AN ECONOMIC ANALYSIS OF COMMON PROPERTY RESOURCES AND LIVELIHOOD PATTERNS AMONG RURAL POOR IN TAMIL NADU: A COMPREHENSIVE STUDY

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Abstract

In the present context, Environmental quality that rural poor livelihoods depend on for their daily sustenance, environmental issues are currently ranked quite highly when compared to social issues. Resources from common property are crucial for rural lives and their survival. The issue in the present situation is that local community members face numerous obstacles on a daily basis relating to caring for livestock and taking risks at the local and regional levels. Both primary and secondary data provide the entire basis of the current study. The study's key findings indicate that 88 percent of the sample respondents in the study villages depend on common property resources, whereas 31 percent use those resources to manage cattle, 29 percent for employment, and 29 percent to gather materials from CPR land in the study area. However, between 39 and 42 percent of the land in the study villages has been degraded due to CPR. Encroachment, land being converted to homes, and other factors in the study villages are the main causes of lower CPRs.

Keywords: *Environmental quality, livelihoods, common property resources, encroachment, livestock, survival.*

Introduction

A natural resource is very important resources for rural poor sustenance for their entire life. The common property resources (CPRs) form a crucial part of environmental resources. Resources accessible to and collectively owned or managed by an identifiable community and on which no individual has exclusive property rights (NSSO 2000).The common property resources have more essential of rural pockets in order to rural poor people. In India CPRs include forest, village pasture and grazing grounds, village forests and woodlots, protected and unclassified government forest, waste lands, common threshing grounds watershed drainage, ponds and tanks, rivers, rivulets water reservoirs, cannel and irrigation channels. Common property resources are the primary sources of livelihood for the millions of rural and urban people because the CPRs take care of the food needs, provides space for housing, offers employment, fuel wood, fodder, and other income sources for the rural poor in developing countries. According to jodha (1990) reveals that to contribute to the production and consumption needs of rural communities in several ways. The proportion of poor households depending on fuel, fodder and food items from CPRs ranged between 84 and 100 percent in different villages.

Major aim of the study:

The study is currently pursuing three primary objectives:

1. To assess the status of common property resources in the study area through the analysis of secondary data and per capita availability of these resources.
2. To determine the significance of common property resources in supporting the livelihoods of rural communities within the study region.
3. To investigate the factors leading to the decline of common property resources and evaluate their consequences on the local community within the study area.

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Methodology of the study

The current study is a comprehensive examination based on both primary and secondary data sources. Secondary data was obtained from the Ministry of Agriculture and Economic Statistics in India, as well as from various journals, books, and other relevant publications. Primary data was collected from 305 selected respondents through the use of pre-tested interview schedules within the state. Specifically, two taluks, Melur and Kallikudi, were chosen for primary data collection, with each taluk encompassing two revenue villages: Kidaripatti and Udupakkulam in Melur taluk, and M. Puliyankulam and Valayankulam in Kallikudi taluk, all located in the Madurai District of Tamil Nadu. These villages were selected due to their abundant common property resources, which are a focal point of the researcher's investigation. The literature review incorporated findings from well-regarded journals, books, and articles related to various facets of common property resources. The study employed a cross-sectional methodology, and the analytical approach included the use of simple percentage calculations, cross-tabulation, linear correlation, as well as ANOVAs to address both quantitative and qualitative aspects of the study.

Hypothesis of the study:

1. Ho: There is no relationship between CPRs dependence and CPRs reduction in the study area.

Ha: There is significant relationship between CPRs dependence and CPRs reduction in the study area.

2. Ho: there is no relationship between CPRs reduction and livestock stock maintenance of rural poor in the study area.

Ha: there is significant relationship between CPRs reduction and livestock stock maintenance of rural poor in the study area.

Review of literature (in various aspects)

Dependence of CPRs and income from CPRs

According to Jodha (1989) has found out that CPR based activities provided employment for 43 to 89 days per household, 18 to 31 day per adult workers among the poor households during 198283. The cattle grazing and fuel collection have identified as the important contributions of common lands. It has been revealed that 45 to 76 percent of the households using common lands for grazing purpose, and 35 to 46 percent for fuel wood collection (S.Iyangar (1989). According to pasha (1992) has found that CPRs contributing about 63 percent to 72 percent fuel wood and fodder consumption in three villages of Karnataka state respectively. Sharma (1993) has identified the CPRs were contributed about 67 percent of the fuel wood consumption in higher income groups in the area of Aravalli region of Haryana. According to Smith and Japal (2000) has study conduct of Common property resources have great importance for the poor and women in particular. Certain classes of common property resources are also among the degraded land in Asia. They are study to highlighted common causes of poverty and environmental deterioration. Mahesh Kumar Gaur (2019) indicates that CPRs whereas the fuel wood collections are done during pre-monsoon (dry) period and again during the post-Spring season when litter fall from the trees is at a maximum. The average annual income of the landless, marginal, small and semi-medium households ranges from Indian Rupees 2000 to 7000.

Risk mitigation of rural poor livelihood sustenance

Problems of Local commons:

The rural community, in particular the rural poor, have faced many problems related to the collection of materials, maintaining the livestock, which is grazing time, and encroachment problems which are prevalent in the study villages. The researcher has identified several problems related to CPRs and the rural poor in particular. For instance, around 82 percent of the total population viewed that over the collection period they faced a lot of problems in the study villages. Nearly 93 percent of respondents faced the problem of CPR collection in the selected area. According to Suresh Kumar (2003) has finds that in India the availability of CPRs land resources has been declined from 28.67 percent to 28.67 percent during the period of 1970-71 to 1993-94. Further, the CPR lands were

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estimated to be approximately 75 million hectares. In national level CPR lands occupy about 23 percent of the total geographical area.

Data analyses and interpretation from primary and secondary Data

The following chapter consists of data analysis and interpretation of the collection of primary information from the sample respondents in the study area. The data was analyzed for both qualitative and quantitative variables in the results of the study. The researcher has followed some strategies and techniques for the collection of primary data from the sample respondents. The researcher has undertaken a different analysis method with regard to dependent and independent variables, likewise for more appropriate results from the sources of primary data. In this situation, the results of the study are more correlated with the rural poor and CPRs in the study area than with maintaining livestock, dependence of CPRs, causes for reduction in CPRs, etc.

Status of CPRs in Tamil Nadu state and Madurai District

Common property resources are resources that are accessible to the entire community and to which no individual has exclusive property rights, and they are owned and governed by an institution with private and public resource rights. The CPRs in Tamil Nadu society generally are natural resources and cultural heritage. In the rural environment of Tamil Nadu, both ecological and socio-economic sustainability are largely determined by the status of CPRs' availability in the community.

Table 1 Status of CPLRs in Tamil Nadu during 1998-99 to 2020-21 (in hectares)

Year	Forest	Barren and Unculturable land	Permanent pasture and other grazing lands	Culturable wasteland	Fallow other than current fallows	TGA
1998-1999	2140342 (16.46)	477517 (3.67)	123451 (0.95)	348497 (2.68)	1110728 (8.54)	13005800
1999-2000	2133654 (16.41)	475850 (3.66)	122585 (0.94)	348640 (2.68)	1139522 (8.76)	13005800
2000-2001	2133617 (16.41)	475821 (3.66)	122953 (0.95)	352154 (2.71)	1228010 (9.44)	13005800
2001-2002	2131726 (16.39)	477381 (3.67)	118463 (0.91)	386806 (2.97)	1408944 (10.83)	13005800
2002-2003	2131604 (16.39)	478237 (3.68)	118313 (0.91)	389289 (2.99)	1491311 (11.47)	13005800
2003-2004	2122041 (16.32)	509378 (3.92)	113474 (0.87)	379439 (2.92)	1862861 (14.32)	13005800
2004-2005	2122069 (16.32)	509275 (3.92)	113563 (0.87)	374026 (2.88)	1704139 (13.10)	13005800
2005-2006	2110703 (16.23)	503255 (3.87)	110309 (0.85)	368661 (2.83)	1518008 (11.67)	13005800
2006-2007	2106113 (16.19)	502404 (3.86)	110293 (0.85)	354264 (2.72)	1493069 (11.48)	13005800
2007-2008	2105818 (16.19)	492229 (3.78)	110127 (0.85)	346889 (2.67)	1493069 (11.48)	13005800
2008-2009	2105906 (16.19)	491908 (3.78)	110009 (0.85)	333441 (2.56)	1497549 (11.51)	13005800
2009-2010	2126672 (16.35)	490335 (3.77)	109924 (0.85)	326445 (2.51)	1542137 (11.86)	13005800
2010-2011	2125475 (16.34)	489253 (3.76)	109568 (0.84)	330958 (2.54)	1580173 (12.15)	13005800
2011-2012	2125475 (16.34)	488557 (3.76)	109568 (0.84)	329117 (2.53)	1594305 (12.26)	13005800

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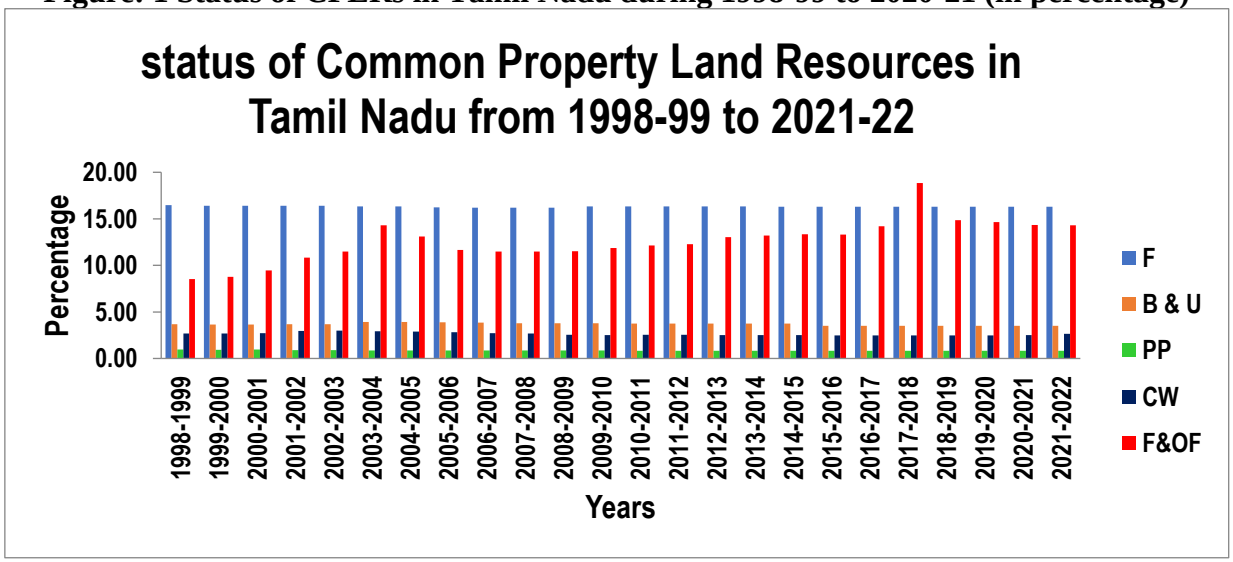
2012-2013	2125475 (16.34)	488512 (3.76)	109568 (0.84)	328026 (2.52)	1695689 (13.04)	13005800
2013-2014	2125475 (16.34)	488460 (3.76)	109567 (0.84)	328326 (2.52)	1717831 (13.21)	13005800
2014-2015	2125475 (16.30)	488739 (3.76)	107925 (0.83)	325196 (2.50)	1733589 (13.33)	13033116
2015-2016	2156574 (16.30)	457635 (3.52)	107768 (0.83)	324131 (2.49)	1729138 (13.30)	13033116
2016-2017	2156574 (16.30)	457671 (3.52)	107768 (0.83)	322706 (2.48)	1847525 (14.21)	13033116
2017-2018	2156574 (16.30)	457613 (3.52)	107717 (0.83)	319870 (2.46)	1933169 (18.86)	13033116
2018-2019	2156574 (16.30)	457580 (3.52)	107712 (0.83)	323405 (2.49)	1930519 (14.84)	13033116
2019-2020	2156574 (16.30)	457414 (3.52)	107673 (0.83)	321968 (2.48)	1906243 (14.66)	13033116
2020-21	2156574 (16.30)	457414 (3.52)	107643 (0.83)	325209 (2.50)	1864691 (14.34)	13033116
2021-22	2156574 (16.30)	457234 (3.50)	107640 (0.82)	346365 (2.65)	1863651 (14.29)	13033116

Source: Directorate of Economics & Statistics, Ministry of Agriculture, Govt. of India

The above table indicates that the evolution of land use patterns over a span of 24 years, from 1998-1999 to 2021-2022, with a focus on five specific land categories: Forest, Barren and Unculturable land, Permanent pasture and other grazing lands, Culturable wasteland, and Fallow other than current fallows. During this timeframe, the availability of forested land experienced a slight decrease, declining from 16.46 percent to 16.30 percent. Similarly, Barren and Unculturable land saw a reduction from 3.67 percent to 3.50 percent, and Permanent pasture land declined from 0.95 percent to 0.82 percent. Culturable wasteland also showed a marginal decrease from 2.68 percent to 2.65 percent within the same duration. Notably, there was a noticeable increase in the percentage of fallow land, which gradually rose from 8.54 percent in 1998-1999 to 14.29 percent in 2021-2022. These findings suggest a shift in land use dynamics, characterized by relatively stable forest cover and a noteworthy increase in fallow land, potentially reflecting changes in agricultural practices or land management strategies during this period.

Figure: 1 Status of CPLRs in Tamil Nadu during 1998-99 to 2020-21 (in percentage)



Source: Directorate of Economics & Statistics Ministry of Agriculture, Govt. of India

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The above diagram indicates that status of common property land resources in Tamil Nadu during the period of 1998-99 to 2021-22.

Table : 2 Per capita availability of CPLRs and PPRs in Tamil Nadu (in Ha)

Year	CPLRs	PPLRs	Total Population
2000-01	4312555 (0.0691)	8678767 (0.1390)	62405679
2010-11	4635427 (0.0642)	8397709 (0.1163)	72147030

Source: Directorate of Economics & Statistics, Ministry of Agriculture, Govt. of India & Census of Tamil Nadu 2001 and 2011.

Table (2) the data provided offers insights into the per capita availability of Common Property Land Resources (CPLRs) and Private Property Land Resources (PPLRs) in Tamil Nadu, measured in hectares (Ha), for two distinct years, 2000-01 and 2010-11. In 2000-01, each individual had access to approximately 0.0691 hectares of CPLRs and 0.1390 hectares of PPLRs, with a total population of 62,405,679. However, over the subsequent decade, a shift occurred in per capita availability. By 2010-11, the per capita availability of CPLRs had decreased to 0.0642 hectares, and that of PPLRs decreased to 0.1163 hectares, while the total population had grown to 72,147,030. These changes suggest a potential challenge in land resource distribution relative to the expanding population, highlighting the need for in-depth analysis to comprehend the implications of these shifts in land resource availability on land utilization, resource management, and their consequences for Tamil Nadu's population and economy.

Table: 3 status of CPLRs in Madurai district from 998-99 to 2019-20 (in Hec)

year	Forest	Barren and Uncultivable	Cultivable Waste	Permanent Pasture land	Fallow other than current fallow	TGA
1998-1999	50452 (13.48)	15783 (4.22)	5275 (1.41)	210 (0.06)	23122 (6.18)	374173
1999-2000	50452 (13.48)	15799 (4.22)	5387 (1.44)	230 (0.06)	28384 (7.59)	374173
2000-2001	50452 (13.48)	15799 (4.22)	5332 (1.43)	230 (0.06)	37905 (10.13)	374173
2001-2002	50452 (13.48)	13201 (3.53)	5695 (1.52)	232 (0.06)	83291 (22.26)	374173
2002-2003	50452 (13.48)	13201 (3.53)	5695 (1.52)	232 (0.06)	94400 (25.23)	374173
2003-2004	48473 (12.95)	13201 (3.53)	5695 (1.52)	232 (0.06)	106562 (28.48)	374173
2004-2005	48473 (12.95)	13200 (3.53)	5683 (1.52)	232 (0.06)	92686 (24.77)	374173
2005-2006	48473 (12.95)	13154 (3.52)	7127 (1.90)	233 (0.06)	66317 (17.72)	374173
2006-2007	48473 (12.95)	13154 (3.52)	6855 (1.83)	233 (0.06)	71741 (19.17)	374173
2007-2008	48473 (12.95)	13160 (3.52)	6498 (1.74)	233 (0.06)	65167 (17.42)	374173
2008-2009	48473 (12.95)	13031 (3.48)	6100 (1.63)	233 (0.06)	68500 (18.31)	374173
2009-2010	48473 (12.95)	13031 (3.48)	6115 (1.63)	233 (0.06)	79439 (21.23)	374173 (100)

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2010-2011	48473 (12.95)	13031 (3.48)	14446 (3.86)	233 (0.06)	76235 (20.37)	374173
2011-2012	48473 (12.95)	13031 (3.48)	14629 (3.91)	233 (0.06)	77390 (20.68)	374173
2012-2013	48473 (12.95)	13031 (3.48)	14618 (3.91)	233 (0.06)	80250 (21.45)	374173
2013-2014	48473 (12.95)	13031 (3.48)	14519 (3.88)	233 (0.06)	95436 (25.51)	374173
2014-2015	48473 (12.95)	13031 (3.48)	14446 (3.86)	233 (0.06)	88866 (23.75)	374173
2015-2016	48473 (12.95)	13031 (3.48)	14273 (3.81)	233 (0.06)	85001 (22.72)	374173
2016-2017	48473 (12.95)	13031 (3.48)	14270 (3.81)	233 (0.06)	92387 (24.69)	374173
2017-2018	48473 (12.95)	13064 (3.49)	14057 (3.76)	233 (0.06)	104827 (28.02)	374173
2018-2019	48473 (12.95)	13031 (3.48)	14269 (3.81)	233 (0.06)	88914 (23.76)	374173
2019-2020	48473 (12.95)	13031 (3.48)	14268 (3.81)	233 (0.06)	86175 (23.03)	374173
2020-21	48473 (12.95)	13031 (3.48)	14268 (3.81)	233 (0.06)	85836 (22.94)	374173
2021-22	48473 (12.95)	13031 (3.48)	14268 (3.81)	233 (0.06)	81153 (21.68)	374173

Source: Directorate of Economics & Statistics, Ministry of Agriculture, Govt. of India
Note: TGA- Total Geographical Area

The table (3) presents data on the availability of Common Property Land Resources (CPLRs) and Private Property Land Resources (PPLRs) in the Madurai district of Tamil Nadu, spanning the years from 1998-1999 to 2021-22. Notable changes in land resource availability are evident during this period. The availability of forest land declined from 13.48 percent to 12.95 percent, while barren and uncultivable land decreased from 4.22 percent to 3.48 percent. Cultivable wasteland saw an increase from 1.41 percent to 3.81 percent. In contrast, permanent pasture land and other grazing land remained consistent at 0.06 percent throughout the study period. Remarkably, the availability of fallow land other than current fallow land increased from 6.18 percent to 21.68 percent in the same duration. This data indicates a significant transformation in the land resource composition in the study area over the last two decades, with notable shifts in land utilization patterns, particularly the increase in fallow land.

Table:4 Per capita availability of CPLRs and PPRs in Madurai District (in Ha)

Year	CPLRs	PPLRs	Total Population
2000-01	109718 (0.1165)	264455 (0.2810)	940989
2010-11	152418 (0.1497)	221755 (0.2178)	1017865

Source: Directorate of Economics & Statstics, Ministry of Agriculture, Govt. of India & Census of Tamil Nadu, Madurai District 2001 and 2011.

Table (4) the data provided focuses on the per capita availability of Common Property Land Resources (CPLRs) and Private Property Land Resources (PPLRs) in Madurai District, measured in hectares (Ha), for two distinct years, 2000-01 and 2010-11, alongside the total population figures. In 2000-01, each individual in Madurai District had access to approximately 0.1165 hectares of CPLRs and a more substantial 0.2810 hectares of PPLRs, with a total population of 940,989. Over the decade

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that followed, there was a noticeable shift in per capita availability. By 2010-11, the per capita availability of CPLRs had increased to 0.1497 hectares, while that of PPLRs slightly decreased to 0.2178 hectares. Simultaneously, the total population of the district had grown to 1,017,865. These changes suggest a dynamic interplay between land resource distribution and population growth within Madurai District, highlighting the importance of understanding the implications of these shifts for land utilization, resource management, and the well-being of the district's inhabitants.

Figure 2: Per capita availability of CPLRs and PPRs in Madurai District (in Ha)

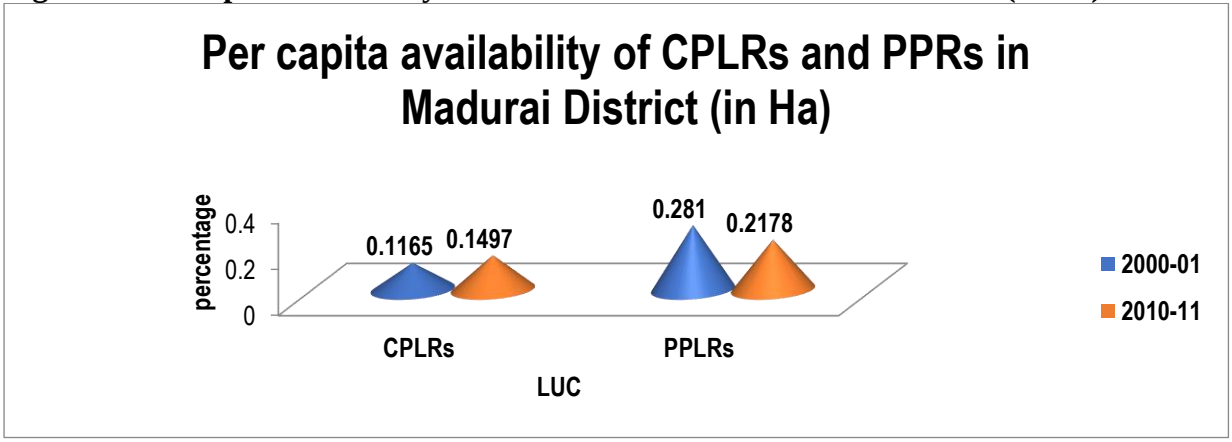

Table 5 Dependence on CPRs by sample respondents

Source	Dependence on CPR				Total
	Family condition is poor	Easy accessibility to the resources	Free of cost	No	
Land less	12 (3.93)	78 (25.57)	19 (6.22)	21 (6.88)	130 (42.6)
Landholders	41 (13.44)	89 (29.18)	32 (10.49)	13 (4.26)	175 (57.4)
Total	53 (17.37)	167 (54.75)	51 (16.71)	34 (11.14)	305 (100)

Source: Computed from Primary Data

Table (5) shows that 54.75 percent of sample respondents rely on CPRs for easy access to resources; 17.37 percent of respondents rely on CPRs for their family condition; 16.71 percent of sample respondents rely on CPRs for free collection materials; and the remaining 11.14 percent of sample respondents have no reliance on CPRs in the study area. For instance, according to Kannan (2011), about 73 percent of the population depends on CPRs for the purpose of livelihood sustenance in pudukottai district of Tamil Nadu.

Table: 6 Main Purpose of Dependent on CPRs

Source	Main purpose of dependent on CPR				Total
	Maintaining livestock	Employment opportunity	Free of cost for collection of material	Not dependent	
Land less	33 (10.81)	42 (13.77)	34 (11.14)	21 (6.88)	130 (42.6)
Landholders	61 (20.0)	46 (15.08)	55 (18.03)	13 (4.26)	175 (57.4)
Total	94 (30.81)	88 (28.85)	89 (29.17)	34 (11.14)	305 (100)

Source: Computed from Primary Data

In rural premises, common property resources are more essential and important for rural poor livelihood sustenance. In this context, table (6) explains that 30.81 percent of the sample respondents are mainly dependents on CPRs due to maintaining livestock; 29.17 percent of the sample respondents are mainly dependents on CPRs due to free of cost for collection of materials, 28.85 percent of the

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sample respondents are mainly dependents on CPRs due to employment opportunity from CPRs; and the remaining 11.14 percent of the sample respondents are not dependents on CPRs land in the study area.

Table: 7 Gathering resources from common property areas for the benefit of rural communities.

Attributes	Contribution of CPRs					Total
	Fuel wood collection	Water	Fuel & Fodder collection	Fuel & water	No contribution	
Land less	25 (8.1)	34 (11.14)	50 (16.39)	0 (0)	21 (6.88)	130 (42.6)
Landholders	47 (15.40)	26 (8.52)	77 (25.24)	12 (3.93)	12 (3.93)	175 (57.4)
Total	72 (23.5)	60 (19.66)	127 (41.23)	12 (3.93)	34 (11.14)	305 (100)

Source: Computed from Primary Data

Table (7) shows the rural poor's involvement in common property resource utilization within the study area. Specifically, 41.23 percent of the sampled respondents contribute to the collection of fuel and fodder, 23.50 percent solely engage in fuel wood collection, 19.66 percent participate in water retrieval from rivers, lakes, and canals, 3.93 percent are involved in both fuel and water collection, while the remaining 11.14 percent do not actively contribute to common property resources in the study area.

Table: 8 Opinion on CPRs Decline in the study village by sample respondents

	Opinion on CPRs decline		Total
	Yes	No	
Land less	109 (35.73)	21 (6.88)	130 (42.6)
Landholders	162 (53.11)	13 (4.26)	175 (57.4)
Total	271 (88.84)	34 (11.14)	305 (100)

Source: Computed from Primary Data

Table (8) reveals that opinion on CPRs declines in the study villages by sample respondents. It is estimated that 88.84 percent of the sample respondents' opinions are that CPRs have declined in the study area. And the remaining 11.14 of the respondents gave their opinion on whether they declined the CPRs in the study area.

Table 9: Purpose of Gathering Resources from Common Property Resources (CPRs) in the study area.

Source	Collection of material from CPRs land				Total
	Fully household uses	Partly selling in the market	Partly selling among the native dwellers	Others	
Land less	57 (18.68)	31 (10.16)	21 (6.88)	21 (6.88)	130 (42.6)
Landholders	100 (32.78)	43 (14.09)	7 (2.22)	25 (8.19)	175 (57.4)
Total	157 (51.46)	74 (24.25)	28 (9.1)	46 (15.07)	305 (100)

Source: Computed from Primary Data

The above table 9 shows the collection of materials from CPRs land by the sample respondents in the study villages. It is estimated that 51.46 percent of the respondents are using it for household purposes, 24.25 percent of the respondents are partly selling in the market, 15.07 percent of the

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respondents are using it for other purposes, and the remaining 9.1 percent of the respondents are using it for partly selling among the native dwellers in the selected study villages. For example, Pasha (1992) found that 77.2 percent and 71.3 percent of both poor and non-poor undertook fuel wood collection in the study area, respectively.

Table: 10 Sources of Collecting Fuel Wood in the study villages

Sources	Collection of Fuel wood			Total
	CPRs	Privately Owned	Others	
Land less	104 (34.09)	12 (3.93)	14 (4.59)	130 (42.6)
Land holders	134 (43.93)	7 (2.29)	34 (11.14)	175 (57.4)
Total	238 (77.48)	19 (6.22)	48 (15.73)	305 (100)

Source: Computed from Primary Data

The above table 10 pointed out sources of collecting fuel wood in the study villages. The majority of the sample respondents 77.48 percent are collecting fuel wood from CPRs land, 15.73 percent are collecting fuel wood from other areas, and the remaining 6.22 percent are collecting fuel wood from private areas.

Table: 11 Purpose of Having Livestock in the study villages

Source	purpose of having livestock				Total
	Earning income	Employment opportunity	Necessary purposes	others	
Land less	33 (10.81)	56 (18.36)	27 (8.85)	14 (4.59)	130 (42.6)
Landholders	93 (30.49)	32 (10.49)	38 (12.45)	12 (3.93)	175 (57.4)
Total	126 (41.31)	88 (28.85)	65 (21.31)	26 (8.52)	305 (100)

Source: Computed from Primary Data

Income plays an important role in the rural poor's sustenance, in particular the standard of living in the rural pockets. On this occasion, table 8 reveals that 41.31 percent of the sample respondents are maintaining livestock for the purpose of earning income, 28.85 percent have employment opportunities, and 21.31 percent of the sample respondents are for necessary purposes like household purposes, with the remaining 8.52 percent of the respondents having other reasons for maintaining livestock in the study villages.

Table: 12 Reasons for Reduced Livestock in the study villages

Source	Reason for Reduced livestock				Total
	Unavailable fodder	Encroachment of CPRs land	Lack of Rainfall	Others	
Land less	33 (10.81)	32 (10.49)	7 (2.29)	58 (19.01)	130 (42.6)
Landholders	46 (15.08)	74 (24.26)	14 (4.59)	41 (13.44)	175 (57.4)
Total	79 (25.90)	106 (34.75)	21 (6.88)	99 (32.45)	305 (100)

Source: Computed from Primary Data

The rural people have faced many problems in maintaining livestock in the study villages. In this situation, Table (12) clearly explains that the majority of 34.75 percent of respondents mentioned the encroachment of CPRs land, 32.45 percent of the sample respondents said that for other reasons, 25.90 percent of the respondents said that the unavailability of fodder was the remaining 6.88 percent of the respondents clearly mentioned the lack of rainfall in the study area.

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Table: 13 Reason for Reduced CPRs land in study villages

Sources	The opinion given by the respondent of the reason for reduced CPRs land			Total
	Encroachment	Converted to housing area	others	
Land less	45 (14.75)	48 (15.73)	37 (12.13)	130 (42.6)
Land holders	73 (23.93)	48 (15.73)	54 (17.70)	175 (57.4)
Total	118 (38.68)	96 (31.47)	91 (29.83)	305 (100)

Source: Computed from Primary Data

The above table implies that the reason for reduced CPRs land in the selected study villages. It is very clearly shown in the above table that the main reason for the reduction of CPRs land is encroachment in selected study villages in the proportion of 38.68. Another reason is the converted to housing area in the proportion of 31.47 and the remaining 29.83 percent of CPR reduction, which is the reason for others in the selected study villages.

Hypothesis testing 1

Hypothesis testing is a fundamental and widely used statistical technique that allows researchers and analysts to draw conclusions about populations based on sample data. It is an essential part of the scientific method and plays a crucial role in various fields, including science, business, healthcare, and social sciences. The main objective of hypothesis testing is to evaluate and test hypotheses, which are statements or claims about the characteristics of a population or a phenomenon.

Table 14 Correlation between two variable related with CPRs

		dependent on CPR	CPR decline
dependent on CPR	Pearson Correlation	1	.851**
	Sig. (2-tailed)		.000
	N	305	305
CPR decline	Pearson Correlation	.851**	1
	Sig. (2-tailed)	.000	
	N	305	305

**. Correlation is significant at the 0.01 level (2-tailed).
source: computed from primary data

The provided correlation data indicates a strong and highly statistically significant positive relationship between the two variables: "dependent on CPR" and "CPR decline." The Pearson correlation coefficient is 0.851 for both, and the significance level is very low at 0.01 (2-tailed). This suggests that there is a robust and positive linear association between these variables, meaning that as one variable (e.g., the dependency on CPR) increases, the other variable (CPR decline) tends to increase in a predictable and linear manner. The statistical significance indicates that this correlation is not likely due to random chance but reflects a genuine association in the data. However, it's important to emphasize that correlation does not imply causation, and further research is needed to understand the underlying factors driving this relationship.

Testing hypothesis

Null Hypothesis (H0): There is no significant correlation between "dependent on CPR" and "CPR decline" in the population.

Alternative Hypothesis (H1): There is a significant positive correlation between "dependent on CPR" and "CPR decline" in the population.

The significance level indicated in the data is 0.01 (2-tailed), which suggests that a correlation coefficient of 0.851 or more extreme is considered statistically significant at a 0.01 significance level. Therefore, you would test whether the correlation coefficient of 0.851 is significantly different from zero to determine if there is indeed a significant positive correlation. If the p-value associated with this

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test is less than 0.01, you would reject the null hypothesis in favor of the alternative, concluding that there is a statistically significant positive correlation between these variables.

Table 15 opinion on role rural poor to CPRs in the study area.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Private	27	1.2593	.44658	.08594	1.0826	1.4359
Forest	47	1.1489	.35987	.05249	1.0433	1.2546
Stall fed	18	1.0000	.00000	.00000	1.0000	1.0000
CPRs	195	1.0718	.25881	.01853	1.0352	1.1083
Others	18	1.3333	.48507	.11433	1.0921	1.5746
Total	305	1.1115	.31524	.01805	1.0760	1.1470

Sources: Primary data

The provided data summarizes descriptive statistics for different categories or groups, which seem to relate to a variable referred to as "CPRs." Each category, labeled as "Private," "Forest," "Stall fed," "CPRs," and "Others," is associated with a specific number of observations (N), mean values, standard deviations (Std. Deviation), standard errors (Std. Error), and 95% confidence intervals for the mean. The "Private" category, for instance, has a sample size of 27, and its mean value is approximately 1.2593, with a standard deviation of about 0.44658. The 95% confidence interval for the mean ranges from 1.0826 to 1.4359 respectively. Similarly, the other categories show their respective statistics. Overall, the "Total" row summarizes these statistics across all categories, with a total sample size of 305 and a mean value of approximately 1.1115. These statistics provide insights into the central tendencies and variability within each category, indicating differences in "CPRs" among the groups. For example, "Private" and "Others" have higher mean values, while "Forest" has a slightly lower mean value. These findings could serve as a basis for further analysis or decision-making, depending on the context of the data.

Hypothesis testing: 2

Table 16: CPR decline and live stock maintenance

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.072	4	.518	5.524	.000
Within Groups	28.138	300	.094		
Total	30.210	304			

Source: computed from primary data

The ANOVA (Analysis of Variance) test conducted on the data in Table 14 reveals statistically significant differences between groups when examining "CPR decline" and "livestock maintenance." The significant F-statistic (5.524) with a very low p-value (0.000) indicates that the means of these groups are not equal, suggesting that there are meaningful distinctions among these groups with regard to the variables being examined. In other words, the variations observed in the data are not likely due to random chance but are more likely to be attributed to actual differences in the groups. This ANOVA analysis provides valuable insights into the relationship between CPR decline and livestock maintenance.

Testing Hypothesis

Null Hypothesis (H0): There is no significant difference in the means of "CPR decline" and "livestock maintenance" across the groups.

Alternative Hypothesis (H1): There is a significant difference in the means of "CPR decline" and "livestock maintenance" across the groups.

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In this context, the null hypothesis suggests that there are no significant differences among the groups, while the alternative hypothesis posits that there are indeed significant differences in the means of "CPR decline" and "livestock maintenance" across the groups. The ANOVA test is used to determine whether the observed differences between the groups are statistically significant or if they could have occurred by chance. The low p-value (0.000) associated with the F-statistic in the table provides evidence to either reject the null hypothesis in favor of the alternative hypothesis, indicating that there are statistically significant differences among the groups when comparing these variables.

Conclusion of the study:

Common property resources are a form of crucial environmental resources. It plays a vital role in the lives of the rural poor, in particular, and local people in general. In recent decades, common property resources have continuously declined due to various reasons like environmental stress, commercialization, liberalization, population growth, encroachment, privatization, over exploitation, state intervention, ecological degradation, etc. The present study also very clearly explains that CPRs have declined in Madurai district, Tamil Nadu, and across the country. Further, the rural poor depend upon common property resources in the study area because the common property resources have provided more items like fuel wood, honey, fodder, timber, fibre, fish, water, and etc., at no cost. On the other hand, CPRs have provided employment opportunities, earned income, and availability of grazing land for the purpose of livestock maintenance in the study area. It is observed from this study that around 85 percent of the rural poor are dependent on common property land resources in the selected study villages.

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