed have been shared and exchanged among farmers within and between villages. Meanwhile, some efforts were made to link the women farmers to the external seed market in order to add value to their product and empower themselves in the process. So far, a waxy PPB variety, Gunou 2006, has very good market value, in both its seed and fresh cob, has become an important income generation item for the women groups.

2. Results Achieved

Enhancing women's organizational skills

The SAGA action plan was initiated by women farmers, and implemented mainly by women farmer groups in collaboration with grassroots extensionists. New linkages have emerged allowing farmers collectively to channel ideas and demands to the formal extension and research system. For instance, the SAGA work has further enhanced the “seeds” women groups' self-organization and management capacity. They took part in training on management, seed production and marketing, their access to seed market information has increased, and they are now becoming involved directly in the formal seed market.

Strengthening the linkage between women groups and the extension system at grass-roots level

In order to facilitate the exchange between farmer and formal knowledge and to strengthen the linkages between the two seed systems, the formal grassroots extension system (including the township extension stations and their village farmer technicians) was identified as another local network to strengthen and work with. So far Good collaboration among the women farmers, township extensionists and village technicians has been established in all six villages. This collaboration between the women groups and the grass-roots extensionists, which is highly appreciated by farmers, has become the institutional basis for the design and implementation of new policy experiment, in formal collaboration with the Ministry of Agriculture. This policy experiment is part of the country's agricultural extension reform process currently underway.

Value adding to farmers' varieties, PPB products and local process by involving women farmers into OPV seed production and marketing

The selected varieties for seed production, including local improved varieties and PPB varieties, have produced very good harvests, especially the PPB variety "Mexico 1" and Guinou 2006 has higher yield and higher market value. The seeds of all these varieties have been disseminated and diffused through the existing farmer-to-farmer exchange network. Some seed has also been disseminated through local seed markets like free farmer- market and through the farmer seed fair and some through extension system to external market.

3. Major findings and conclusions from the in-depth case study

Reflecting on the research questions that formulated for the action, it could be summarize the major findings and preliminary conclusions as follows. First of all, the SAGA action research has shown that it is crucial to add value to farmers' traditional knowledge and their resources such as landraces and self improved varieties. The case study illustrates that the marginalized women farmers and their knowledge can be easily recognized, protected and strengthened through a collaborative process in which farmers and formal system actors such as researchers, extensionists, and policy-makers work together on (a more) equal basis.

The women groups in the action case study show that farmers' self-organisation/ management and autonomous capability are important to protect and empower themselves in the mainstreaming process. In the context of strengthening women groups, or other farmer groups, and the local communities of which they are part, can be the first step in such self-organisation and autonomous capacity building.

Farmer seed fairs seem to be a very promising innovation. In a short time, they have gained popularity enhancing the recognition and exchange of farmers' knowledge and genetic resources. In addition, the fairs could enhance local seed systems and indigenous networks by value adding to farmers' knowledge and local process economically, culturally and socially. The collaboration between women groups and the grass roots extensionists is an alternative to enhance women farmers' access to more institutional support and their linkages to the formal system.

4. Main Impacts of the action projects

Participatory impact assessment were conducted by the 4 action projects both quantitative and qualitative methods like key informant interview, group discussion with farmers and other stakeholders. The results showed that all the 4 cases have achieved quite impressive progress in addressing the issues confronted by the women and the poor households in their project villages. Given the diversity of the projects and their different intervention we focus on one case, i.e. Guangxi, to illustrate the impacts with examples from field;

The assessment was conducted in 2008 in 4 PPB project villages in comparison with 4 neighboring non-project villages with similar situation when the project started 8 years before. The results show that;

- The project villages' income has increased about 30% more than those in non-project villages in the last 10 years. This was received by the farmers as contribution from the project supported activities as mentioned in the women seed production case.
- the average labor age in project villages is 44 yet that in the non-project villages is 50 years old. The project has actually attracted some young people to work in their villages.
- The project has enhanced natural resources in terms of diversity, grassland and etc. or example, the number of maize varieties used in the project villages is more than these in non-project villages.
- Comparatively women in project villages are in better situation than those in non-project villages in terms of participation in decision making at both household and community levels. For example there were a few women have been selected as village leaders in the project villages. One of them even become one of the 10 model provincial citizens in Guangxi in 2007.
- Women in project villages are more confident and organized with better

linkages to external world and market. For instance a women group in project villages has organized themselves for contract organic vegetable production and marketing with an organic restaurant. This group activity has doubled their vegetable income and also expanded their network to city consumers for value adding to other local products.

VI. Conclusions, policy implication and recommendation

1. Preliminary conclusions and key findings

The direct preliminary conclusions from the our SAGA research across the 4 action project sites could be summarized as bellow;

- Per capita rural income has increased two to three times. Nevertheless, the income gaps become larger between households within a village and among villages in different areas since 1995.
- Agricultural income has increasingly become smaller percentage in rural household income. Most farmers are losing interest in farming, just farming for maintaining their land and for household food security.
- The feminization and ageing agriculture phenomenon is happened in all the 4 research site at different degree in the last decade. Although regional differences, in terms of location, urbanization, marketization, average income, income structure and agricultural structure etc, may resulted in differences in FA and AA in the 4 cases and among villages. In any case women and old people become the major acting agricultural cultivators who have limited productive assets and limered social capital comparing to men.
- Some traditional intensive farming methods like inter-cropping, multiple cropping etc have been changed into more labor saving crops and methods. Some farmers even gave up the traditional two crop seasons per year, like rice and maze in the South, and grow only one crop season due to labor constraints and low return of food crops.
- Women become the main everyday decision makers in agriculture especially in food crops, which are not considered as prioritized area by men. Women still have less opportunity in “big” decision making in household and community.

- Women's access to technology and related production resources are quite limited despite of their increasing dominant roles in the division of labor and decision making in agriculture. Women are facing difficulties in technology, credit and market information access due to their limited social and human capitals comparing with men. Some constraints and issues confronted by women are lower education, traditional by both men and women themselves, male bias and gender mutual public services like extension and credit etc.
- Decrease quality of life in certain degree caused by seasonal migrant labor with inadequate social services facilities and policies towards family reunion in cities. For example children have to be remaining in the rural area while their parents migrant in urban area, or wives, mostly in our cases, have to be remaining in rural area while their spouse migrant to urban area.
- Livelihood patterns have been transforming from single traditional subsistence farming form to multiple livelihood patterns. The major 4 types are transforming subsistence farming, traditional subsistence farming, starting professional farming and non-farming. Majority of rural households are in transforming subsistence farming, waiting and experiencing changes.
- There are four factors resulting in the livelihood transformation: (1) land size is too small to maintain livelihood; (2) agricultural production return is too low to attract labor force, particular the youth; (3) increasing demand of cash income in rural HHs; (4) economic growth provides more job opportunities in cities
- Re the four action projects' impacts, the study showed that all the 4 cases have achieved quite impressive progress in addressing the issues confronted by the women and the poor households in different ways. Particularly the Guangxi case assessment results showed a quite impressive project impacts in income increase, biodiversity enhancement, women and their organization empowerment etc. However, more concerns and efforts are needed for scaling up and institutionalizing these good practices national wide.

In summary the four key findings of our research could be concluded as following;

- 1) subsistence farming in China is experiencing transformation, agricultural income is generally declining and represents a lower percentage of rural household income, farmers are losing interest in farming, feminization and ageing of agricultural labour are severe and increasing, women and old people have become the key agricultural cultivators.

- 2) Under these changes, gender inequalities are deepening in terms of resource and opportunity access, reinforced by existing conservative cultural norms and institutional systems, and intensified by the impact of external forces that include globalization and marketization.
- 3) Gender neutral policies such as gender mutual land tenure policies, and gender insensitive support services like extension and credit have undermined women's opportunities for equal employment in and benefits from economic growth.
- 4) The case study of a women's empowerment action research project demonstrated that farming women can be organized into effective women's groups and self-organizations for technology development and market linkage with appropriate support from public research and extension agencies. Such interventions could greatly empower women and increase their access to technology, credit and market in a sustainable way.

2. Analysis and discussions

The major economic and social transformations, in China, are changing the structure of agriculture and rural households. Subsistence farming is in crises meanwhile scale enlargement of agriculture for commercialization is happening. Under these transitions, male and youth migration from agriculture is resulting to female and aged agriculture.

This male dominant migration model in China is determined by two major factors. *First*, the traditional patrilineal ideology in society, the household, and even in women themselves maintains women's inferior status in terms of resources and allocation opportunities. *Second*, the current structure and status of rural households makes it is very difficult for all members of a rural family to migrate because it is almost impossible to get a permanent residence permit in the cities. As a consequence most of the male migrants become temporary labourers in cities. Nevertheless, land and agriculture remain as a kind of insurance and retreat for those who venture into the cities and their farm households.

While both men and women have always been engaged in agriculture, traditionally the men's role were predominant since women are also engaged in domestic work. However, the new social context has shaped the transformation and reconstruction of the gender division of labour within the households, i.e., from "*the men till and the women weave*" to "*the women till and the men work in industry*". In our point of view, this is the current reinvention of the traditional model of the gender division of labour in China, i.e., "*men control the outside world, women the inner*". The only difference is that women's 'inner world' is extending to agriculture,

which is considered an inferior profession, but at the same time also a valuable retreat and insurance for rural households in the transition period.

As a result, externalisation of costs has been brought onto women who are staying with farming and maintaining their land for livelihood security. At same time specialisation and mono-cropping driven by the commercial forces has increased farming women's dependency on pesticides and fertilisers with externalisation of costs to environment. Biodiversity and other natural resources are in degradation and traditional intensive farming culture is losing due to labor constraints, low return of agriculture and market forces.

Under all these forces women are cultivating and maintaining the subsistent farming to meet the needs of their families on small pieces of land. This subsistence food production directly contributes to the food security of these small farmers' families, whose survival depend on it, and the food security of the state, which still mainly rely on the majority of small subsistent farmers for the food supply.

Indeed, women are playing crucial roles in food security and poverty reduction. Yet they are facing great constraints and difficulties in the access of technology, credit and market due to their limited human and social capital and insufficient external support. The current gender mutual policies like land tenure etc and gender insensitive government supporting services like extension and credit have affected women's contribution to agriculture and food production as well as their equal employment in and benefit from the economic growth.

3. Main policy implications

The important policy implication, which could be withdrawn from the research, is that the aged and female agriculture phenomenon matters because of women's limited access to productive assets and social capital for their new roles of producers. It matters because women's role in agriculture remains largely unrecognised in policy, resource allocation and institutional support to women. This unrecognition's direct implications are;

- Food security at both household and national levels is becoming an issue due to the increasing feminization and aging of farming labor
- Poverty and equity is getting more severe and income gaps are enlarging with women and old people staying in marginal and remote areas;
- New technologies including environment friendly technologies, like organic and conservation agriculture, are difficult for adoption due to labor constraints and technology access constraints of women and old people.

The research also showed with lots field evidences and the action case that appropriate supports to farming women through enhancing their group and organizations and improvement of public services towards more demand driven and gender sensitive services are crucial and possible alternative.

4. Some policy recommendations

In general more appropriate and supportive policies, institutional settings, mechanism and actions are needed to involve more women in development process and improve the quality of their participation. Our research illustrates that SAGA is essential, not optional, for the formulation of responsive and gender sensitive policies and related implementation and management to avoid further marginalization and biases in the economic development process

Specifically;

- More gender sensitiveness and concerns in current 3 “Nong” and poverty alleviation policies and efforts;
- More policy attention and mechanisms for enhancing women’s productive assets like land tenure, credit and market access etc.
- Reforming the agricultural R&D and extension services towards a small farmer oriented, gender sensitive and client demand driven services for meeting women and aged farmers’ needs in agriculture production.
- More gender sensitive and environment friendly technology development and diffusion for serving women farmers as well as enhancing natural resource management.
- More attention to women’s roles and rights in food production and food security, and more balance between the state’ food security & farmers’ income and livelihood
- Enhance women’s groups and organizations through supporting policies (like specific credit for women group and organization) and trainings in leadership and organization management etc.

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