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Cropping Pattern and Land Degradation in Kasaragod, Kerala

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Abstract

The consequence of the Green Revolution and the continued impact of globalisation and economic reform policies, the agricultural sector in the Kasaragod district witnessed a paradigm shift. For a higher yield and high income the farmers apply fertilisers and pesticides without considering its impact on even the the minmimum requirments. Similarly, the diversification of crops from food crops to non-food crops and from one non-food crop to yet another non-food crop also emerged. All these factors have caused challenges to the agricultural sector and created a conflict in the form of land degradation. This study shows that there is constant and continuous decline in both soil health and in soil fertility in general and also in the decline of P, K soil status and pH status in the rubber cropped areas as compared to other cropped areas in the district.

Keywords

cropping pattern; land degradation; soil fertility

Introduction

Kasaragod district was organised as a separate district of Kerala on 24 May 1984. The district is the northernmost district of the state of Kerala. The land use pattern in the district in the last few decades showed diversification in agriculture. Data on the area under major crops shows that paddy cultivation has decreased from 9,158 hectares in 2000-01 to 4,991 hectares in 2009-10; the area under coconut cultivation decreased from 59,073 hectares in 2000-01 to 57,057 hectares in 2009-10; the area under cashewnut cultivation decreased from 20,448 hectares in 2000-01 to 11,667 hectares in 2009-10; the area under tapioca cultivation decreased from 1,373 hectares in 2000-01 to 452 hectares in 2009-10; whereas the area under rubber cultivation increased from 22,232 hectares in 2000-01 to 28,230 hectares in 2009-10. During 1985-86 the order of the first six crops were coconut, cashewnut, rice, pepper, rubber and arecanut in the descending order of their shares as compared to the total cropped area. In 2009-10, the first six crops were coconut, rubber, arecanut, cashewnut, pepper and rice. Then Rubber attained the second position by pushing rice to the sixth position. The main crops losing area and importance between 1985-86 and 2009-10 were rice and tapioca.

The diversification of crops in Kerala was noticed during the last few decades. Crop diversification mainly towards rubber and coconut has also been observed in the recent years. The diversification of crops and the consequent application of chemical fertilisers and pesticides resulted in the depletion of macronutrients, plant nutrients and micronutrients of the soil. The overuse of chemical fertilisers and pesticides in the Kasaragod district leads to land degradation and creates conflict in the sustainability of the agricultural sector of the district. This paper therefore makes an attempt to look at the changing cropping patterns in Kasaragod district of Kerala with a view to understand the impact of it on the environment and its land.

Methodology and Materials

Data for the study was collected from various publications of the Government of Kerala such as the Economic Review and Statistics for Planning and Agricultural Statistics (Government of Kerala, 2010). Secondary data were also collected from the Analytical Register, Assistant Soil Chemist Office, Kasaragod; Soil Fertility Card, Vasutha Programme; and District Panchayat, Kasaragod and Package of Practices, Kerala Agricultural University, Trissur.

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The decline in the fertility of its native soil, the deficiency of plant nutrients and decline in micronutrients are the three main indicators for the unsustainability of the land. Among these, the first one has been considered in this study due to the lack of data on the rest of the other two indicators. Decline in the soil fertility of Kasaragod district was taken as aproxy for land degradation. Panchayat-wise soil fertility status of the all 36 panchayats in the district was worked out for the period 2000-09. Soil fertility in different cropgrowing areas (paddy, coconut, arecanut and rubber) was also worked out from the Analytical Register, Assistant Soil Chemist Office of the Kasaragod district for 2000-09.

Analysis and Discussion

The main agricultural systems comprising of seasonal crops, annual crops, tree crops and plantation crops are prevalent throughout the district of Kasaragod. The agricultural scenario in the district continues to be the most important and the single largest sector of its economy in terms of income and employment. The most significant change in the agricultural sector of the district is the shrinking area of the food crops.

Cropping pattern means the proportion of area under different crops, the nature of rotation of crops and the area under double cropping in a region or in a country. "A change in cropping pattern means a change in the proportionate area under different crops" (Deshpande, 2000: 218). The changes in cropping pattern broadly reflect the changes in the relative profit expectations of the alternative crops at different points of time. Cropping pattern indicates the level of development and economic prosperity of a region. Cropping pattern is a manifestation of the cropping system, which is described as the kind and sequence of the crop grown over a period of time under the specified soil conditions. It is a dynamic process and occurs due to changes over space and time with cumulative effects subject to that of the past and present decisions. Farmers allocate their land to alternative crops in order to maximise their expected returns subject to economic, technical and institutional factors.

The change in the cropping pattern from food crops to garden, land or tree crops has important economic and environmental implications on households in terms of food availability, income, employment, health, livestock and water, soil and chemical pollution. This paper discusses the environmental impact of changes in the cropping pattern on land degradation in the Kasaragod district as well.

Coconut, arecanut, rubber and banana showed increase in the proportion of the area used during the time periods of 1985-86 to 2009-10 in this district. Areas under rice, pepper, cashewnut, tapioca, cardamom and ginger experienced declining trends during these periods. The area under rice decreased from 16.2 per cent to 3.22 per cent and the area under rubber increased from 9.6 per cent to 18.2 per cent during the time periods of 1985-86 and 2009-10 respectively (Table 1). One important feature of the cropping pattern of Kasaragod district is the high proportion of arecanut area when compared to the the total cropped area.

Table 1
Cropping pattern in Kasaragod district in Kerala (1985-86 to 2009- 10)

Crops	1985-86	1990-91	1995-96	2000-01	2005-06	2009-10
Rice	16.19	10.08	7.39	5.94	3.89	3.22
Coconut	25.35	31.28	38.15	38.33	37.52	36.79
Arecanut	6.46	8.66	8.06	8.77	11.38	9.71
Rubber	9.57	12.92	12.22	14.43	16.39	18.20
Pepper	6.72	4.80	4.19	4.04	4.31	4.29
Cashewnut	20.58	17.46	15.57	13.27	11.67	7.52
Tapioca	4.00	1.72	0.94	0.89	0.37	0.29
Coffee	0.00	0.00	0.00	0.00	0.00	0.00
Tea	0.00	0.00	0.00	0.00	0.00	0.00
Cardamom	0.00	0.59	0.53	0.33	0.24	0.24
Ginger	0.40	0.12	0.10	0.09	0.04	0.04
Banana and other plantains	1.32	1.74	1.92	2.30	2.14	1.81

Source: Computed from (i) Statistics for Planning (various issues), Department of Economics and Statistics, Government of Kerala, Thiruvananthapuram; and (ii) *Economic Review* (various issues), State Planning Board, Government of Kerala, Thiruvananthapuram.

Land, which is the most precious heritage and the physical base of biomass production of life supporting system, is finite andinelastic. It is the major input in agriculture and is steadily reducing both in terms of size and its productivity. Land degradation problems have become a major and serious issue not only in India but is also being recognised as a global one (Sejwar, 2004). The percentage of degraded agricultural land are "as high as 75 % in Bangladesh, 61 in Pakistan, 44 in Srilanka, 26 in Nepal and 25% in India" (Singh et.al., 2004: 176). Unsustainable agricultural activities like "overuse of chemical fertilisers, the use of high yielding varieties of seeds, intensive cultivation, cultivation on steep slopes, shifting cultivation, etc," are some major causes of land degradation (Lal, 2004: 39).

Growing agricultural crops implies that nutrients (N-Nitrogen, P-Phosphorus, K-Potassium, etc.) are removed from the soil through the agricultural produce (food, fibre, wood) and crop residues. In permanent agricultural systems, soil fertility is maintained through applications of manure, other organic materials, inorganic fertilisers, lime, and the inclusion of legumes in the cropping systems, or a combination of these. Nutrient removal may result in the decline of the soil fertility status.

Soil fertility is defined as "the quality of a soil that enables it to provide nutrients in adequate amounts and in proper balance for the growth of specified plants or crops" (Murthy and Hirekerur, 1997). A decline in soil fertility implies a decline in the quality of the soil and is an indicator of land degradation. Soil fertility decline is defined as "the decline in chemical soil fertility or a decrease in the levels of soil organic matter, pH, Cation Exchange Capacity (CEC) and plant nutrients" (Hartemink, 2006: 1618). Soil fertility decline thus includes (i)nutrient depletion or nutrient decline (large removal than addition of nutrients), (ii) nutrient mining (large removal of nutrients and no inputs), (iii) acidification (decline in pH), (iv) the loss of organic matter, and (v) an increase in toxic elements. The land use alternation and changes in cropping pattern also changes soil fertility. The studies conducted by the Centre for Earth Science Studies (CESS) pointed out "deteriorating soil fertility due to changes in the cropping pattern in Kerala" (Chattopadhyay and Frank, 2006: 90).

Changing soil fertility status in the Kasaragod district is analysed by taking a panchayat-wise soil fertility status during the different years from 2000 to 2009 and were assessed by calculating the average of the pH and NPK (Nitrogen, Phosphorus, Potassium)) status for each panchayat for each year from the Soil Analytical Register of the Assistant Soil Chemist office Kasaragod and the Vasutha Programme of the District Panchayat Kasaragod. Soil fertility status is assessed in two ways— firstly it is based on panchayat-wise results of the average native soil fertility (macronutrients—N, P, K) during the past ten years, and secondly it is based on the panchayat wise average pH status during the past ten years from 2000 to 2009.

The pH and NPK status of the soil in the district are grouped and graded into different classes from 0 to 10. The zero class is the lowest class in the group with 0 to 4pH, 0 to 0.16 kg per hectare N, 0 to 3 kg per hectare P and 0 to 35 kg per hectare K. Class 9 and 10 are the highest class with 8.1 to 10 pH, 2.17 to 2.5 kg per hectare N, 31.1 to 34.5 kg per hectare P and 356 to 395 kg per hectare K respectively and above class 9 is in the 10^{th} group or class. The class of 0 to 3 indicates low soil fertility status group, the class 4 to 6 indicates medium soil fertility status group, the class 7 to 9 adequate soil fertility status group and above 9 shows or indicates a high soil fertility status group.

Among the 36 panchayats studied in the district, 21 of the panchayats showed soil pH in the fourth class, 13 panchayats showed soil pH in the fifth class and two panchayats showed class six pH during 2000. The number of panchayats in the fourth class soil pH continuously decreased to eight in 2005 and reached one during 2009. During 2000, 58 percentages of the panchayats showed 5.6 to 6 pH, 36 percentages of the panchayats showed 6.1 to 6.5 pH and the remaining panchayats showed 6.6 to 7 pH. During the year 2000, there was no panchayats in the district having class 1, class 2 and class 3 pH. But after 2004 the number of panchayats in these classes increased and reached 18 in class 1 and 17 in class 2 during 2009. In 2009, 97 per cent of the panchayats in the district had low or very low soil pH (that is pH below 5). Table 2 reveals that the average soil pH of the majority of the panchayats in the district decreased after 2000 and reached a low or very low percentageduring 2009, showing steady decline in soil fertility.

Table 2 shows that during the period 2000-09 considerable variations in the soil fertility status in Kasaragod district were observed. Out of the 36 panchayats studied 32 had high N, 24 had high P and 4 had high K nutrients during 2000. In 2009 the number of panchayats observed high macro nutrients were nine for N, one for P and none for K. For available P and K more than 50 per cent of the panchayats are rated low or very low (below 17 kg per hectare P and below 155 kg per hectare K). Of

these, "low available P is of greatest concern as soil parent materials are generally K rich and this is reflected in predominantly moderate to high levels of exchangeable K" (Lhendup and Duxburg, 2008:15). The total N levels were high in more than 60 per cent of the panchayats.

The various trends in the soil fertility status of the Kasaragod district as shown in Table 2 identify the major features: (i) nearly 97 per cent of the panchayats had low or very low soil pH (that is, pH below 5), (ii) the total N levels were high in more than 60 per cent of the panchayats (that is, above 1.5 kg per hectare of N), (iii) the available P levels were low or very low in more than 50 per cent of the panchayats (that is, below 17 kg per hectare of P), (iv) K nutrients were relatively low or very low in 53 per cent of the panchayats (that is below 155 kg per hectare of K), and (v) there is nutrient depletion or decline and acidification in the soil of Kasaragod district over the years.

There are several studies that indicate that intensive cropping with high doses of inorganic fertilisers has led to deficiencies in the soil fertility status in several parts of India (Chattopadhyay and Franke, 2006; Hartemink, 2006). It is an important indicator to measure the quality and health of the soils which determines agricultural sustainability and environmental quality.

Table 2
Class wise analysis of soil fertility status in the Kasaragod district (pH)

Class	*Year*									
	2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
0	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	8	18
2	-	-	-	-	1	1	1	10	15	17
3	-	1	5	8	13	27	29	25	12	-
4	21	25	22	20	21	8	6	1	1	1
5	13	8	7	6	1	-	-	-	-	-
6	2	2	2	2	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-
Total	36	36	36	36	36	36	36	36	36	36

N

Class	*Year*									
	2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
0	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-
2	-	1	-	-	-	-	-	-	1	1
3	-	-		-	-	-	-	-	-	2
4	-	-	-	-	-	-	-	2	3	1
5	-	1	1	1	1	2	2	1	1	3
6	1	-	-	-	1	-	4	3	3	5
7	1	1	-	-	1	2	3	4	11	11
8	2	2	5	3	7	9	10	12	8	8
9	4	4	6	10	16	16	15	12	8	4
10	28	27	24	22	10	7	2	2	1	1
Total	36	36	36	36	36	36	36	36	36	36

P

Class	*Year*									
	2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*

0	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-
2	1	-	1	1	1	1	1	1	1	5
3	-	-	-	-	-	-	1	3	5	6
4	-	1	1	1	1	4	8	8	10	10
5	2	1	2	4	9	6	5	5	5	2
6	2	4	5	4	-	2	1	4	4	8
7	2	1	1	2	4	6	1	4	5	3
8	5	5	4	5	5	1	8	5	3	1
9	4	2	3	3	3	8	9	5	2	1
10	20	22	19	16	13	8	2	1	1	-
Total	36	36	36	36	36	36	36	36	36	36

K

Class	*Year*									
	2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
0	-	-	-	-	-	-	-	-	1	1
1	-	-	-	-	-	-	1	1	-	1
2	-	2	2	2	2	3	2	5	8	11
3	6	4	6	6	6	12	12	9	11	6
4	5	5	6	6	12	11	12	17	11	12
5	7	8	5	6	10	7	6	1	3	4
6	8	10	10	8	3	3	3	3	1	1
7	4	1	3	2	3	-	-	-	1	-
8	2	5	3	6	-	-	-	-	-	-
9	4	1	1	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-
Total	36	36	36	36	36	36	36	36	36	36

Figures show the number of panchayaths.

In the present analysis four crop growing areas were selected to measure the changes in the soil fertility status in the Kasaragod district (paddy, coconut, arecanut and rubber) and the data collected from the Analytical Register, Assistant Soil Chemist office, Kasaragod. For each crop the average soil fertility status was calculated for the period of 2000-09. The soil fertility evaluation on the basis of soil test results in the four crop based systems are done in two ways—firstly by analysing the macronutrients (NPK) and secondly by analysing the pH status.

Table 3
Average soil fertility status in different crop growing areas in the Kasaragod district (2000-09, macro nutrients (NPK) in kg per hectare)

Year	*Rubber*				*Arecanut*			
	Macro nutrients (NPK)				*Macro nutrients (NPK)*			
	pH	*N*	*P*	*K*	*pH*	*N*	*P*	*K*
2000	5.65	2.96	19.56	131.48	6.10	3.11	51.94	261.53
2001	5.55	2.91	19.02	130.13	6.00	2.93	50.63	257.18
2002	5.45	2.82	18.51	129.70	5.95	2.88	47.75	252.75
2003	5.45	2.75	18.38	127.44	5.90	2.75	47.02	248.75
2004	5.40	2.69	18.21	123.70	5.60	2.60	32.63	243.73
2005	5.35	2.55	17.55	122.62	5.45	2.57	29.39	231.25

2006	5.35	2.46	13.94	96.13	5.40	2.42	27.83	227.58
2007	5.15	2.41	12.06	76.89	5.15	2.37	24.13	225.45
2008	4.40	2.36	11.62	68.13	4.95	2.34	20.89	216.66
2009	4.20	2.14	11.23	61.50	4.80	2.07	20.31	208.33

Year	*Paddy*				*Coconut*			
	Macro nutrients (NPK)				*Macro nutrients (NPK)*			
	pH	*N*	*P*	*K*	*pH*	*N*	*P*	*K*
2000	6.15	2.91	36.34	211.36	5.96	3.37	55.14	292.56
2001	6.10	2.84	34.24	209.85	5.90	3.18	45.34	284.53
2002	6.05	2.67	33.06	201.15	5.83	3.00	43.59	270.03
2003	6.00	2.53	31.15	195.18	5.76	2.78	42.23	262.16
2004	5.85	2.45	29.57	185.94	5.53	2.62	32.11	220.41
2005	5.45	2.27	26.13	172.23	5.40	2.49	29.44	205.18
2006	5.45	2.20	24.21	164.66	5.33	2.42	28.69	203.90
2007	5.30	2.14	21.83	156.33	5.33	2.31	27.27	203.67
2008	5.00	2.06	19.09	149.50	5.03	2.11	26.08	198.29
2009	4.95	2.01	18.11	145.50	4.46	2.09	24.50	193.50

Source: Computed from the Analytical Register, Assistant Soil Chemist office, Kasaragod District.

Table 3 shows that there is a decrease in the average soil pH from 2000 to 2009 in all the crop growing systems. An inter-crop comparison reveals that the decline was severe in rubber cropped systemscompared to the other crop growing systems. In 2009, the average soil pH in the rubber cropped system was very low (4.20). The NPK status revealed that during 2000 except for the rubber cropping system all other systems had a very high NPK status (3.1 kg per hectare N for arecanut, 2.9 kg per hectare N for paddy, and 3.37 kg per hectare N for coconut; the P status is 51.94 kg per hectare for arecanut, 36.34 kg per hectare for paddy; and 55.14 kg per hectare for coconut; the K nutrient was 261.53 kg per hectare for arecanut, 211.36 kg per hectare for paddy and 292.56 kg per hectare for coconut). In the case of the rubber cropping system the NPK status was 2.96, 19.56 and 131.48 kg per hectare during 2000, which decreased to 2.14, 11.23 and 61.5 kg per hectare respectively during 2009.

Table 3 shows the continuous decline of soil fertility as well as, the soil health in general and the deterioration of P and K soil status in particular to the rubber cropping system in the district. It is found that P and K elements are low in the rubber plantations of the study area. Studies by Balagopalan (1995) and Amma et al. (1996) found that NPK components are lower on rubber plantations than those of other vegetations (Chattopadhyay and Franke, 2006). This substantiates the findings of the earlier studies that the organic matter content on rubber plantations had lower values than other cropping systems and vegetations (Shaji and Abraham, 1994). The analysis confirmed that the change in cropping pattern and expansion of rubber cultivation had caused the soil NPK status todecline and had been in fact, showing a tendency of further deterioration in the soil fertility status of the Kasaragod district in Kerala; indicating land degradation and a threat to the sustainability of the cropping system.

Conclusion

From 1985-86 to 2009-10 the cropping pattern of Kasaragod district experienced vast changes. The main crops losing their cultivation area during this period were rice and tapioca while rubber rose to the second position. All these are challenges to the agriculture sector and create conflict in the sustainability of the agricultural sector of the district in the form of land degradation.

Land degradation is an effect of change in the cropping patternis studied by analysing the soil fertility status (pH and macro nutrients) of 36 panchayats in the district during the period 2000-09. In 2000, 58 per cent of the panchayats showed 5.6 to 6 pH, 36 per cent of the panchayats showed 6.1 to 6.5 pH and the remaining panchayats showed 6.6 to 7 pH. In 2009, 97 per cent of the panchayats in the district had low or very low soil pH (that is, pH below 5). Out of the 36 panchayats studied 32 had high N, 24 had high P and 4 had high K macro nutrients in 2000; in 2009 the number of panchayats that had high macronutrients were 9 for N, one for P and zero for K. In 2009 the available data

showed with regrd to P and K, more than 50 per cent of the panchayats were rated low or of very low status. Some negative features of the soil fertility status over the years are also worth noting. They include: (i) nearly 97 per cent of the panchayats studied had low or very low soil pH, (ii) the available P levels were low or very low in more than 50 per cent of the panchayats, (iii) K nutrients were low or very low in 50 per cent of the panchayats, (iv) P nutrient status was very low in 40 per cent of the panchayats, and (v) there is nutrient depletion, decline and acidification in the soil of the panchayats studied.

The decline in soil fertility was measured by calculating the average soil fertility status of four crop growing areas (paddy, coconut, arecanut and rubber) for the period of 2000-09. The soil fertility status was evaluated by analysing the pH and NPK status. The analysis revealed that (i) pH was decreasing over the years in all crop growing areas but the decline was severe in rubber cropped systems and (ii) the continuous decline of soil health and soil fertility in general and the decline of P and K soil status in particular were observed in the rubber cropped areas compared to other cropped areas.

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Empowering Women in Asia and Africa: A Comparison

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Abstract

Efforts at mainstreaming women in the development process began with an emphasis on issues of equity and redistribution as well as meeting the basic needs of the people. Negative and harmful traditional practices such as male child preference, early marriages, and domestic violence against women indicate the cultural subordination of women in Asia and Africa. The introspection of the current approaches to gender equality and sustainable development from a cultural perspective is critical in achieving a balanced development. It is imperative that cultural factors be integrated into current discourses for enhancing gender equality and sustainable development. This study is intended to examine and compare the relationship between gender and development from an African and an Asian perspective as it is necessary to delve into the past to identify the historical factors that may impinge on current developmental outcomes. In reviewing the future perspective, women's grassroot organisations are identified as critical for women's empowerment in the developing countries. The experiences of the developing countries of Asia and Africa show that empowering women is a powerful strategy for reducing poverty and achieving other developmental goals. The objective of the paper is to reveal the centrality of an approach to development in the on-going debate for an inclusive gender and development strategy to enhance sustainability and scrutinise the main phases of the development and debate upon their perception of the womens'role in development.

Keywords

women; empowerment; gender; equality; Asia; Africa

Introduction

Analysts understand empowerment as a multidimensional and multilevel concept. Very often, womens' empowerment and gender equality are used interchangeably. While they are related, they are not the same. Charmes and Wieringa (2003) have designed a Women's Empowerment Matrix that consists of six dimensions, namely physical, socio-cultural, religious, economic, political, and legal; and six levels of the individual, which are, household, community, state, region, and global. The concept of women's empowerment is the outcome generated by the women's movement, particularly by 'the third world' feminists. They state that women's empowerment really requires is to challenge the patriarchal power relations that result in women having less control over material assets and intellectual resources. Women's empowerment must become a force that is an organised mass movement which challenges and transforms existing power relations in society. Gender equality is about women's status relative to that of men while true women's empowerment is about women's ability in an absolute sense to exercise control, power, and choice over practical and strategic decisions (Grown, 2008). Gender is a socio-cultural variable, seen in relation to other factors, such as race, class, age and ethnicity. It refers to both women and men, and to their status, relative to each other. Gender equality refers to that stage of human social development at which the rights, responsibilities and opportunities of individuals is determined when both men and women realise their full potential.

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Unequal opportunities between women and men continue to hamper women's ability to lift them from poverty and gain more options to improve their lives. More often women's economic contributions go unrecognised and their work undervalued. Research show that inequalities persist in the way paid and unpaid work is divided between women and men. In fact women remain the sole caregivers at home, and also in their limited access to resources. These imbalances slow economic growth. This study intends to examine and compare the relationship between gender and development from an African and an Asian perspective as it is necessary to search into the past to identify historical factors that may impinge on current developmental outcomes. The paper addresses the conceptual issues related to women's empowerment, the trends in women's empowerment in key areas such as education, health, economic and political participation, and finally the role of state and non-state actors in empowering women in Asia and Africa. The present study attempts to capture the gap between men and women in terms of economic participation by comparing unemployment levels, the levels of economic activity and remuneration for equal work. The goal is to provide a comparison between Asia and Africa, based on the factors that determine empowerment and how the vary as per the geographic locations. However, the yearly individual country surveys vary. The study is an attempt to consolidate data obtained by comparing figures on the national economy, politics and education in a manner that allows us to take a closer and more structured look at a relative country's strengths and weaknesses. These comparisons are meant to identify existing strengths and weaknesses, and serve as a useful guide for policy, based on learning from the experiences of these continents that have had greater success in promoting the equality of women and men.

Economic Role of Women in Asia and Africa

Women's economic empowerment i.e., their capacity to bring about economic change for themselves is increasingly viewed as the most important contributing factor to achieve equality between women and men. Economically strengthening women not only spur economic growth, but also advance women's human rights. When governments and communities invest in women,the entire nation becomes a stronger player in the global market. Women's increasing economic participation is one of the most visible trends of the global economy marked by increasing feminisation of the labour force, increased participation in the informal or vulnerable economy, and migrating to work in the service industry. Between 1980 and 2007, this increase was second highest in North Africa (Desai, 2010). In South Asia and sub-Saharan Africa, the increases were more modest. Despite this increase, the gender gap in labour force participation remains large, particularly in North Africa, South Asia, and sub-Saharan Africa (World Bank, 2012).

Women in Africa are not empowered because of poverty and negative cultural practices. Traditionally women in Africa were involved in the economy since they were de facto managers of income generating activities on farms as husbands were involved on non-farm business. The colonial economy created title deeds, making men the sole owners of land, thereby rendering women economically weak. The colonial regime also uprooted men from villages to work in urban areas and plantations like rubber plantations in Congo, Cocoa plantations in Ghana and Coffee plantations in Kenya, amongst others. Women consequently were overburdened with running homes, making them economically unstable. In another study of four other countries in Africa—Benin, Madagascar, Morocco, and South Africa—in urban areas women spent between 16 and 55 per cent of their time in paid market activities compared to men's 80 to 84 per cent of their time in paid activities (Desai, 2010). Although the percentage of women in vulnerable employment has dropped since 1997 in most regions, disparity between men and women still exists, especially in North Africa, and sub-Saharan Africa (UNIFEM, 2010). At the national level in Africa, the inadequacy of information, data, and resources render these problems daunting.

During the early stages of economic development, rapid industrialisation and urbanisation lead to a major growth in the manufacturing sector, and the rise of factory employment in South Asia and South East Asia. The situation of women's economic participation is partly responsible for women's lack of access to assets and productive resources. Women's lack of access to land and the insecurity of their property rights pose constraints on women's access to agricultural services, including credit, that require formalised ownership of land.

Sixty per cent of all farmers in Africa are women—making them major contributors to Africa's agriculture based economy (The State of Food and Agriculture, 2011). Sub-Saharan Africa has a very small gender gap in agriculture, which employs over 60 per cent of both men and women (Desai, 2010). Women who live in countries with a large agricultural sector, such as Egypt, tend to work mainly in that sector, although some North African countries have been more successful in getting

women into non-agricultural occupations (Desai, 2010). Morocco and Tunisia, for example, have been able to engage women in the countries' export-manufacturing sectors. Women's participation in the labour force is still low. Only 20 per cent of women aged 15 and older in North African countries are in the labour force—the lowest level for any world region (Desai, 2010). The highest levels of native female labour force participation in North African countries are found in Morocco, where women constitute more than 25 per cent of the labour force. But those rates are lower than rates found outside the region.

East Asia and the Pacific have the least sex-segregated workforce. In South Asia, more than 60 per cent women are employed in agriculture as compared to 40 per cent of men (Desai, 2010). In India, from 1990 to 2005, states with the highest percentage of women in the labour force grew the fastest economically and saw the largest reductions in poverty (Desai, 2010). There has also been progress in many countries to unionise informal sector workers based on the model of Self Employed Women's Association (SEWA) in India. They have successfully changed legislation at the state and national levels to award the same protection to informal workers as formal workers and they have also formed global networks to facilitate this process, such as Women in Informal Employment Globalising and Organising. Men in India spent the least amount of time in unpaid care work while men in South Africa spent the most, a reflection of the high unemployment rate among men in South Africa (Desai, 2010). But even in South Africa women spend almost three times as much time in unpaid care work (Desai, 2010).

Accessing credit is the major constraint on the women's ability to earn an income. The microfinance sector is now taking the African women back to their role of being involved in the economy as they were in dire need of other income generating activities to supplement their small farms. It is estimated that women comprise 74 per cent of the 19.3 million of the world's poorest people now being served by microfinance institutions. In Africa Microfinance Institutions (MFIs) have recorded notable gains (Janet, 2014). The sector has transformed from an insignificant player in the national psyche to a recognised sector with potential to equitably offer financial services to the active poor women in viable micro-enterprises, empower enterprising women through financial access and skills and drastically reduce poverty.

South Africa's Expanded Public Works Programme and India's National Rural Employment Guarantee Act, which mandates a third of the jobs for women, have both been successful in increasing women's livelihoods, which has also resulted in better education and health outcomes for their children. In 2005, the Indian government passed the National Rural Employment Guarantee Act (NREGA), which has resulted in the creation of the world's largest social security system (UNIFEM, 2010). The Indian government has also undertaken a social insurance programme for workers in the informal sector, Unorganised Sector Workers Social Security Scheme Bill, which will cover a majority of urban workers (Barrientos, 2010). Indian Parliament has passed an ambitious law aimed at ensuring social security to workers in the unorganised sector, comprising 94 per cent of the country's labour force.

In 2008 Southern African Development Community countries signed a protocol on gender and development that calls for 50 per cent representation of women in all levels of government by 2015 (Gender Monitor, 2013). It also promotes equal participation of men and women in economic policies and utilisation of gender sensitive and responsive budgeting. It calls for examining all laws relating to access and control of resources both in formal and informal economy to ensure women's equal access. Women in many countries such as Kenya, Rwanda, India have had difficulties in gaining inheritance rights. Still, many countries have passed land reforms that have included gender parity in ownership of communal land such as Tanzania, Namibia, and Rwanda (Desai, 2010). An increasing number of low income countries, including South Africa, Namibia, Bangladesh and India, are introducing fully tax-financed pension schemes, making pension a source of income even in poorer countries. Integrating gender perspectives in the design of pension schemes is essential to avoid excluding large numbers of women. Promoting women's economic empowerment facilitates the achievement of other important public policy goals such as economic growth, improved human development, and reduced violence.

Women and Political Participation in Asia and Africa

Political empowerment refers to the equitable representation of women in decision-making structures, both formal and informal, and in exercising their voice in the formulation of policies affecting their societies. It is important to study the history of women's participation in politics as it is an indication of how difficult it has been for women to penetrate power structures and also make a

difference to women's lives by voicing their problem. Measuring the disparities is a necessary step towards implementing corrective policies. With an overall rank of 33, the Chinese government's much touted gender equality objective still falls far short of expectations. Nonetheless, China remains the highest ranking nation in Asia, followed by Japan (38). The 1995 Beijing Platform for Action (BPA) remains the most comprehensive document of the world's commitment to women's rights. The inequality between men and women in the sharing of power, family responsibilities and decision making at all levels is one among the 12 critical areas of concern adopted in the Platform for Action at Beijing. The year 2005 marks the 10th anniversary of the Beijing World Conference on Women, bringing renewed focus and energy to the efforts to empower women. As demonstrated in East Asia in the 1990s, it is often the case that women are only able to secure employment during rapid expansions, employment that is usually transitory and insecure, and performed under harsh conditions. From the period of 1990 to 2008 the number of women in national parliaments was: 18.6 per cent in Asia, and 17.8 per cent in sub-Saharan Africa (Desai, 2010). In 2008, Rwanda became the first parliament with a majority of women members 56.2 per cent (Kagame). The target of 30 per cent representation has been met in only 24 countries in Africa, Asia, Europe, and Latin America (CSW, 2009). India is one among those countries that have passed legislation to increase women's participation in local government, panchayats, to 33 per cent (Inter Parliamentary Union, 1997).

Role of Education in Empowering Women

Educational attainment is the most fundamental prerequisite for empowering women in all spheres of society, for without education of comparable quality and content to that, which is given to men, its relevance to existing knowledge and real needs, the women will be unable to access well-paid, formal sector jobs. They will not advance among themselves, participate in, and be represented in the government and will neither gain political influence. Education is a key part in the strategies to improve the individuals' well-being and societies' economic and social development. In North Africa, access to education has improved dramatically over the past few decades, and there have been a number of encouraging trends in girls' and women's education. Primary school enrollment is high or universal in most Middle East and North African (MENA) countries, and the gender gaps in secondary school enrollment have already disappeared in several countries. Women in these countries are also more likely to enroll in universities than they were in the past. As women's educational attainment in North African countries has increased, more women have moved into the job market. In sub-Saharan Africa, inequality between men and women in education and employment suppressed the annual per capita growth during 1960–92 by 0.8 percentage points per year (Sharma and Keefe, 2011). A boost of 0.8 per cent per year would have doubled the conomic growth over that period. While South Asia does better than sub-Saharan Africa in tertiary education, it lags behind sub-Saharan Africa in primary educations. But the increase in South Asia and Oceania, hide the still low enrollments of girls to boys, 77/100 and 85/100 respectively (Desai, 2010). Most of the North African women who work outside the agricultural sector are college-educated professionals employed mainly in the government. A smaller share of women work in factories, but many lack the educational qualifications of factory workers in countries such as China and Vietnam. The current high unemployment rates among men in North African countries make it harder for women to compete in the male-dominated job markets, and women's unemployment rates are higher than those of men in the region.

Improving the quality of education, providing more vocational training, developing job-creating programmes, and removing obstacles to women's entrepreneurship can help alleviate the high rates of female unemployment. From 1990-2008 the ratio of female to male primary enrollment has increased in Asia and Africa. Primary school completion rates have also improved in all regions including sub-Saharan Africa and South Asia. The literacy rate for girls 15-24 between 1990 and 2008 increased in all regions of the world (Nallari and Griffith, 2011). There is no gap in literacy in East Asia and the Pacific. While gains were made in South Asia, North Africa, and Sub-Sahara Africa, there is still a large gap of 10 per cent between male and female literary and in sub-Saharan Africa the overall literacy rate is also low.

Physical and Socio-Cultural Dimension

The 1990s brought international attention to issues of sexual and reproductive rights, violence against women, and gender inequality. Non-discrimination and equality of sexes are some of the principles proclaimed in the international instrument drawn up since the end of the Second World

War. Even in the developing world, in some countries in Asia there are more females than males. Women generally live longer than men but in parts of Asia, particularly China and India due to gender-based discrimination, female life expectancy is lower than that of the males (WHO, 2009). Grown (2010) notes that the least progress has been made in preventing maternal mortality, even though it is easy to do, primarily due to lack of health care. While gains have been made, South Asia and sub-Saharan Africa continue to have very high mortality rates (Rogo et al., 2006). Lack of access to primary care, births without attending midwives, and poor nutrition are among the reasons for this high mortality in addition to the HIV/AIDS crisis which has affected all health outcomes in sub-Saharan Africa and will to a greater degree in South Asia as its rates of infections increase. African women are often seen as victims of sexual oppression. At the global level, life expectancy has improved slightly but in East and Central Asia it is now above 70 years. South Asia and North Africa have made the most gains, while sub-Saharan Africa lags behind at mid-50s. Azarnet (2009) uses abortion laws as a measure of empowerment and its impact on women's education in Africa.

Policies that support training of community level midwives have been effective in both South Asia and sub-Saharan Africa. Some countries in Africa like Burkina Faso and Ghana had reduced their adolescent fertility rates by 10 per cent each while Columbia, Peru, Dominican Republic, Madagascar and Zimbabwe showed a reverse trend of increasing rates (Morrison et al., 2008). In South Asia, high adolescent fertility takes place within marriage, hence an important policy consideration is raising the age of marriage (Grown, 2010). In South Asia and China, where sons are valued over daughters, this lack of autonomy is particularly evident in the increase in sex-selective abortions, often against the women's wishes. Women's movements in India have been successful in getting legislation against such abortions and have also focused on public awareness campaigns that promote the value of daughters. While gains have been made, South Asia and sub-Saharan Africa continue to have very high mortality rates.

Regional Institutions in Empowering Women

The International Women's Movement, punctuated by world conferences of the United Nations on women, has for a long time attracted the attention of specialised agencies which take care of development as well as government for the need to integrate the woman's dimension in the development process. The result was the proclamation by the General Assembly of the United Nations naming the year 1975 as the International Year of the Woman with a three-fold objective: equality, development and peace. In the early 70s when the concept of Women Development (WID) emerged, then a thought process aimed at tying the question of the feminine gender to development, by showing the advantages that exist in this link, especially at the level of economic growth, showed how it was wise to "invest in women." This approach lays emphasis on the contributions that women could offer to development, rather than how development could improve the lifestyle of women. Furthermore, the concept of Women in Development led to another concept that of Gender and Development (GAD) and was understood to have aimed at a social rapport between the women and men.

To establish gender equality around the world, the United Nations Development Fund for Women (UNIFEM) was established as a separate fund within the United Nations Development Programme (UNDP) in 1984. The General Assembly instructed it to ensure women's involvement with mainstream activities. The ILO Convention No. 156 on `Workers with Family ' provides guidance on policies and measures needed to enable female and male workers to combine family and work responsibilities. To help remedy worldwide gender disparities, the UN's Millennium Development Goals prioritise gender equality and empowerment of women. It is necessary to evaluate the deeds of women's movements for peace in Africa in order to ensure that they form pressure groups to make themselves ' heard, by organising marches, to proclaim messages, and call upon the fighting factions to halt their carnage. Women are the main victims of crisis on the African continent and are aware of the important role they have to play for peace and so actively organise these needs at the national, regional and international levels to promote tolerance and peace. At the Organisation of African Union (OAU), the women section is particularly committed to these causes. It promotes African women and their participation in the decision making process, by organising conferences for groups of female members of governments as well as female related NGOs. This is done in collaboration with other bodies, especially women's units of the Economic Commission of Africa (ECA) and the United Nations Development Programme (UNDP). In the armed conflict areas such as Burundi, Liberia, Rwanda, Sierra Leone, Somalia and Sudan, women's movement for peace have been known to make spirited efforts. For example, in Liberia, even if women had no chance to take part in

negotiations and in meetings held by the different parties, all the women's associations and groups were mobilised and have succeeded in making declarations to the United Nations, the OAU and the Economic Community of West African States (ECOWAS). The goal of the Population Reference Bureau's Middle East and North Africa Programme was to respond to regional needs for timely and objective information, an analysis on the population, socio-economic and reproductive health issues. The programme raises awareness of these issues among decision-makers in the region and in the international community, in the hope of influencing policies and improving the lives of people living in the region. NGOs have been prime actors in educating women and, as a result, produce some of the greatest political leaders in the global society today. One such example is Marie Elise Gbedo who was the first African woman candidate for the Presidential Elections in Benin in 2001 and 2006. Programmes in Asia have started to publicly address the causes of trafficking in women in the area. The participants in the Asia/African Forum on the Economic Empowerment of Women, having met in Bangkok from July 16-18, 1997, acknowledged the progress made in implementing the Beijing Declaration and Platform for Action, adopted at the Fourth World Conference on Women, 1995; the Tokyo Declaration on African Development, 1993; the recommendations of the first and second Asia/Africa Forums in Bandung, 1994, and Bangkok, 1997; and, the work of the First Global Women Entrepreneurs' Trade Fair and Investment Forum in Ghana, 1996.

Challenges and Limitations Facing Women

Achieving gender equality, however, is a slow process, since it challenges one of the most deeply entrenched of all human attitudes. Violence against women of all kinds is routine. During an armed conflict or internal strife, the women are not exempted. She endures the same suffering as the whole population; be it mass execution, torture, arbitrary imprisonment, forced migration, taking of hostages, threats and intimidation. She is equally subjected to direct and indirect effects of hostilities such as bombings, famine and epidemics. Besides she is the single target for all kinds of sexual violence. However, comparison of estimated data demonstrate that Philippines and Vietnam, both in South East Asia, have the highest education level, highest rates of economic participation, and the lowest fertility rates (Chaudhuri, 2010). Cambodia has the highest female to male ratio. Pakistan and Nepal have lowest education. Pakistan and Bangladesh have the lowest economic participation rates and highest fertility rates. India has the lowest sex ratio (Chaudhuri, 2010).

Some of the challenges facing microfinance industry in Africa are: High cost of service delivery with poor infrastructure, regulatory policy issues and the need to develop institutional leadership. Because the infrastructure and communication technology remain largely underdeveloped in Africa, it is significantly more expensive for microfinance institutions (MFI) in Africa to operate compared to their peers in developing countries. Another challenge in Africa is policy making and government regulations, which vary in each country. Government regulations faced by MFIs are usually ambiguous and opaque. For instance in 2008, Kenya Women Finance Trust fought for increased transparency in regulatory policy by urging the government to approve and publish regulations which guide MFIs in the formalisation process (Janet, 2014). The Microfinance Act of 2006 of Kenya became operational on 2 May 2008 and allowed MFIs to register under it to take deposits. A low population density area where the number of women to form a viable group is inadequate also poses a great challenge. The situation is complicated by the unequal distribution of the family resources, which makes it difficult for women to raise the necessary savings and participate in a group. Thereby underlying the course of a good approach to solve the problems of the poor women in rural and disadvantaged areas of Africa to move out of their poverty levels. For this, the women must develop the capacity to generate and maintain their means of livelihood so as to increase their savings.

CARE, the global poverty fighting organisation, announced the start of its new `Pathways' programme on 23 February 2012. Pathways will enable 150,000 women farmers of small holdings and their families for over five years, living in Bangladesh, Ghana, India, Malawi, Mali and Tanzania to improve food security and implement a model which will improve their access to land, water, markets, agricultural training and services. The Pathways model is centered on the proven success of CARE's Village Savings and Loans Associations, and will work with community-based savings and producer organisations to build their capacities and skills for additional sustainable agricultural activities and markets. Technology helps women increase their productivity as well as launch income-generating pursuits and entrepreneurial ventures. These kinds of outcomes empower women to become stronger leaders and to contribute more effectively financially to their families, communities and countries.

The challenges of gender inequality in society at large are:

- In Ghana as in many other countries, women's life prospects are hampered by inequalities in gender relations. Although not all women are uniformly affected by this situation, only a minority of women are able to break into the male dominated professions and activities.
- The absence of women from political structures is serious because they represent the most important areas of decision making in society.

Forced marriage and bride-burning are still prevalent in the Asian sub-continent. A pregnant woman in Africa is 180 times more likely to die of pregnancy complications than in Western Europe. India and China, with the fastest economic growth rates, also have the highest number of missing girls, so economic growth does not guarantee gender equality or security (Beneria, 2007; Elson, 2006; Harcourt, 2010; Molyneux and Razavi, 2006). Because of the society's perception of a woman's place is the home, some women are not aware of the existence or availability of other sources of finance.

Economic development efforts to combat poverty can only succeed if women are part of the solution.

Policy Recommendations

Empowering women requires much more than providing access to health care, education and financial resources. In addition to improving their own health, knowledge and skills, women must also contend with social structures, cultural traditions and personal relationships that affect their success. Empowerment is a process by which those who have been denied power gain power, in particular, the ability to make strategic life choices. For women, these could be the capacity to choose a marriage partner, a livelihood, or whether or not to have children. Globalisation has greatly improved the lives of women worldwide, particularly the lives of women in the developing world. There have been some positive changes in some key indicators of women's empowerment particularly in enrolments at the primary education level and to some extent in the secondary and tertiary levels and increased participation in national parliaments and in the labour force. To a lesser extent there has also been a decline in maternal mortality and fertility and increase in contraceptive use. However, the changes vary across regions—with South Asia and sub-Saharan Africa showing the greatest gaps—and within countries urban and rural poor, ethnic minorities, and older and disabled women fare worse on all indicators. Training community-based health care providers has also been successful in addressing basic health care as well as supporting HIV/AIDS patients in South Africa and India (Desai, 2010). Bangladesh performs relatively well on economic participation, Malaysia on health and well-being (Lopez-Claros and Zahidi, n.d). But the great challenges remain. Despite having ratified the Beijing Convention for the Elimination of All Forms of Discrimination against Women, most of these nations lack a coherent strategy for empowering women. Many people especially girls are still excluded from education, fertility and employmentand the important elements in women's empowerment.

- The woman still has to be ready to fight and to seize the opportunities offered by the democratic process to occupy positions of their choice to decide their future.
- It is necessary to firmly support women NGOs that are emerging and women entrepreneurs because they indicate that women are agents for development.
- It is important to encourage the establishment of mechanisms to facilitate the revitalisation of positive socio-cultural values and conflict prevention at national levels with provisions giving priority to women.
- Make the empowerment of women and girls a priority of development policy.
- Increase gender equality in terms of access to and control over land and property rights.
- Women's rights should be made known and enforced.
- Empowering women requires changing perceptions of women's roles in family and society.
- Establish networks of female entrepreneurs, gender-based non-governmental organisations, women in the labour force and government officials from Asia and Africa.

To empower a woman, it is imperative to ensure her: economic participation, economic opportunity, political empowerment, educational attainment, health and well-being. However, women's economic empowerment is the most important factor contributing to equality between women and men.

Conclusion

No country either in Asia or in Africa has yet managed to eliminate the gender gap. Women have the potential to change their own economic status, as well as that of the communities and countries in which they live. It is time to increase awareness of the need to empower women through measures to increase social, economic and political equity, and broader access to fundamental human rights, improvements in nutrition, basic health and education. Experience in developing countries of Asia and Africa show that empowering women is a powerful strategy for reducing poverty and achieving other developmental goals. When women own property and earn money from it, they may have more bargaining power at home. This in turn can help reduce their vulnerability to domestic violence. When women are economically empowered, they raise healthier, better and educated families. Investing in women helps speed up the development of local economies and creates more equitable societies. Women can not only address and deal with their own issues, but with issues of the state, with issues of war and peace, with issues of their communities. Women are ready and eager to assume their rightful place in their societies, individually as well as collectively.

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