THE GENDER IMPLICATIONS OF FOREST DEGRADATION IN THE POOR HOUSEHOLDS

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Objectives

- To investigate the effects of environmental degradation on women's time allocation decisions.
- To examine the fortune of children—gender wise-- due to change in the time required for environmental resource collection by the female members in a family.
- To examine the impact on time devoted by women for the family due to the male members getting engaged in various public employment generating schemes.
- To assess women's participation in environmental resource management activities in the society.

HYPOTHESES (H_0)

- There has been no significant change in total time required for environmental resource collection in the households during the period 2005--2010.

- Resource availability in the forest does not affect time allocation decision of the households.

- There is gender equity in the family in sharing the additional time required for resource collection.

Profile

- Assam is a state in the North-east of India.
- Population: 2.57%(31.17 million) of India,
- Area: 2.4% (78,438sq.km.) of India
- Tinsukia is in the upper part of Assam,near the Himalayan ranges of hills.
- Area- 3790 sq.km. , Population- 1.3 million
- .9 million is rural. Sex Ratio- 940/1000.

Forest

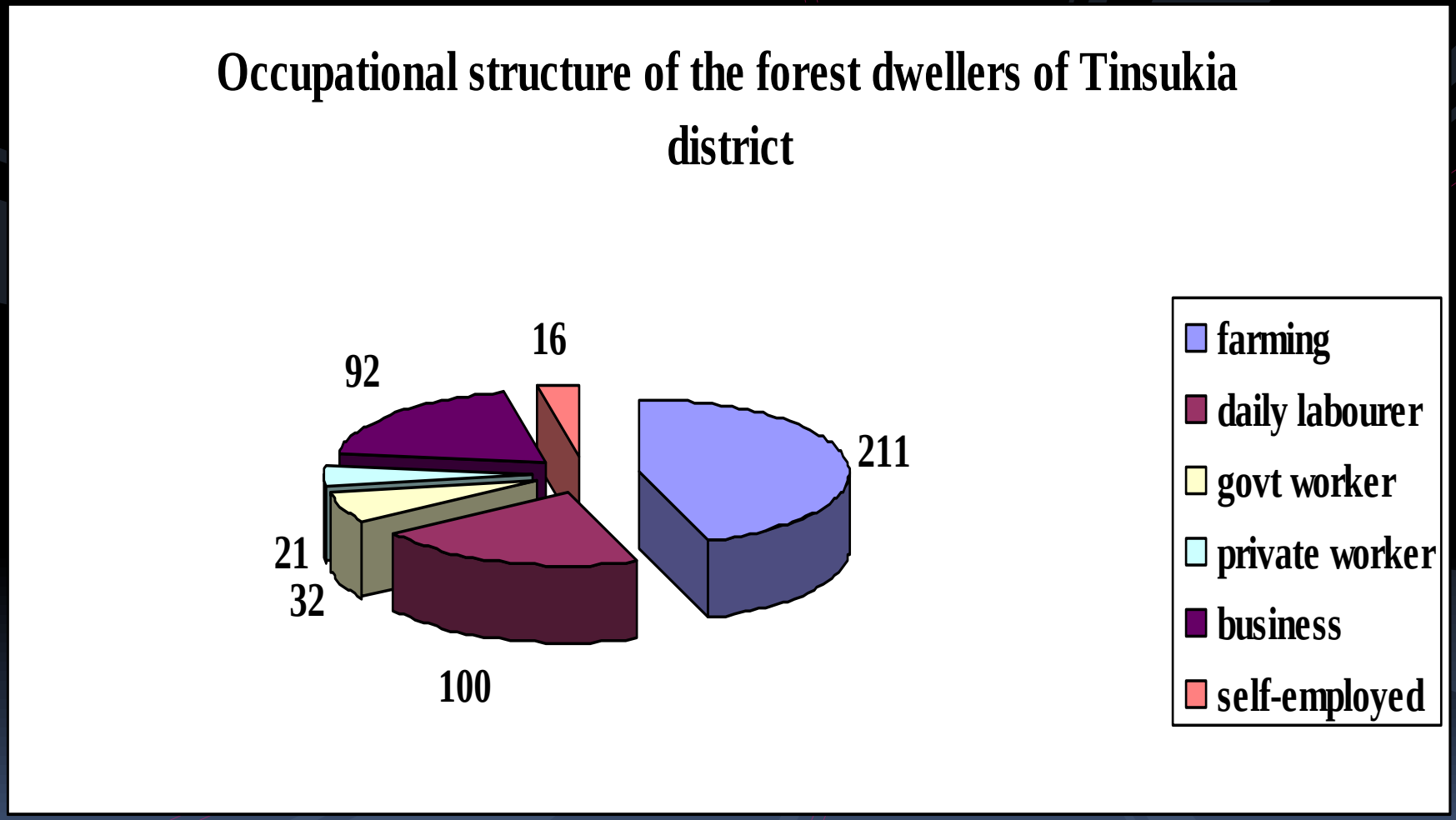
- Forest:Assam-2 mln hec, Tinsukia-.006 mln hec
- Tinsukia- 21 reserve forest
- 3 forest divisions(Tinsukia,Digboi & Doomdoma). In them no. of villages: 1138
- Only adjacent (5 kms from forest) villages were considered which are 20 nos.
- 4725 such households are there.
- Data size is 10% of universe i.e. 472.

Methodology

- Responsibility of food is thrust upon women in the poor households.
- Women in the study area collect substantial amount of food, fodder etc. from common property resources mainly forest.
- Data on forest degradation of this area is not available at secondary level.
- So additional time required over the study period, to reach the same forest have been used as proxies for forest degradation.

- Fortune of women is expressed in terms of curtailment of leisure time of women.
- Fortune of girl children is expressed by their school drop-out rate due to their sharing of work load of their mother and elder female members in the family.
- The impact on women due to husband getting engaged in public employment generating schemes are analysed in the same way.
- Women's environment awareness is measured by their participation in JFM meetings.

Profile


Occupational structure of the forest dwellers of Tinsukia district
16
92
211
21
32
100
farming
daily labourer
govt worker
private worker
business
self-employed

Literacy level of the forest dwellers of Tinsukia district

	Illiterate	Upto Class V	Class VI-Class X	Class X–Class XII	Graduation
Digboi	**13**	**100**	**220**	**55**	**24**
Tinsukia	**3**	**17**	**25**	**5**	**2**
Doomdoma	**1**	**3**	**4**	**0**	**0**

Objective 1:
To investigate the effects of environmental degradation on women's time allocation decisions

Time taken by the female members for resource collection before and after five years

Paired Samples Statistics	Mean	N	Std. Deviation	Std. Error Mean
Time required by female members for resource collection after 5 years	2.9206	466	.5885	0.02726
Time required by female members for resource collection before 5 years	1.5891	466	.3198	0.01481

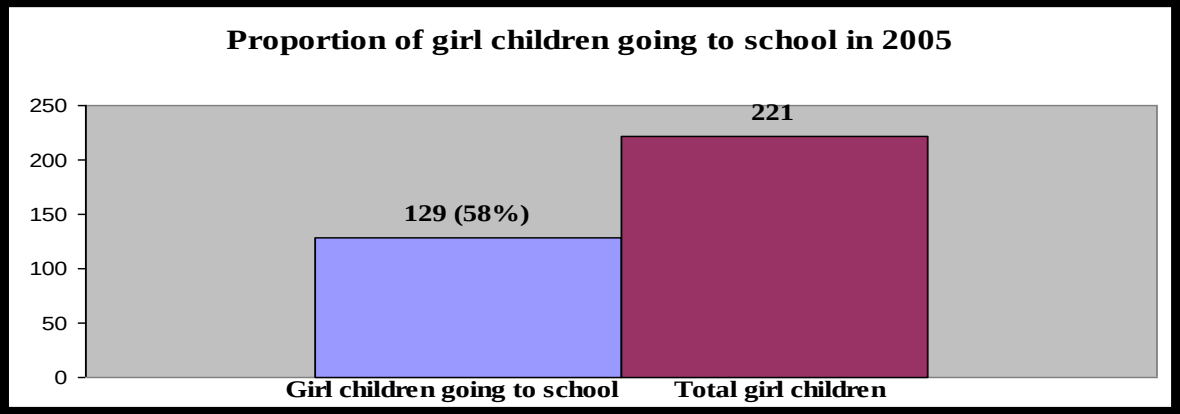
Hypothesis 1

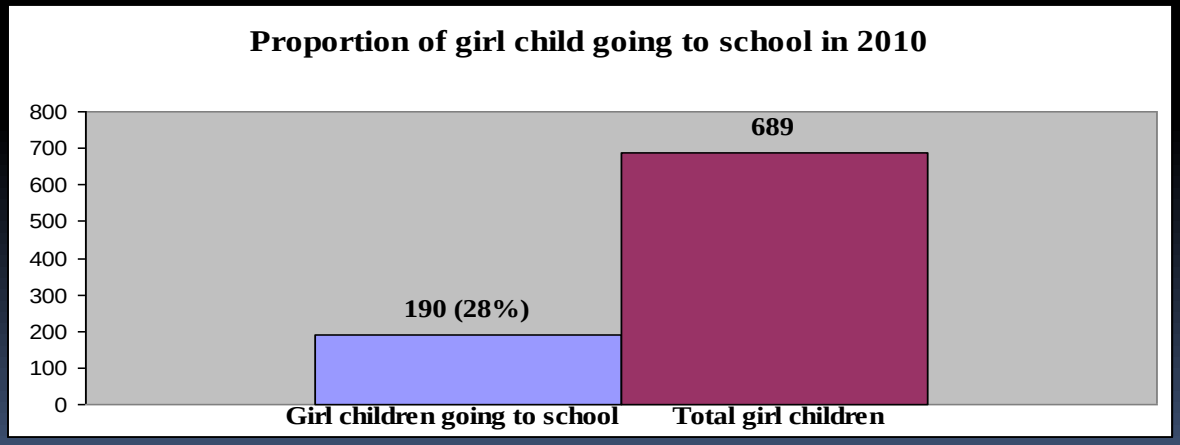
There has been no significant change in total time required for environmental resource collection in the households during the period 2005–2010

Pair Sample Test	Mean	Std. Deviation	Std. Error	Z-value	Df	Sig. (2-tailed)
Time taken by households for resource collection after five years – Time taken by the households for resource collection before five years	1.6126	0.6289	0.02955	54.577	465	0.000

The hypothesis is rejected at 5% level of sig. Hence women need to work more now having left with lesser time for leisure .

To examine the fortune of children -gender wise- due to change in the time required for environmental resource collection by the female members in a family.





Multiple Regression Analysis and findings

This objective has also been supported by a multiple regression model where the difference between the educational level of the girl children before 5 years and after 5 years has been given as below:-

$$Y_i = \beta_0 + \beta_1 FT_1 + \beta_2 PCI_2 + u_i$$

i=1, 2, 3… . . . 460 as we covered 460 households …… (1)

where,

Y_i = Educational level of girl children before 5 years

FT_1 = Female members' time for resource collection

PCI_2 = Per capita income of the household

and u_i = Random error term.

Variables	coefficients	Std. error	T value	Sig.
(Constant)	.876	.257	1.69	0.001
Female's time for resource collection	-.001	.046	3.13	0.000
Per capita income	.001	.000	10.22	0.000

Number of Observation = 460

R- Square = 0.19

F value = 52.26

Based on the above results, we fitted the following regression lines:-

$Y_i = .876 - .001(FT_1) + .001(PCI_2)$ ..... (2)

Results of the regression test of the impact of the educational level of the girl children after 5 years on female members' time for resource collection and per capita income of the household

Variables	coefficients	Std. error	T value	Sig.
(Constant)	.962	.128	3.41	0.000
Female's additional time for resource collection	-.145	.022	3.79	0.000
Per capita income	.001	.000	12.71	0.000

Number of Observation = 460

R- Square = 0.45

F value = 84.22

Based on the above results, we fitted the following regression lines:-

$Z_i = .962 - .145(FT_1) + .001(PCI_2)$ ..... (4)

Time available to the household members within the house before and after five years

Paired Samples Statistics	Mean	N	Std. Deviation	Std. Error Mean
Female Before 5 years	15.05	466	.3268	0.015
After 5 years	14.28	466	.4934	0.023
Male Before 5 years	16.00	466	. 3268	0.015
After 5 years	15.90	466	.1247	0.0578

Objective 3

To examine the impact on time devoted by women for the family due to the male members getting engaged in various public employment generating schemes.

Multiple Regression Analysis and its findings

$$M_i = \beta_0 + \beta_1 FT_1 + \beta_2 EM_2 + u_i$$

i=1, 2, 3… . . 472' as we covered 472 households

… (5)

Where,

M_i = Time devoted for family by the female members

FT_1 = Female's additional time for resource collection

EM_2 = Employed male members

and u_i = Random error term.

Hypothesis 3

There is no gender bias in the family in sharing the additional time required for resource collection

Paired samples Z-Test

Diff. in time efore & after 5 yrs.	Mean	Std. Deviation	Std. Error Mean	Z	df	Sig. (2-tailed)
Male -	0.10	.133	0.006	5.396	465	.000
Female	0.774	.366	.017	45.600	465	.000

We find that there is a statistically significant difference between the two paired values at 5% level of sig.

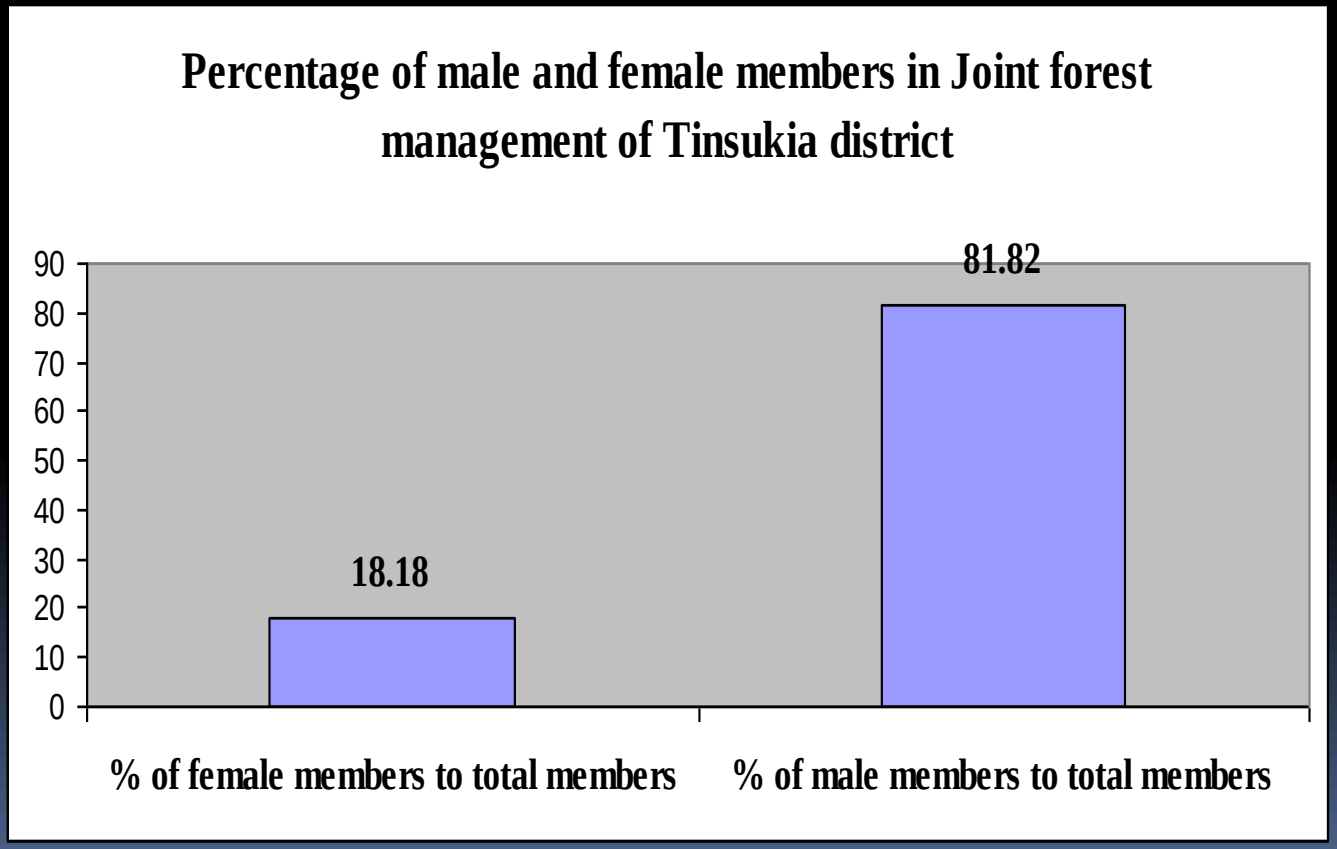
Variables	coefficients	Std. error	T value	Sig.
(Constant)	-.002	.010	-.24	0.010
Female's additional time for resource collection	-.890	.006	-16.49	0.000
Male employed	-.004	.009	-.42	0.050

Number of Observation = 466
R- Square = 0.83
F value = 79.18
Based on the above results, we fitted the following regression lines:-

$M_i = -.002 - .890(FT_1) - .004(EM_2)$…….. (6)

Objective 4

To assess women's participation towards environmental resource management activities in the society



Logistic Regression Analysis and its findings

This objective has also been supported by a regression model where the awareness about forest resource management among the forest women of Tinsukia district is shown and given below:-

$$A_i = \beta_0 + \beta_1 PCI_1 + \beta_2 FT_2 + \beta_3 AF_3 + \beta_4 E_4 + \beta_5 AM_5 + u_i$$

i=1, 2, 3… . . . 472 as we covered 472 households

…… (7)

where,

A_i = Awareness of the female members ('Yes'-1, 'No'-0)

PCI_1 = Per capita income of the household

FT_2 = Female's additional time for resource collection

AF_3 = Adult female/Total female

E_4 = Educational level of the female member

AM_5 = Adult family member/Total family member

and u_i = Random error term.

Variables	coefficients	Std. error	T value	Sig.
(Constant)	-2.880	.036	-79.34	0.000
Per capita income	.001	.000	43.32	0.000
Female's additional time allocation	-.662	.014	-46.17	0.000
Adult female/Total female	.220	.046	4.78	0.000
Highest education level	1.761	.036	48.51	0.000
Adult family member/Total family member	-.662	.065	-10.21	0.000

Number of Observation = 472
R- Square = 0.73
F – value = 50.80
Based on the above results, we fitted the following Logit model as such:-

$$A_i = -2.880 + 0.001(PCI_1) - 0.662(FT_2) + 0.220(AF_3) + 1.761(E_4) - 0.662(AM_5) \quad \ldots\ldots\ldots\ldots\ldots (8)$$

Policy prescriptions:-

- 1. Various economic activities should be introduced as a way to encourage the conservation of specific trees and shrubs that help to combat environmental degradation.
- 2. Encouragement should be made for further research and information from which we can obtain a solid understanding of the roles and relationship of human with environmental resources, as well as their rights and roles in resource planning and management.
- 3. Awareness-raising education and technology should be aimed at, which makes clear understanding of the environmental issues and economic status of the communities as a way of combating deforestation.

- 4. Affordable energy to rural communities including cleaner, efficient and renewable energy services for sustainable rural development should be provided.
- 5. Policies, legislation and institutional capacity building support should be given to the rural poor to enable their effective participation in decision-making and planning at local level and implementation of sustainable rural development.
- 6. Policy support is needed for the small farmers/rural producers to ensure a fair playing field in national and local markets in order to enhance their livelihoods and environmental sustainability.
- 7. Increased food availability/affordability through equitable and efficient distribution systems is required.
- 8. Capacities should be built for rural poor regarding sustainable natural resource management.

- 9. Proper resource-use management with special attention to local priorities should be made where women's authority over resource management should be promoted and valued so that local women can be empowered and supported.
- 10. Full participation of rural women, especially the most disadvantaged and the voiceless women, in planning and decision-making at all levels should be encouraged.

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