Economic Justice, Climate Change by Gender: The Case of Market gardeners in the Coastal Republic of Benin

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Abstract

Climate change affects men and women differently, specifically in income-related to activities. In the case of market gardening, cropping techniques, input costs and quantities used vary according to sex. This work analyzes economic justice in this context of unequal access to resources by gender. The regression analysis on data collected from actors in the market gardening sector showed that women have lower incomes than men because their production related to climate change are too low. Women can not do all activities and transform them into production costs. The benefits are low and slow down their buying and making provision.

Keywords: B54, D33, D63, J43, K36

1. Introduction

Climate change today is a potentially major threat to the environment and sustainable development. According to Report No. 4 of the Intergovernmental Panel on Climate Change (ICG), they are manifested through various trends such as rising temperatures, rising sea levels, increased variability in rainfall which influences the agricultural seasons, the resurgence of extreme phenomena such as droughts and floods, etc. Global observations now show a general upward trend (0.6 ° C to -0.2 ° C) of the average surface temperature, which is linear and almost twice that of the period from 1906 to 2005, i.e. 0.13 ° C per decade (CRA, 2010). Africa and western Asia would see their production decline thus 25% for 3 ° to 4 ° C of average temperature increase and famine would affect 500 million more people. In this context, 1 / 6eme of the population of these two continents depends on the products of the sea and agriculture which, with a social weight that goes well beyond the 3% to 5% of the gross domestic product in the developed economies, will continue to support the large fraction of the world population that lives With less than US $ 2 per day. At the health level, there have been degradations in the hot regions which, on average, have resulted in an additional 150 000 deaths per year since 1970.

The diagnosis made on the effects of climate change in Benin's 2008 investment report shows that the country's agro-ecological zones are vulnerable to the three major climatic risks of drought, late and violent rains and floods. Heavy winds and excessive heat are likely to become increasingly important in some localities with high resource exposure (catchments, subsistence agriculture and water resources) to social groups such as smallholder farmers Farmers, market gardeners, pastoralists, fishermen and emerging farmers.

In Benin, there are four climatic subsets: a major rainy season from April to July, a small dry season from August to September, a small October rainy season and a large dry season from December to March. In addition, long-term hydrological observations show a general decrease in average rainfall of about 15 to 30% depending on the area and a decrease in the number of rainy days and the duration of the rainy seasons, In surface waters at the level of the main basins (40 to 60%). Under these conditions of difficult farming and the use of multiple species and varieties, research results indicate that the yield level of Beninese agriculture is below the potential of cultivated varieties with a considerable drop in harvest of the order of: 3 to 18% all crops combined.

While, the Beninese economy despite the efforts made to a GDP that remains dissolved of the minimum rate of 7% required to achieve the MDGs. It is characterized by a strong predominance of the primary sector, which occupies about 60% of the population and contributes to 36.6% of GDP. Moreover, according to human poverty indicators, 4.3% of the Beninese population is affected (MEHU, 2011).

Faced with climate change and growing poverty; It is necessary to apprehend the effects of changes in temperature and precipitation on the primary sector and, consequently, to improve the living conditions and sustainable income of the population in Benin.

Several strategies are adopted by farmers and especially market gardeners to counter the difficulties. To this end, the modification of the dates of semi and harvest, the use of seed and fertilizer variety, irrigation, use of tractors etc. are practiced by farmers. However, these different measures have not yet had the same effect in reducing the negative effects of climate change on agriculture. Thus, our work aims to evaluate empirically the effectiveness of these adaptation measures or strategies on climate change mitigation. What are the effects of market gardening strategies on agricultural agricultural productivity? Do the strategies vary by gender?

2. Literature Review

2.1 Climate Change and Economic Growth

The development of adaptation strategies is an inescapable way to reduce the damage expected in the short term (Pielke, 1998). However, adaptation could be achieved through technological innovation. According to Issa (1995); Adaptation can be summarized as a set of readjustments within natural and human systems and in curative and preventive response to current or future climate stimuli or their effects with a view to mitigating or benefiting from their nuisance. Technological innovation is therefore the result of the readjustment made to stimulate growth.

2.2 Economic Foundations

The issue of climate change is essentially due to its global public good character. As with any public good, decentralized market systems do not provide a socially optimal supply. By its global nature, an adequate public policy presupposes the voluntary restriction of sovereignty for States under negotiated agreements.

The provision of global public goods can be used under two management regimes. The most extreme is the uncooperative regime without international agreements. This is the case for climate change until today. In this situation, countries and individuals tend to act according to their own interests, and the overall balance resulting from their decisions is non-cooperative in nature. Although perfect cooperation is very difficult to obtain, the World Trade Organization (WTO) or the Montreal Protocol tries to promote a free and open trade.

2.3 Climate Change and Gender Business and Economic Justice for Women

Economic justice for women is not only about integrating them into a given economic model but also improving their access to economic resources, decent work and control over their own time. It also implies the promotion of women's self-determination and autonomy in economic choices at all levels, from decisions related to household management to those taken in national parliaments and international institutions.

Economic justice also requires the analysis of labor rights, global governance and the informal economy. It promotes adequate universal social protection to alleviate poverty and provide a basic level of well-being for all, especially women most affected by lack of protection and most likely to be excluded from benefits Basis of employment. It thus contributes to collective action while safeguarding specific interests.

Integrating gender and justice into economic debates has a direct impact on food security, livelihoods and the need for unpaid care and domestic work, which falls disproportionately on women. A fair transition to post-carbon or low-carbon economies is needed to mitigate these impacts.

3. Theoretical Framework

This work is based on the theoretical analysis of Elinor Omstrom which perfectly demonstrates in his work that the management of natural resources must be made as close as possible to human control and not remote in governmental spheres, whether national or international. The author's reflections therefore take into account individual and collective interests in a given context. The author has demonstrated that overexploitation of common property is avoided when users organize themselves to manage these assets, whether they are pastures, fishing grounds or groundwater, Mechanisms of their own favoring relations of trust and reciprocity. It proposes a third way, between the state and the private, collective mobilization at the local level around the resources to be managed.

Starting from this reflection in the context of this study, it is necessary to first identify the strategies that the market gardeners espouse themselves in the face of climate change and then make a comparison in terms of access, use and control of Resources and means of production according to gender. Finally, the analysis in this study could extend to the distribution of profits and the management of losses.

Gender-based economic justice, in the context of climate change, analyzed the resources linked to human and financial capital with respect to gender and, on the other hand, the accessibility of women to natural factors of production and Distribution The question is whether women and men benefit from the equitable resources of production that are here human capital and financial capital based on the Cobb-Douglas production model. Human capital is represented by the following factors: Level of education, Practical training in market gardening and capital investment represented by the means of production and management.

3.1 Methodology of the Study

The analysis examines access to and control over the means and resources of the market gardening sector in relation to climate change by gender. The study is in cross section. In the Littoral department in Benin, vegetable growing is the most practiced and more vulnerable to climate change because it requires a lot of water, fertile land and special attention for watering, weeding, phytosanitary and other treatments.

3.2 Sampling

Thus the population of this study would consist of all the vegetable of the department. Sampling is a reasoned choice based on gender differentiation. Indeed, there are more men in the sector than women and even less, women heads of household market gardeners. Very often these latter accompany their husbands to the fields. Faced with this inequality in this sector, all women market gardeners were taken into account in the survey and then supplemented with an equal number of market gardening men in the identified area. This has allowed us to have an almost equal number of men and women.

The variables of the study are forty-seven. These variables took into account the different resources involved in the cultivation of market gardening, from access to land and other means of production, to cultural techniques, Phytosanitary treatments, followed by performance, price and marketing variables. Some variables are quantitative such as price, yield, age area and others are qualitative such as pest control, weeding, weeding or yes or no

The main tool of the collection is the questionnaire containing many closed questions and some open questions.

3.3 Analysis Framework

After the field investigation, the collected information was entered, cleared. Tests were made to compare the mean proportions of each variable using STATA 12 software for men and women. These tests have specified two categories of variables. According to H0 = H1 or H0 different from H1. The variables that indicate equal access to and control of resources among men and women, and variables that show that men have more access and control over certain resources than women.

Estimation of the model

➤ Form of the model and choice of variables

For the verification of our hypothesis we start from the Cobb Douglas model which is as follows:

- Y, where Y is the level of income from market gardening, K is the capital invested and L is the amount of labor used. Applying the logarithm function to this model, its econometric form gives us its linear form which follows: or again with μi the error term. From this model, we retain the following for our study:

- Y (income), K (a combination of inputs, improved seeds) and L (number of weeding and / or watering, treatment).

➤ Estimation model and verification tests

After selection of the variables of the study model, the expression of the model of the study is written as follows:

C (3) * FERTILIZER, NPK, phytosanitary treatments + C (4) * FERTILIZER + C (5) * NUMBER OF DISARMAGE + with μi the term d 'error.

(D) + C (1) + C (2) * social and economic capital + C (3) * means of production + + C (5) * D1 + C (6) * D2 + with μi the error term.

Knowing the values of the variables explained and the explanatory variables of the model, we will estimate the values of the coefficients by simple linear regression and judge their statistical significance by the Ordinary Least Squares (OLS) method. The significance threshold used is 5% and a coefficient will be said to be significant when the probability associated with it is less than 0.05. Estimates are made in an instant cross-section on observations from the survey.

4. Presentation of the Results

4.1 Profile of Respondents

Table1. Profile of respondents in the sample

| | | SEX | | SITMA1 | | SITMA2 | | NIVINST | | | | ALPHABLL | |
		Wife	Man	Married	Single	Polygamous	Monogamous	Uneducated	Primary	Secondary	University	Alphabetized in local language	No Alphabetized
	Wife	71	0	65	4	17	36	24	23	8	1	3	16
SEX	Man	0	78	72	6	27	41	19	28	18	12	16	37
	Total	71	78	137	10	44	77	43	51	26	13	19	53

Source: Survey 2017

The table above presents the characteristic features of the sample studied. This consists of 71 women and 78 men. Of the 71 women surveyed, 65 are married, including 17 polygamous and 36 monogamous; And 4 are unmarried, while of the 78 men surveyed, 72 are married, including 27 polygamous and 41 monogamous; And 6 are single. In terms of educational attainment, 24 women are uneducated, 23 have a primary level, 8 have a secondary level and only one has a university level. On the male side, 19 are uneducated, 28 have a primary level, 18 have a secondary level and 12 have a university level. In addition, only 3 women are literate in the local language and 16 are one literate compared to 16 literate and 37 ducated men.

4.2 Resources and Means of Production of Access and Equal Control by Men and Women in the Market Gardening Sector

In this section, we have analyzed the conditions of equal access to factors and means and resources of production by men and women, and then the most significant coefficients are highlighted. These include:

Table 2. Variables for which the proportion of women is equal to that of men

Code of variables	Variable name	Coefficients	P-value	Significance of product flow
gift	gift	**.189242**	**0.855**	Not significant
LOCAT	leasing	**-.7826186**	**0.061**	significant
FERTTS1	Type soil fertility1	**.5400712**	**0.335**	significant
BLT	integrated	.459532	0.748	Not significant
RLUT1	Elimination of pests	-.360002	0.437	Not significant
WELL	Well	.1335137	0.850	Not significant
Water	River	.1116952	0.800	Not significant
ARROS	watering	.4904402	0.299	Not significant
RACCOR	fittings	.5320509	0.249	Not significant
DEFRICH	Clearing	-1.81086	0.005	significant
THE DIRT	plowing	.4552313	0.557	Not significant
DIGUET	bunds	-13.8713	0.989	Not significant
K2SO4	K2SO4	.2610419	0.596	Not significant
MCBC2	White Fly	-.474622	0.380	Not significant
	Stems c1	7635862	0.191	Not significant

FRUC1	insecticides to protect the fruits	-.869134	0.055	Not significant
TERMC3	Termite Pest	-.709838	0.537	Not significant
	Snail1	1.703717	0.046	Not significant
	Snail2	17.99109	0.996	Not significant
VERC1	worming	.2677208	0.772	Not significant
VERC2	wormingC2	.7703726	0.584	Not significant
NEMC1	nematicides	.3909506	0.349	Not significant
SOUC1	rodenticide C1	-1.13173	0.245	Not significant
SOUC2	Rodenticide C2	-16.1030	0.990	Not significant

Comment: The table 3 above shows on the one hand the variables for which the proportion of women with access is substantially equal to that of men who also have access. Among these variables, we distinguish mainly production factors and production techniques, such as the control of insect pests. These two sets of variables are mainly characterized by their ease of access compared to those that will be presented later in Table 3. This allows women access like men. On the other hand, compared with the influence of these variables on the income of vegetable, the results reveal that only the variable "clearing" is significant. Clearing is an activity that does not require special effort. It can be practiced by men as women. It is also a key factor for crop development and influences yield.

4.3 Resources and Means of Production for Unequal Access and Control by Men and Women in the Market Gardening Sector

Table 3 below shows the variables for which the proportion of women with access is different from that of men.

Table 3 Variables for which the proportion of women is different from that of men

Code of variables	Variable name	Coefficients	P-value	Significance of product flow
PURCHASE	Purchase of land	**-.0642897**	**0.903**	Not significant
HERIT	Inheritance of land	**-.013435**	**0.975**	Not significant
METAY	Earth metering	**-16.34457**	**0.995**	Not significant
Hillside	Hillside	**.9288797**	**0.042**	significant
Low background	Low background	**.9117911**	**0.033**	significant
PLATO	Tray	**.2019739**	**0.654**	Not significant
INONTS1	Flood type sol1	**.4567584**	**0.269**	Not significant
TERMC1	Ants C1	.1144104	0.870	Not significant
TERMC2	Ants C2	-.2876821	0.835	Not significant
NEMC2	Nematodes C1	-.0397403	0.954	Not significant
PHYS	Physical Wrestling	-.8109302	0.194	Not significant
RLUT2	Reason for protection of young plants	-.6613107	0.197	Not significant
RLUT3	Limitation of parasitic pressure	.6358611	0.228	Not significant
RLUT4	Biological Control Tedious and need for regular follow-up	.3878802	0.397	Not significant
WATER	Water	-.8538072	0.206	Not significant
EPLUI	Rainwater	-.4723673	0.468	Not significant
12.FORAG	Drilling	-.7298011	0.257	Not significant

13.TOURNIK	Turnstile	-.638541	0.467	Not significant
14.MOTPOM	pump	-.7648513	0.176	Not significant
15.ASSO	Association	-.2390647	0.432	Not significant
STAKE	Picket	-1.353793	0.027	significant
FUMFON	Furmur of funds	.0282521	0.966	Not significant
Planch	Boards	-.3997292	0.600	Not significant
BILLON	the ridges	-.2891408	0.735	Not significant
NOTILAGE	Without Labor	-.4074224	0.671	Not significant
LABPLA	Plowing	-2.032625	0.000	significant
GESTBIO	Biomass Management	-.1445763	0.719	Not significant
FERTI	Fertilization of land	.2489702	0.385	Not significant
UREA	Urea	-1.797026	0.115	Not significant
NPK	NPK	1.244402	0.274	Not significant
CHEC1	C1 Track	-.6074393	0.374	Not significant
CHEC2	C2 Tracks	.4601404	0.493	Not significant
VIRC1	Virose C1	-.1708351	0.865	Not significant
VirC2	Virose C2	-.0681413	0.933	Not significant
FLEC1	C1 wilting	-.3154588	0.628	Not significant
FLEC2	C2 wilting	-.5865547	0.450	Not significant
MCBC1	White Fly C1	-.6070248	0.422	Not significant
MCBC2	White Fly C2	.2593736	0.764	Not significant
MLCC1	Chemical Control Method C1	.1159017	0.880	Not significant
MLCC2	Chemical Control Method C2	.0108115	0.987	Not significant
MLBC2	Control method Biological C1	-.2293733	0.479	Not significant
MLBC1	Control method Biological C2	-.4481801	0.728	Not significant
ML2C1	The two methods of control C1	.2382199	0.824	Not significant
ML2C2	The two methods of control C2	-.3402386	0.779	Not significant
PARAS	Parasite Pressure	.1264378	0.802	Not significant
FLIGHT	Flight	-.1471675	0.850	Not significant
Mirri	Lack of irrigation equipment	-.2908457	0.619	Not significant
PULVE	Spray	.6882794	0.396	Not significant
SUFALI	Food self-sufficiency	-.519063	0.534	Not significant
FINTONT	Financing of Tontines	-.7069105	0.510	Not significant
VALORI	Valorisation of acquired knowledge	-.8666596	0.386	Not significant

5. Commentary

We note that the variables in Table 3 are competing variables because of their utility. These are mostly variables that require enough means (Land Purchase, Hillside, Low background, Drilling, Urea or NPK); Which limits

women's accessibility because women's resources are limited. Also other factors like plowing flat, picket are also variables that requires enough energy. This prevents women from practicing as women. An estimate of vegetable income represented by the flow of commodities on these variables shows that only the variables "picket planting" and "flat plowing" that require enough energy and land-use variables " And " bottom land " which requires enough financial means for upstream purchase are significant. This explains the low income of women compared to men.

6. Conclusion

The objective of the work is to measure the access and equal control of men and women to resources and means of production in the market gardening sector. The comparison of mean and two multiple regressions to assess the significant coefficients of the equality and non-equality variables was performed. The results show that women have difficulty accessing the relevant and essential means of production such as land and cultivation techniques that require a lot of effort.

On the other hand, they are able to do activities and control yield-related inputs such as men. These results indicate an inequality in the access and control of resources and means of production on income in the market gardening sector. However, variables that seem to offer the same opportunities in terms of access and control still benefit men by positively influencing their income during the sale of market gardening products than women. These analyzes explain the economic interests of man in the face of degradation linked to the management of the environment.

Like Boyce (1994) , these results indicate that men are taking advantage of the weakness of women to further degrade the environment. Democracy at the grass roots and equity are two concepts necessary to integrate into environmental protection policies. Unfortunately, the marginalized women in this sector of market gardening are more limited in access to public resources and in an underdeveloped country such as Benin the civil society that could carry social movements of this kind of theme is subordinated to The political society Heller (2012). For Kashwan (2017), in a study on the relationship between inequalities and environmental management in 137 countries, these results show that in countries where democracy is weak, land inequality is very striking, unlike countries with strong democracies. Grassroots democracy could therefore contribute to the reduction of gender inequalities in the market gardening sector and thus to economic justice.

References

Boyce, J. (1994). Inequality as a cause of environmental degradation. *Ecological economics, 11*, 162-178. https://doi.org/10.1016/0921-8009(94)90198-8

FAO. (2009, October). "The Special Challenge for Sub-Saharan Africa", presentation at the high-level expert forum "How to Feed the World 2050," Rome.

Issa. (1995). Analysis of Benin's Ecosystems in Review of EBA, Number 7, 4 134-145p.

Kashwan, P. (2017). Inequality, democracy and environment: a cross national analysis. *Ecological Economics, 131*, 139-151. https://doi.org/10.1016/j.ecolecon.2016.08.018

Pielke, R. (1998). Interactions between atmosphere and terrestrial ecosystems. Rethinking the role of adaptation in climate policy, in science policy colorado, 161.

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