



Comanagement:An Alternative Model for governance of Gairan(Grazing Land) In Maharashtra :A Case Study

Dr. Shashilala Gurpur,

Mr Yuvraj Patil, Prabhjyot Chhabra(III yr BBA LLB), Raghav Chakravarthy N.C. (III yr BBA LLB), Abhay Anturkar (III yr BBA LLB), Prashant Sivarajan (III yr BBA LLB), Abhijeet Phadkule (I yr LLM), Atul Jaybhaye (I yr LLM).

ABSTRACT:

An attempt is made, in this paper to highlight the lack of legal attention in addressing governance of Commons in India. Management of gairan (=grazing land), in Pune District, is identified for case study, to amplify the point. The study is a combination of empirical and doctrinal research. Comparison with the experiences in different legal systems and evolution of international legal norms on the theme are attempted to draw lessons from and to make a case for reforms in the Law in India. Comanagement is the proposed model for governance of grazing lands and a draft legislative bill is attempted as a culmination and logical conclusion of the study.

KEY WORDS: Grazing Lands, Governance, Co-management, Maharashtra ,Common Pool resources, Policy

A BROAD OUTLINE:

I.	Introduction.....	4
II.	Methodology used for the project.....	5
III.	What is common property?.....	6
IV.	Rights in common property resources.....	7
V.	Common property resources in India.....	10
VI.	Tragedy of commons.....	13
VII.	Existing Common Property Regimes.....	16
VIII.	Scheme of management of resources in India:	
	<i>a. Role of gram Panchayat in India.....</i>	<i>20</i>
	<i>b. Legislative framework.....</i>	<i>21</i>
	<i>c. Analysis of provisions of Maharashtra Land revenue</i>	
	<i>Code and the relevant Acts.....</i>	<i>25</i>
	i. Case study 1.....	28
	ii. Case study 2.....	31
IX.	Comanagement as an alternate model of governance :	
	<i>a. What is comanagement.....</i>	<i>36</i>
	<i>b. The proposed policy.....</i>	<i>41</i>
X.	Conclusion	
	<i>a. Recommendations.....</i>	<i>56</i>

APPENDICES

- I. APPENDIX 1: Table 1: Availability and Depletion of Common Pool Land Resources by Agro-Climatic Zones
- II. APPENDIX 2: Questionnaire used by us for the Case study 1 and Case study 2.
- III. APPENDIX 3: Methodology for the NSSO Survey of Common pool resources in India
- IV. APPENDIX 4: Table 2: Taluka wise Classification of Major Landuse in Pune District
- V. APPENDIX 5: Table 3: Talukawise Livestock in Pune District (As per census 1997).

Comanagement: An Alternative Model for governance of Gairan (Grazing Land) in Maharashtra A Case Study¹

I. INTRODUCTION

A common pool resource, such as a lake or ocean is a natural or man made resource from which it is difficult to exclude others or limit users and one person's consumption of resource units removes those units from those available to others.² Common pool resources often make substantial contributions to the livelihoods of rural people, especially small and marginal farmers, pastoralists and rural landless laborers. But unfortunately, Common pool resources have come under increasing pressure in recent decades, with the growth of human and livestock populations. A study conducted by NSS finds sufficient evidence of the depletion of common pool resource land both in terms of size and productivity.³ **(Refer to Appendix 1.)** The fact that our natural resources are depleting at such a fast rate, makes us ponder as to what is wrong with our policies? We undertake this study, so as to understand the various issues involved in the governance of these common pool resources and to analyze the pros and cons of the existing property regimes for their management. We have focused upon grazing land in Pune District, Maharashtra as a common property resource. The grazing Land is more popularly known as *gairan* i.e. is the pasture land for villagers used to graze the cattle in the villages. It is meant for community purposes and is a major source of livelihood for the villagers.

II. METHODOLOGY

For this research project, a survey was conducted based on Multi stage sampling design. The result of the same has been illustrated in the form of Two Case Studies which highlights the problems associated with the use of *gairan*. Questionnaire has been adopted as the tool for the research. **(Refer To Appendix 2 for the Questionnaire)**. This survey has been done in four Talukas namely Khed, Shirur, Haveli and Ambegoan. These Talukas were chosen on a certain criteria. Khed taluka and haveli Taluka have the second and third highest amount of land being used of Grazing Land. **(Table 2, Appendix 4)** and also Haveli Taluka has the highest number of livestock population and therefore more dependent on Grazing Land. **(Table 3, Appendix 5)**. The sites were also selected based on accessibility, relevance, availability of records and information, receptiveness of people. The research was done from a period of 20th January 2010 to 4th April 2010.

¹ Authored by: Prabhjyot Chhabra, Raghav N.C., Prashant Sivarajan, Abhay Anturkar, Abhijeet Phadkule, Atul Jaybhaye

² E. Ostrom, "Coping With Tragedies of the commons. Annual review of Political Science (1999), 493-535, 497.

³ Table 1 details the availability and depletion of common pool resource land by agro climatic zones for all India. These estimates of the rate of depletion are based upon the difference between the present area and the area that had existed five years ago.

III. WHAT IS COMMON PROPERTY?

The term common property as employed here refers to a distribution of property rights in resources in which a number of owners are co-equal in their rights to use the resource.⁴ It is also well established in informal institutional arrangements based on custom, tradition, kinship and social mores. The concept implies that potential users who are not the members of a group of co-equal owners are excluded.⁵

IV. RIGHTS IN COMMON PROPERTY RESOURCES:

Man's experience with the common ownership of natural resources started communal hunting and gathering societies. Obviously, within these societies the structure and function of resources regulating institutions were based on customs, taboos, and kinship rather than on formal relations such as legislation and court decisions which characterize more "advanced societies". Still, these institutions confer the same rights, i.e. equality of the right to use for members of the group and exclusion of others, as the more modern formal institutions.⁶ In the modern society, these different rights (strands of the bundle) may be distributed in various combinations among natural and legal persons, groups, and several publics, including many units of government. They define actions that individuals can take in relation to other individuals regarding some 'thing'.⁷ If one individual has a right, someone else has a commensurate duty to observe that right. Five property rights that are most relevant for the use of common-pool resources are access, withdrawal, management, exclusion, and alienation. Firstly, Right to Access (The right to enter a defined physical area and enjoy non subtractive benefits; Secondly the right to Withdrawal: The right to obtain resource units or products of a resource system; Thirdly the right to management: The right to regulate internal use patterns and transform the resource by making improvements.; fourthly the right to exclusion: The right to determine who will have access rights and withdrawal rights, and how those rights may be transferred; And lastly right to Alienation: The right to sell or lease management and exclusion rights.⁸

Multiple uses and interrelated rights are the order of the day. In fact, sets of resources are sometimes characterized by complementarity in use, the linkages between these uses giving rise to common property regimes of differing kinds. Institutions formalizing such combinations of common and private property rights continue to thrive as long as it is to the mutual advantage of the stakeholders. Examples are easily found in rural societies in the context of water bodies accessed for different purposes or by different groups of communities. Land situated in different parts of a watershed or a tank bed, can be used by different sets of right-holders at different times of the agricultural year. In parts of Tamil Nadu, landowners in the ayacut of a tank have prior right to the water for irrigation over landowners on the tank foreshore, even though the tank is treated as community property.⁹ It is common for nomadic communities to possess sheep penning rights on private farmland in parts of Karnataka, Gujarat and other parts of semi-arid India.¹⁰ Similarly, grazing rights on private land are accorded to pastoral communities after the harvesting of the monsoon

⁴ It should be noted that this concept, as employed here refers to the right to use the resources, but not to transfer heirs of a common owner become co-owners themselves only through their membership in the group (tribe, village, etc.)

⁵ S.V. Ciriacy Wantrup, Richard C. Bishop, "Common Property As a concept in Natural Resources and policy"

⁶ *Ibid.*

⁷ *Ibid.*

⁸ Schlager, Edella and Ostrom, Elinor (1992), 'Property Rights Regimes and Natural Resources: A Conceptual Analysis', **68** *Land Economics*, 249-262.

⁹ See the exhaustive account of tank management in Tamilnadu in Shah et. al. (1998).

¹⁰ Cincotta and Panagare (1993)

crop A complex mosaic of property rights regimes is therefore found to exist in different parts of the country¹¹.

Now if we explore the Concept of land Ownership in India, Access to land and its ownership in India can be viewed in a number of alternative ways. Ownership of land is vested in private individuals, the state and its agencies including departments (such as the forest department) and local bodies such as panchayats. Some land is under the jurisdiction of the government including the local self- governing units called 'Panchayat'. The panchayats regulate the use of pasture land in general whereas all barren and wasteland, under non agricultural use and cultivable waste is classified as revenue land.

Individuals or groups hold in private ownership agricultural land of about 143 million hectares in a total geographic area of 328 million hectares. About 75 million hectares of land is under the legal jurisdiction of the forest department. However, peoples' rights to access exist on some of these lands.¹² These rights came to be known as *Nistar Rights*. *Nistar* refers to the necessities in carrying on of the business of living. Land set apart for the exercise of *nistar* rights may be timber or fuel reserve; pasture ,grass, or fodder reserve; burial ground or cremation ground; goadhan or village site; encamping ground threshing floor; bazaar ;skinning ground; manure pit ;public purposes; such as school playground, parks, drains, and any other purposes that may be described.¹³ *Nistar* rights are different from the customary and easementary rights recorded in the *wajib-ul-arz*. This *wajib-ul-arz* is a record of customs in each village in regard to: right to irrigation; right of way; or other easementary right or right to fishing. It recognizes the right of the person who claims the rights either as licensee or as from the record of rights or rights based on custom from time immemorial.

Cow being the backbone of rural life and economy in India, care was taken for their well-being and uplift. Grazing areas and grass lands (*gochar Bhumi*) were kept reserved in abundance everywhere. People used to donate their lands to *gaushalas* on auspicious occasions so that cows may have sufficient land for grazing. Thus the entire culture of ancient India was 'Gow-Sanskriti' or Culture based on cow. Common pastures find a reference under Section 18 of the Indian Easements Act, 1882, wherein the right to graze cattle on a common pasture finds place as a customary easement. Even the courts in India in the case of *The Secretary of State for India v Mathurabhai*¹⁴ has recognized the custom of grazing cattle on a government field.

V. COMMON PROPERTY RESOURCES IN INDIA

Common pool resources in land are estimated to be about 70 million hectares in the major states of India.¹⁵ Common activities based on CPRs include the collection and sale of: firewood, leaves made into plates and cups, fruits, grass for fodder, and grass for thatching, honey and fish. Grass and tree fodder may also be fed to small ruminants, which can be a significant source of income, especially for the poor. Animal husbandry is also dependent on pasture land. One way in which CPRs contribute to rural livelihoods is by serving as a source of forage for livestock. Forage from CPRs may make both direct and indirect contributions: it contributes directly by helping to sustain people's animals, thereby providing them

¹¹ Kanchan Chopra and Purnamita Dasgupta; "Common pool resources in India:evidence ,significance and New Management Initiatives. ";March 2002

¹² Kanchan Chopra and Purnamita Dasgupta; *Common pool resources in India:evidence ,significance and New Management Initiatives.*;March 2002

¹³ Dr. Usha Ramanathan, *Common Land and Common Property Resources*, Published in Praveen K. Jha. Ed., *Land Reforms in India-Issues of equity in rural Madhya Pradesh*(new Delhi: Sage, 2002),p. 204

¹⁴ 1890) ILR 14 BOM 213

¹⁵ Chopra, K. and Gulati, S.C. 2001. "Migration, Common Property Resources and Environmental Degradation: Interlinkages in India's Arid and Semi-arid Regions." Sage Publications India Pvt. Limited: New Delhi

with products (e.g. milk, meat) that they can consume or sell. It contributes indirectly insofar as the animals consuming the forage provide inputs to crop production, either in the form of manure or draught power.¹⁶ India with less than 2.5% of world's land mass supports 15% of its cattle, half the number of buffalo, 15% goat and 4% sheep¹⁷ on 16% of land throughout India. **(Refer to Graph 1 below)** Due to heavy livestock and human population pressure all types of grazing resources are fast degrading.

Also, the grazing resources are constantly shrinking because of conversion to cropland, leaving the pastoralists vulnerable to environmental extremes. There is a drastic de-facto reduction in common pool grazing lands in most states due to absence of a clear cut policy which leads to overuse, congestion, opportunistic behaviors, encroachment, privatization. This behavior can be explained by a concept called tragedy of commons which is discussed below.

Table 1: All INDIA SUMMARY FINDINGS FROM NSSO

1. Size of Common Property Land Resources (CPLR)	
a. Percentage of CPLR in total geographical area	15 %
b. CPLR per household (ha)	0.31
c. CPLR per capita (ha)	0.06
d. Reduction in CPLR during last 5 years(per 1000 ha)	19 ha
II. Collections from CPOLR	
a. Households reporting collection of any material from Common pool resources	48 %
b. Average value of annual collections per household (Rs)	693
c. Ratio of average value of collection to average value of consumption expenditure	3.02
III. Nature of use of Common pool resources:	
a. Share of fuel wood in value of collection from Common pool resources	58%
b. Average quantity of fuel wood collected from Common pool resources during	500 kg
c. Average quantity of fodder collected from Common pool resources during 365 days	275 kg

VI. EXISTING REGIMES TO GOVERN COMMON PROPERTY RESOURCES

In the literature of common property broadly three different schools of thought have emerged on the institutional arrangements to avert the tragedy of commons.¹⁸ A common policy prescription is articulated

¹⁶ CONROY, C. (2002) PRA tools used for research into common pool resources. *Socio-economic Methodologies for Natural Resources Research. Best Practice Guidelines*. Chatham, UK: Natural Resources Institute

¹⁷ Ghosh.A.N., "Protection and Regeneration of Common Property Resources: Socio Economic Issues; The Indian experience."

¹⁸ Bhim Adhikari, "Property Rights and Natural Resources : Impact of common Property institutions on Community based Resource Management." Research Proposal for the Award for Outstanding Research on Development Third Annual Global Development Network Conference Rio de Janeiro, Brazil December 9-12, 2001

by¹⁹ when he states that 'the only way to avoid the tragedy of the commons in natural resources and wildlife is to end the common property system by creating a system of private property rights'. Private property is considered to be the most efficient way to internalize the externalities generated from over exploitation of the commons.²⁰ It further argues that private property rights will spontaneously emerge in reality to increase efficiency.²¹ The scholars of second school of thought advocate that only the allocation of full authority to regulate the commons to the external agency i.e. state property regime can reduce the overexploitation of CPRs.²² The third school argues for community ownership and according to them, community based approaches are likely to be more successful than either centralized legislation or individual actors negotiating in the market.²³ Ostrom argues that collective action for CPR management will be long enduring and successful under conditions of well-defined boundaries, congruence between appropriation and provision rules, graduated sanctions, efficient conflict-resolution mechanisms and effective monitoring.²⁴ In a similar study in North Western Himalayan region, Singh and Ram²⁵ argue that the success of a strategy for CPRs often depends upon local participation and institution. Institution building at the community level for managing common-pool resources has emerged as a third possibility. An increasing number of scholars advocate that decentralized collective management of CPRs by their users could be an appropriate system for overrating the 'tragedy of commons'

Open access resources — those characterized by no property rights—will be overused, will generate conflict, and may be destroyed. All types of property rights regimes—include private property, common property, and state property whether locally selected or externally imposed — may reduce the costs of open access regimes, but perform differentially depending on the attributes of the resource, the local community, and the specific rules used. Thus, evolved or self-consciously designed property right regimes are needed to regulate the use of natural resource systems, but all such regimes have limits.²⁶

VII. SCHEME OF MANAGEMENT OF RESOURCES IN INDIA.

a. *Role of gram Panchayat in India:*

Village-level democracy became a real prospect for India in 1992 with the 73rd amendment to the Constitution, which mandated that resources, responsibility and decision-making be devolved from central government to the lowest unit of the governance, the *Gram Sabha* or the Village Assembly. According to article 243 G, the State governments have constitutional authority to delegate their responsibility for preparing and implementing economic development and social justice plans to panchayats. In matters of land, states could assign panchayats the powers and duties necessary for land improvement, implementation of land reforms, land consolidation, rural housing, and maintenance of community assets.

Hence in the subsequent enactment of Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA) aimed to operationalize decentralization in India, through the transfer of power to the

¹⁹ R. Smith (1981, p. 467)

²⁰ *Ibid.*

²¹ Demsetz, H. (1967) "Towards a Theory of Property Rights". American Economic Review, Vol.52, No.2, pp: 347-379.

²² Hardin, G. (1968): "The Tragedy of Commons". Science, 162.

²³ A. Agarwal, "Sustainable governance of Common Pool Resources: Context, Methods and Politics", Annual review of Anthropology(2003) ,243-262, esp 244-245.

²⁴ Ostrom, E. (1990) "Governing the Commons: The Evolution of Institutions for Collective Action" Cambridge University Press.

²⁵ Singh, G.S. and S.C. Ram (1997) "Prospects of Sustainable Development of Kullu Valley in North-Western Himalaya". *Journal of Rural Development*", Vol.16 (2), pp: 359-368

²⁶ *Ibid.*

Gram Sabha or the village assembly. The PESA attempted to vest legislative powers in *Gram Sabha*, specifically in matters relating to development planning, management of natural resources and adjudication of disputes in accordance with prevalent traditions and customs. However, the problem is the control over prospecting of minor minerals, planning and management of water bodies, control and management of minor forest produce, prevention alienation of land are all subject to rules in force or as may be prescribed by the State.²⁷ Thus in the real sense of the term, panchayati raj institutions need further strengthening to act of units of self government. More autonomy and decision making powers need to be vested in these institutions. People's participation at the village level is a necessity to realize the concept of village democracy in India.

b. Legislative Framework:

There exists a vast legislative framework to govern the commons. Discussed below are the important legislations all over the world. Since this paper focuses on *gairan* in Maharashtra, the legislations governing the management of Gairan Land in Maharashtra have been discussed and analyzed in detail, highlighting the provisions in favor of and against the commons. Some 36 commons in England and Wales are or were regulated under the Commons Act 1876. The Act enabled commons to be regulated or enclosed by means of an Order made on application to the Enclosure Commissioners, and confirmed by Parliament by means of a Provisional Order Confirmation Act. Then came The Commons Act 1899 which provided for an easy process of enabling district councils and National Park authorities to manage commons where their use for exercise and recreation is the prime consideration and where the owner and commoners do not require a direct voice in the management, or where the owner cannot be found. And now they finally have The Commons Act 2006 which will protect our common land for current and future generations, and deliver real benefits in terms of sustainable farming, public access and biodiversity. It enables commons to be managed more sustainably by commoners and landowners working together through commons councils, with powers to regulate grazing and other agricultural activities.²⁸

In India the commons are regulated by State specific land revenue codes or acts. Only Punjab And Himachal Pradesh have specific legislations dealing with commons namely ; The Punjab Village Common Lands Regulation Act 1961 and The Himachal Pradesh Village Common Lands Vesting and Utilization Act, 1974 (Himachal Pradesh Act 18 of 1974) .Other legislations which deals with the common pool resources are India's Biological Diversity , The national seeds Policy,2002;,national forest Policy (1988)National Agriculture Policy,2000;the patents Act,1970; Geographical Indications of Goods Act,1999.

c. Analysis of Provisions of Maharashtra Land Revenue Code, 1966 and relevant Acts:

The Maharashtra Land Revenue Code, 1966 contains some provisions regarding the regulation and protection of pasture lands. It provides the villagers with the right to pasturage only to the cattle of the villages and to the villages to whom such rights have been assigned by the state government.²⁹ *Nistar Patrak* embodies a scheme of management of all unoccupied lands in the village and matters incidental thereto.³⁰ It contains the terms and conditions on which the grazing of cattle in the village is permitted, instructions regulating generally the grazing of cattle.³¹ It is also the duty of collector to make provisions for

²⁷ Sanjay Upadhyay, "Tribal Self-Rule Law and Common Property Resources in Scheduled Areas of India- New Paradigm Shift or another Ineffective Sop"

²⁸ <http://www.defra.gov.uk/rural/protected/commonland/about-act.htm>

²⁹ Section 23 Maharashtra land revenue code.,1966

³⁰ Section 161, Maharashtra land revenue code.,1966

³¹ Section 162, Maharashtra land revenue code.,1966

free grazing of cattle used for agriculture.³² Also the villagers may be granted a right of *Nistar* in the neighboring village and such villagers shall be given a right to passage.³³ When a dispute regarding grazing land comes up, the collector has the power to solve the same and it is limited to one appeal only.³⁴

Also The Maharashtra Land Revenue (Disposal of Government Trees, Produce of trees, Grazing and Other Natural products) Rules, 1969³⁵ prescribes the method for disposal of Grazing Land. It says that the unoccupied land and all the land reserved for grass or grazing may be disposed off by public auction by way of lease or otherwise year to year, or for any term not exceeding five years to any person as the collector deems fit, either field by field or by tracts. The person allotting the land shall be entitled to charge grazing fee as he may with the previous sanction of the collector. Also if no one offers to take the land such land will be declared as not required for grazing and the Tahsildar shall direct the land to be recorded as land available for cultivation.³⁶ Also it should be noted that the right conferred upon anyone shall be cancelled if such a person commits breach of any condition as laid down in rule 4 of the said rules or if the majority of the person on grazing land desire so.

Firstly, the provisions in the act talk about making arrangements for free grazing of cattle. It should be noted that no such rule has been made in reality. In fact there are occasions when the *gairan* is not sufficient for villagers and they have to buy fodder from outside. The process of auctioning is done under a lot of political pressure and there is no fairness and transparency in the same. Some people can't even afford to pay the grazing fee and hence are denied the right to graze their cattle on the community land. Villagers are not involved in the decision making process, hence such decisions are made at whims and fancies of the collector. The money collected from the auction is given to the collector and there are no funds with the Panchayat to maintain *gairan*. Also no provisions have been made either under the act or in the abovementioned rules for the maintenance of *gairan*. Also instead the sarpanch of the Panchayat should be empowered to resolve disputes instead of the collector. Various anomalies exist when revenue land is regulated by the revenue department and panchayat and gochar (village grazing) land by the forest department. Actually, the state government should enact the law which will be especially applicable for the regulation of *gairan* and provide detailed rules for allocation of rights, maintenance provisions and dispute resolution mechanism.

VIII. Case Studies:

To have an in depth understanding of the various issues involved with grazing land as a common property resource and to gain knowledge about the existing traditions customs and practices followed by people for maintaining *Gairan*, we present two case studies. These case studies were done in villages located in Pune District. Pune is located between 17.5 to 19.2° degrees North & 73.2° to 75.1° East. The district is bounded on North & East by Ahmednagar district, by Satara district on South & by Raigad district on the West. The total geographical area of Pune district is 15642 Sq. Kms. This is about 5% of the total area of Maharashtra State. Out of the total geographical area, 11% is forest area, 7% is covered by grazing land. 74% is cultivated area which is about 1157506 ha. About 10.70% is non-cultivated area. In Pune district there are two municipal corporations, namely Pune Municipal Corporation & Pimpri-Chinchwad Municipal Corporation. There are about 14 Talukas & 13 Panchayat Samitis in Pune district. It covers about 25 urban areas out of which there are 2 Municipal corporations, 3 Cantonment boards & 11 Municipal councils. There are about 1866 villages in the district.³⁷

³² Section 163, Maharashtra land revenue code., 1966

³³ Section 164, Maharashtra land revenue code., 1966

³⁴ Section 23 Maharashtra land revenue code., 1966

³⁵ G.N., R. & F.D., No. UNF .1567-(F) –R, dated 3rd April, 1969 (M.G., Pt. IV –B.p.512)

³⁶ Rule 6 of The Maharashtra Land Revenue (Disposal of Government Trees, Produce of trees, Grazing and Other Natural products) Rules, 1969

³⁷ <http://mpcb.gov.in/images/pdf/actionplanpune11.pdf>

a. Case Study 1:

Case Study 1 describes the controversy regarding acquisition of *gairan* in shinde village, Khed Taluka. An analysis of the same is presented after the case study.

The Dow Controversy:

The villages Shinde and Vasuli - some 30/35 Kms. away from Pune located in Khed Taluka. Khed Taluka has 9457 hectares of grazing land, i.e. the second highest in Pune district. On 19th October 2007 the Maharashtra Pollution Control Board gave consent to an American MNC named Dow Chemical International Private Limited Company to establish manufacturing Unit at Shinde village, in Chakan, Pune. Dow chemicals are a Blacklisted company. It took over Union Carbide's Assets in Bhopal but refused to pay any liability or compensation to the affected Families.

This led to a huge controversy as 100-120 acres of *gairan* land was allotted to this company without the permission of the Panchayat or villagers. Approximately 12,200 trees which were 20 to 25 feet in height were cut down and the *gairan* land was completely destroyed. This resulted in loss of timber and livelihood for many village lands. The villagers were completely unaware of this until Justice B.G. Kolse-Patil, retired Judge of Bombay High Court and Vilas Sonawane, both leaders of the Lokshasan Andolan, (who had come there in connection with an agitation going on nearby) came to visit the site. A writ petition was filed and a stay was granted on 16th January 2008. But no compensation was provided to the villagers. In whole of Khed Taluka 4000 hectares of land has been acquired under SEZ. In nearby villages such as Warud, under the grab of SEZ land has been acquired. According to villagers, the land is called the saint land (*santh bhoomi*) and they worship the land. According to Santh Jagadguru Tukaram, whose followings are preached by village people, *bhoomi* (land) should be protected against pollution. The people of Warkari community have protested against the acquisition of *gairan* land (grazing land) all over Pune district.

Conclusion from Case Study 1:

Case Study 1, reveals the victimization of villagers due to encroachment by industries. It can be seen that where land or resources is officially owned by the government, it is now being handed over to private companies directly even where it actually belongs to villagers. To our dismay, the Land and Revenue Department officials are clearly flouting the rules of the land. The Maharashtra Panchayat Act, 1958 requires them to take the consent of the panchayat before changing the use of the land. But this procedure is hardly adhered to. The villagers are unaware of their rights and have no say in any matter. Many such instances of encroachment on common pool resources due to industrialization and urbanization have been reported.³⁸

Laws such as the Land Acquisition Act, 1894 are being used against village communities, to take over their resources thereby denying them their right to livelihood. Under this Act the definition of public purpose under section 4 is too wide to include anything and everything and the act allows village common property like wells, grazing lands to be acquired.³⁹ Also in Orissa, more than 40 memoranda of understanding have been signed with various big mining companies. The Special Economic Zones Act 2005, is posing big threat to the farmers and agriculture sector, is a completely anti people and anti environment scheme. On Feb 14, '07, five members of the community have filed a petition before the Gujarat High Court. Nine villages have also lost their grazing land to the SEZ.⁴⁰

³⁸ Iyengar, S. and Shah, A. 2001 "CPR in a Rapidly Developing Economy: Perspectives from Gujarat" Paper for workshop on "Policy Implications of Knowledge with respect to Common Pool Resources in India", September 14th. Institute of Economic Growth, Delhi.

³⁹ Kelly A. Dhruv; "Displacement Due To Land Acquisition For "Development" Projects In India"; The Problems with the Existing Legislation and Policy

⁴⁰ Dams, Rivers & People, *The SEZ Threat To Water and Food Security*; SANDRP

The main issue is that the land is under the custody of the Land and Revenue Department of Maharashtra so they have unfettered powers to dispose off the land in whichever way they want. This leads to unfair practices and there is no transparency in the process as people have no say in the decision making process. Though there has been an initiative to bring about an amending Act to the Land Acquisition Act, the Community role is still underplayed.⁴¹ To solve this problem, the unique system of Panchayat Raj (Village self-governance), a Gandhian legacy incorporated in the Part-IX of the Constitution of India can be utilized to form a platform where the affected people can voice their opinions and grievances within their comfort-zone, and at the same time, form an interest group that cannot go unheard. The power to empower the Panchayats, however, rests with the State and Central Governments. Later in the paper various changes in the form of a new policy have been proposed to improve the system and to empower the villagers. (Refer To pg. No. 42).

b. Case Study 2:

Case study 2 depicts various issues involved in the use of *gairan* by the villagers. An analysis of the same is also presented after the case study.

The second case study covers village wagheli located in Haveli taluka, Village Dingarwadi located in Shirur Taluka, Peth and Avsari village located in Ambegaon Taluka, in the Pune district. The distribution of grazing land in various talukas as follows; Haveli Taluka, 9808 hectares, Ambegaon 3000 hectares, Shirur 2197 Hectares. Peth village is located in Ambegaon taluka and has a population of 5136 people. Mr. Todkar Raghunath is the sarpanch; the head of the gram panchayat. A total of 256 hectares of land has been classified as Gairan Land and 886 cattles graze on this land. *Gairan* has been given to people for a lot of other purposes. 20 hectares has been given for rehabilitation of adivass, 1.6 gunthas for Maharashtra State Electricity Board, 1 hectare for Ambedkar Hostel (for backward classes). 50-60 hectares of land has been encroached upon by Thakkar samaj.

The right to graze on Gairan land is allocated to people on the basis of auction. The money collected from the auction is given to the collector. People who don't get a share of gairan land, go to the nearby forest area to collect fodder. All the disputes regarding the gairan land are looked into by the panchayat. When there is no rain the fodder can be obtained from *Duth Sankalan Sangh* at a subsidized price. The milk produce per day is around 2500 litres and local sales amount to Rs 12,000 per day. Payment is done in a period of 15 days which amounts to Rs 1,50,000. According to one Gulab Mahadeo Bhor, a farmer in Avsari village in the same Taluka said that for people who could not pay enough money for the auction, the expenses per day on cattle fodder is Rs 135 whereas the earning is only Rs 90. According to the other villagers a lot of political pressures play a role during the process of auction. Shri. Dattatray More, a senior clerk in the Gram Panchayat office of Wagheli revealed that 110 acres of land is used for grazing purposes. The *gairan* is not continuous and is scattered all over the village. The pasture land is often used by traveling nomads to reside on for their period of stay. The other more common usage of the *gairan* is that of market place. Considering the *gairan* is government owned land the government often converts its usage to an activity other than *grazing*.

Conclusion of Case Study 2:

⁴¹ For an analysis of participation in development induced displacement, see Pablo Bose, Nicholas Garside and Richard Oddie, *The Ethics of Development-Induced Displacement Project*, Working Paper Series #2: The Politics of Participation, Center for Refugee Studies, (York: University of York, December 2003)

In India, the NSSO report validates some of the results of village based approaches. According to the study, **(Refer to Table 1 below)**

Case study 2, reveals various issues with respect to rights on the common property

- a. That the area of common pool resources varies in approximately the same range from the two sets of data i.e. from a minimum of 1 to 32% of the geographical area in different parts of the country.
- b. That the average value of collections from common pool resources was highest for the Rural poor.
- c. That the level of development of a village (as approximated by size) is inversely related to the extent of use and collection of fuel-wood.
- d. That dependence for rearing livestock is not as high as it is expected.

y resources, the impact on the livelihood of people due to change in the use of the land and other disputes related to grazing land. Change in Land use has become a common practice in villages. There is overcrowding on the grazing land as the *gairan* available is not sufficient. There is no provision for villagers to obtain fodder at a low and subsidized price, incase the grazing land is not sufficient. Villagers have to go to the forest areas and arrange for fodder. No practices are being followed to conserve and maintain *gairan*. And the land is being frequently used for other purposes even by villagers (setting up of markets). There exists no clear cut policy laying down rules in detail for grazing of cattle. There is no sense of environment citizenship amongst people.

Grazing of livestock and collection of fodder are two important aspects of common pool resources contributions to rural the economy. **(Refer to Graph 2 below.)** Livestock population in Pune district is divided into poultry (45%) and milking animals (49%) such as Buffalo, Goat, Sheep and Cow.⁴² Analysis of the graph clearing reveals that 33 percent of people's livelihoods are dependent upon grazing land. Thus the picture revealed by the case study is pretty grim. Many villagers are struggling to make their ends meet as most of their money is spent in maintaining livestock and buying fodder and the returns are low. Government should take some steps to ensure that free grazing is permitted or arrangements are made for fodder. This will also reduce conflicts in the society are there would be less friction amongst people with respect to rights on grazing Land. The grazing fee might be reduced if more resources are provided by the government.

GRAPH 2. Percentage of Households using Common Pool Resources for Livestock ,Fuel wood and Fodder.

If we analyze the dependence of people on common pool resources, according to a study conducted by NSSO, 48% of the households reported collection of some material from common pool resources, the average value of annual collections per household was rs. 693, which amounted on an average to 3.02 of a rural household's consumption expenditure. In the light of these figures, it is important that we realize the dependence of people on these common pool resources and take steps towards their sustainable use.

IX. "Comanagement" as a model of governance :

In recent decades, an international transformation has been occurring in conservation and natural resource management. With the expansion of community-based management regime, a question of equity in sharing the benefits from, and costs of, participatory management has been emerging more acutely than

⁴² <http://mpcb.gov.in/relatedtopics/CHAPTER1.pdf>

ever before. The major questions still to be answered are how great are the real costs and benefits of participation, and how they are distributed amongst the various actors.⁴³

A slow but definite shift is taking place towards decentralized, site specific, community based activities from standardized policies and programs initiated by centralized and urban based agencies.⁴⁴ Despite the increasing numbers of community –based collaborative initiatives in different parts of the world, it is evident that when success has been achieved it is very often limited to small areas or “Project Sites.”⁴⁵ Chopra et al.⁴⁶ in their study of Haryana highlights the importance of participatory management in controlling the Common Property Resources. Thus recognizing the importance of public participation **Comanagement** (an abbreviation of “cooperative management”) as an alternative model of governance for community pool resources is proposed.

a. What is comanagement?

Let us first understand the concept of Comanagement. This term is frequently used in publications to describe situations in which collaborative arrangements between the government agencies and community level institutions have been formalized in legislation or contract.⁴⁷ It is defined as a partnership in which the government agencies, local communities and resource users, on governmental organizations and other stakeholders negotiate ,as appropriate to each context ,the authority and responsibility for the management of specific area or a set of resources.⁴⁸ It is important to note that whereas a fully implemented Comanagement system typically necessitates a process of legal and administrative reform, it:

“Is not tantamount to asking for a drastic retrenchment of State responsibilities in resource management. The basic concern is actually with reshaping State interventions so as to institutionalize collaboration between the administration and resource users and end those unproductive situations where they are pitted against one another as antagonistic actors in the process of resource regulation.”⁴⁹

Thus comanagement focuses upon partnerships between stakeholders i.e. the community people with the governmental agencies accompanied by *sharing of authority* over resource management. Thus one need’s to empower the villagers and include them in the decision making process. Over recent years there have been significant moves towards increasing both the quantity and quality of public participation in many different areas of environmental decision making. The importance of Public Participation is recognized in Principle 10 of Rio Declaration:

Environment issues are best hands with the participation of all concerned citizens, at the relevant level. At the national level, each individual shall have access to information concerning the environment that is held by public authorities and the opportunity to participate in decision making processes .States shall facilitate and encourage public awareness and participation by making

⁴³ Hobley, M. and E. Wollenberg (1996) “ A New Pragmatic Forestry or another Development Bandwagon? In M. Hobley, *Participatory Forestry: The Process of Change in India and Nepal*”. Rural Development Forestry Study guide 3. Overseas Development Institute, London.

⁴⁴ A.Kothari,R.V.Anurasha,&N. Pathak,”*Community- Based Conservation:issues and Prospects,*” in A Kothari et al.,eds.,*Communities and Conservation:Natural Resource management in South and Central Asia*(New Delhi: sage,1998),25-57,esp 25

⁴⁵ Justin Rose;*Community Based Biodiversity Conservation in the Pacific:Cautionary lessons in “regionalizing” Environmental Governance.*

⁴⁶ Chopra, K., C. Kadekodi and M. Murthy (1989) “*People’s Participation and Common Property Resources*”. *Economic and Political Weekly*, Vol (24) pp: A.189-A.195.

⁴⁷ See For Example , the definition of “comanagement “ provided in J.Whyte ,A review of lessons learned and best Practice In Integrated Watershed Conservation And Management Initiatives in the Pacific Island region, Pacific Island International waters Programme technical report 2002/06(Apia:SPREP,2002),70

⁴⁸ World Conservation Congress *Resolution for collabotrative management for Conservation* IUCN resolution no. 1.42,adopted at montreal ,Canada ,14-23 October 1996

⁴⁹ Baland & Platteau,note 10,at 347

information widely available. Effective access to judicial and administrative proceedings including redress and remedy shall be provided.

The three pillars of promoting people's participation are access to environmental information, public participation in decision making process and access to justice environmental matters. This will help us develop fair and transparent and fair decision making frameworks. Improved access will enhance the quality and implementation of decisions. Also engaging the public to play an active role in environmental policymaking will impose some responsibility for their interactions with the environment.⁵⁰

Property regime of comanagement with a special focus on people's participation is being successfully implemented in Ethiopia. A study of Tigray located in the northern most region of Ethiopia on the Sudano – Sahelian dry land zone is presented below. Restricted grazing areas are widespread in the highlands of Tigray and are managed only at the village level. Most grazing areas are established through local initiative and village administrations are principally involved in its management. Village members contribute in cash or in kind for guard payment and contribute uncompensated labor for management. When a guard is not used for protection, village members take turns to protect the land or they use fences. The regional Bureau of Agriculture is involved mainly in the provision of technical and material assistance. Since oxen supply draft power for traction, a critical input for crop production, the restricted lands are mainly used for grazing oxen. Communities use cash penalties for violations. The level and effectiveness of collective action for grazing land management appears to differ by population density and market access, as well as across zones. The involvement of external organizations in promoting restricted grazing areas reduced the likelihood of communities paying for guard, suggesting that the need for communities to pay is eliminated by payment made by the external organizations. Involvement of external organizations has a positive on household contributions for grazing land management.⁵¹

The potential of collaborative approaches for natural resource management in rural regions of Thailand, Vietnam, Cambodia, Indonesia and Laos has been explored. Some new initiatives aimed at introducing a more participatory approach to management of land and water in the common and governmental domains have been initiated in the nineties. The more significant among them, which impact the management of common pool resources and aim at introducing new management regimes for them are Joint Forest management Introduced through departmental Notification in 1990 and now extended to twenty six states and new guidelines for watershed development introduced and implemented in 1994. An investigation using economic experimental games on the fishermen inhabiting. The influence zone of marine protected areas in the Colombian Caribbean⁵² has shown that co-management exhibits the best results with regards the governance of common pool resources. The results have shown that both in terms of resource sustainability and reduction in extraction, it has been effective, highlighting the importance of strategies that recognize communities as key actors in the decision- making process for the sustainable use and conservation of common pool resources in protected areas.

In many parts of India, small village groups have started to protect and reclaim degraded forestlands through collective action. The Joint Forest Management Program seeks to develop partnerships between local community institutions and state forest departments for sustainable management and joint benefit sharing of public forest lands. The primary objective of JFM is to ensure sustainable use of forests to meet

⁵⁰ Chapter 10, Public participation, Stuart bell

⁵¹ Berhanu Gebremedhin, Pender J. and Girmay Tesfay. 2002. *Collective action for grazing land management in mixed crop–livestock systems in the highlands of northern Ethiopia*. Socio-economics and Policy Research Working Paper 42. ILRI (International Livestock Research Institute), Nairobi, Kenya. 28 pp.

⁵² Moreno Sánchez, Rocio del Pilar and Maldonado, Jorge H., Can Co-Management Improve the Governance of a Common-Pool Resource? Lessons from a Framed Field Experiment in a Marine Protected Area in the Colombian Caribbean, Document to CEDE No. 2009-15. Available at SSRN: <http://ssrn.com/abstract=1486222>

local needs equitably while ensuring environmental sustainability.⁵³ Two instances of success often quoted are of Arabari in west Bengal and sukhomajri in Harayana. Though this policy has faced a lot of criticism and since many years the role of institutional constraints in planning and implementation had often been cited as the primary reason for the low success of watershed programs in the past.⁵⁴ It is argued that the major flaw in the scheme of joint forest management was that it ignored the existing traditional management systems. The new guidelines on watershed which came into effect from April 1, 1995 aimed to take care of these shortcomings. These provided for development of an entire compact watershed, taking into consideration the land capability, site conditions and needs of the local people and it was noted that success has been reported and benefits of watershed development have reached people where the participatory approaches were utilized.⁵⁵

The lesson to be derived is that in a large country like India, interventions need to take regional variations in existing institutional bases into consideration and not aim at centralized drafting of “decentralized participatory governance”.⁵⁶ Co-management involves participation of people which gives them the right to access, exclude and alienate, manage and withdraw the common pool resources. Elinor Ostrom designed various design principles for long enduring Community Property Resources which are as follows:

1. Clearly Defined Boundaries:

Individuals or households with rights to withdraw resource units from the CPR and the boundaries of the CPR itself are clearly defined.

2. Congruence between Appropriation and Provision Rules and Local Conditions:

Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labor, material, and/or money.

3. Collective Choice Arrangements:

Most individuals affected by operational rules can participate in modifying operational rules.

4. Monitoring:

Monitors, who actively audit CPR conditions and appropriator behavior, are accountable to the appropriators and/or are the appropriators themselves.

5. Graduated Sanctions:

Appropriators who violate operational rules are likely to receive graduated sanctions (depending on the seriousness and context of the offense) from other appropriators, from officials accountable to these appropriators, or from both.

6. Conflict Resolution Mechanisms:

Appropriators and their officials have rapid access to low-cost, local arenas to resolve conflict among appropriators or between appropriators and officials.

7. Minimal Recognition of Rights to Organize:

The rights of appropriators to devise their own institutions are not challenged by external governmental authorities

For CPRs that are part of larger systems:

8. Nested Enterprises:

Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.⁵⁷

⁵³ <http://www.manage.gov.in/managelib/extdig/Untitled-1>.

⁵⁴ Saxena, N.C. and Sarin, M. 1999. “*The Western Ghats Forestry and Environmental Project in Karnataka: A Preliminary Assessment*”, in Jeffery, R. and Sundar, N. (eds) “*A New Moral Economy for India’s Forests?*” Sage Publications, New Delhi.

⁵⁵ Kerr, J., Pangare, G., Lokur-Pangare, V., George, P.J. and Kolavalli, S. 1998. “*The Role of Watershed Projects in Developing Rainfed Agriculture in India*,” Study prepared for ICAR, World Bank, Washington D.C.

⁵⁶ Kanchan Chopra and Purnamita Dasgupta; “*Common pool resources in India: evidence, significance and New Management Initiatives*”; March 2002

⁵⁷ Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*.

b. **The new policy (*Mananagement and Maintenance of gairan in Maharashtra, 2010 Bill*)**

Based on the principle of comanagement, design principles illustrated by Elinor Ostrom and keeping in mind people's participation certain policy changes are proposed. One of the major Flaws with the present system is that *gairan* is under the control of the forest and revenue department and thus the villagers have no rights or powers to make rules to govern the community land. There is a big communication gap between the people and the government.. Though we have a right to information act in India, due to its procedural aspect most of the villagers who are illiterate are devoid of any information and are unaware of what is happening around them.

Thus we propose few suggestions, in the form of a new policy called ***Mananagement and Maintenance of gairan in Maharashtra, 2010 Bill*** to overcome the defects of the present system. The new policy devised by us is illustrated below:

THE MAHARASHTRA GAIRAN (MAINTENANCE AND MANAGEMENT) BILL 2010:

A

Bill

to amend and supplement the laws for the governance of gairan in the state of Maharashtra.

WHEREAS it is expedient to amend the law and rules relating to gairan and to provide for governance, management and maintenance of Gairan in Maharashtra, and for it's efficient use and sustainable development.

Be it be enacted by parliament in the sixty-first year of the republic of India as follows

CHAPTER 1-Prelimnary

1) Short title Extent and Commencement:-

- i. This act may be called the "Gairan" Commons Lands (Maintenance and Management) Act, 2010.***
- ii. It extends the whole State of Maharashtra.***
- iii. It shall come into force in the whole of Maharashtra ,on such a date as the State government may, by notification in the Official Gazette appoint***

2) Definition- In this Act, unless the context otherwise requires.

- (a) "Collector" means the collector of district and includes any officer appointed by the State Government for performing the functions of the collector under this Act.***
- (b) "Inhabitant of a village" means a person, whether a proprietor, or non proprietor, who ordinarily resides in the village.***

Provided that temporary absence or absence in relation to employment elsewhere shall not affect his residence in the village

- (c) "Panchayat" means a Gram Panchayat constituted under the Maharashtra Gram Panchayat Act, 1958.***
- (d) "Prescribed" means prescribed by the rules made under the Act.***

- (e) **“State Government” means the Government of the State of Maharashtra.**
(f) **“Tahsildar” means the Tahsildar in whose jurisdiction the land is situate and includes Special Tahsildar.**

CHAPTER 2-Transfer of Ownership of Land

3) Vesting of rights in Panchayat.

- (1) **Notwithstanding anything to the contrary contained in any other law for the time being in force or in any agreement, instrument, custom or usage or any decree or order of any court or other authority, all rights, title and interest whatever in the land:-**
(a) **Which is included in the Nistar Patrak⁵⁸ of any village and which has not vested in a Panchayat shall at the commencement of this Act vest in a Panchayat constituted for such village, and where no such Panchayat has been constituted for such village, vest in the Panchayat on such date as a Panchayat having jurisdiction over that village is constituted ;**
(2) **Any land which is vested in a Panchayat, shall be deemed to have been vested in the Panchayat under this Act.**

4) Regulation of use and occupation, etc of lands vested or deemed to have been vested in Panchayats-

- 1) **All lands vested or deemed to have been vested in a Panchayat under this Act, shall be utilised or, disposed of by the Panchayat for the benefit of the inhabitants of the village concern in the manner prescribed. Provided that where two or more villages have a common Panchayat, Gairan of each village shall be utilised and disposed of, by the Panchayat for the benefit of the inhabitants of that village.**
2) **The State Government or Forest officer may, from time to time, with a view to ensuring compliance with the provision of this act may issue to any panchayat such directions as may be deemed necessary.**

CHAPTER 3-Gairan Samiti

5) Establishment of the “Gairan Samiti”

- 1) **The Gram Panchayat may, for any area or areas of land to which this act applies, establish a ‘Gairan Samiti’ to carry out functions conferred under this Act.**
2) **The order establishing a “Gairan Samiti’ must specify**
a. **The name of the samiti;**
b. **The area or areas of land for which the samiti is established**

6) Composition and Status:

- 1) **The Gairan Samiti shall consist of Five members and will be headed by the Sarpanch of the respective gram panchayat.**
2) **The other four members are ; one Forest Officer and three villagers of which one would be a women ;one member from backward classes and one member based on seniority.**
3) **The property of a Gairan Samiti is not to be regarded as the property of, or**

⁵⁸ As mentioned in the Maharashtra land revenue code,1968

as property held on behalf of, the Revenue department of the government of Maharashtra

7) Tenure:

- 1) *The samiti shall be in force for a period of five years.*

8) Register for gairan:

- (a) *Each Gairan Samiti shall maintain a register for entries of Gairan called the "Gairan Common Land Register" for the villages.*
- (b) *The purpose of the register is to maintain land record of the gairan under use in the village.*
- (c) *Any change in the use of land shall be mentioned in the register*
- (d) *It shall mention the number of cattle to be allowed to graze on the land.*
- (e) *It shall also keep an account of people who are using such land.*
- (f) *It shall also keep accounts of the rent that is being collected by the panchayat for the panchayat fund for the maintenance of the land.*
- (g) *It shall also keep the minutes of the village meetings.*

9) Powers and Functions:

1. *The functions which may be conferred on gairan Samiti include in particular the following functions of*
 - (a) *The gairan samiti in consultation with the sarpanch, by notification in the official Gazette, make rules for carrying out the purposes of this Act.*
 - (b) *In particular and without prejudice to the generality of the foregoing power, such rules may provide for-*
 - i. *Rules to access the land for grazing.*
 - ii. *The principles on which and extent to and the manner in which the inhabitants of the village shall make use of the lands vested or deemed to have been vested in the Panchayat.*
 - iii. *the maximum and minimum area to be leased to any single person ;*
 - iv. *the prescribing of forms for such books, entries, statistics and accounts as may be considered necessary to be kept, made or compiled in any office or submitted to any authority ;*
 - v. *the terms and conditions on which the use and occupation of any such land is permitted ;*
 - vi. *the manner and the circumstances in which any such land may be disposed of, transferred or sold ;*
 - vii. *the purpose for which any such land may given free of charge ;*
 - viii. *the regulation of procedure where a Panchayat [sues or] is sued on its representative capacity ;*

- ix. *the manner or the order of priority in which the excess area shall be utilized by the villagers ;*
- x. *any other matter which can be or may be prescribed.*
- xi. *preparing and maintaining a register for gairan;*
- xii. *establishing and maintaining boundaries;*
- xiii. *removing unlawful boundaries and other encroachments;*
- xiv. *removing animals unlawfully permitted to graze.*

- 2. *The samiti must discharge its functions having regard to—*
 - (a) *any guidance given by the appropriate national authority; and*
 - (b) *the public interest in relation to the land for which it is established.*

- 3. *The reference in subsection 9.(b)(2.)to the public interest includes the public interest in—*

- (a) *nature conservation;*
- (b) *the conservation of the landscape;*
- (c) *the protection of public rights of access to any area of land; and*
- (d) *the protection of archaeological remains and features of historic interest.*

- 4. *The gairan Samiti may:*

- (a) *take any steps to protect the land against unlawful interference that could be taken by an owner in possession of the land; and*
- (b) *institute proceedings against any person for any offence committed in respect of the land (but without prejudice to any power exercisable apart from this section).*

- 5. *Where a gairan samiti wishes change the existing use of land or sell the land or do anything in such nature ,it shall obtain the consent of the villagers by.*

- i. *For the same the Samiti shall organize a meeting for the villagers and inform them as to what :*
 - a) *what the Samiti proposes to do;*
 - b) *Obtain their consent by calling a meeting and record the same in the register.*
 - c) *the time within which the person/s who is/are being affected ,should object*
 - d) *which may not be less than 28 days after service of the notice, or announcement in a village meeting; and*
 - e) *the manner in which he/she may object*

10) Ancillary powers:

- 1. *A gairan Samiti has the power to do anything which it considers will facilitate, or is conducive or incidental to, the carrying out of its functions.*
- 2. *The power conferred by subsection includes power to—*
 - a) *enter into agreements;*
 - b) *prepare and adopt management plans;*
 - c) *raise money (including by applying for funds from any source);*
 - a. *Acquire or dispose of land;*
 - b. *Employ staff.*

3. **The power of a Gairan Samiti to raise money as specified in subsectionincludes power to require the payment of fees in connection with**
 - a. **the exercise of rights of common over, or the exercise of rights to use the surplus of, the land for which the council is established, and**
 - b. **and any such fees owed to the council may be recovered as a debt due to it.**

11) Panchayat Fund:

1. **There shall be a fund called the Panchayat fund which shall receive grants from the state government to, protect, manage and conserve the gairan.**
2. **The Panchayat Fund shall be used in following ways:**
 - a) **It can be used to buy fodder for the villagers incase the gairan available is less or has degraded.**
 - b) **The money collected can also be used for create various facilities for the animals to improve the milk and meat quality and treatment of diseases**
 - c) **Fencing can be done to demarcate the area and prevent the entry of encroachers.**
 - d) **To make provision for water on Gairan**
 - e) **For hilly areas Shel Tele (Village Lake) should be formed which will help conserve ground water also.**

CHAPTER 4: Information and Inspection

12) Information and Inspection:

1. **Any person may inspect and make copies of, or of any part of—**
 - a. **The register of gairan;**
 - b. **any document kept by Gairan samiti or Panchayat which is referred to in such a register;**
 - c. **any other document which relates to an application made at any time in relation to such a register.**
2. **The right in subsection (1) is subject to regulations which may, in particular—**
 - a. **provide for exceptions to the right;**
 - b. **impose conditions on its exercise.**
3. **Conditions under subsection (2)(b) may include conditions requiring the payment of a fee (which may be a fee determined by a commons registration authority).**
4. **It shall be the duty of the Gairan Samiti to supply to the authority with such information relating to activities on the land carried out, or caused to be carried out, as it may reasonably require.**

CHAPTER 5: Disputes and Appeals

13) Decision of claims of right, title or interest in Gairan.-

1. **Any person claiming right, title or interest in any land, vested or deemed to have been vested in a panchayat under this Act or clamming that any land has not so vested in a Panchayat, may submit to the Gairan Samiti, within such time, as may be prescribed, a statement of his claim in writing and signed and verified in the prescribed manner and the Collector shall have jurisdiction to decide such claim in such manner as may be prescribed.**

14) Appeal :

1. If any person is aggrieved by an act or decision of gairan Samiti under section 5, he may, within thirty days from the date of such act or decision, appeal to the tehsildar who may confirm, reverse or modify the act decision or make such other order as he thinks to be just and proper.

15) Saving of existing Possession.-

1. Where, on any Gairan immediately before it vests or is deemed to have been vested in a Panchayat under this Act, a person is in cultivating possession and his uncut and ungathered crops are standing thereon, he shall not be ejected from such land, unless his crops have ripened and he has been allowed reasonable time to harvest them.

16) Finality of orders.

Save, as otherwise, expressly provided in this Act, every order made by the and shall not be called in question in any court by way of appeal or revision or in any original suit, application or execution proceedings.

17) Bar of Jurisdiction in Civil Courts:-

No civil court shall have jurisdiction:-

- a. to entertain or adjudicate upon any question, whether any property or any right to or interest in any property is or is not Gairan vested or deemed to have been vested in a Panchayat under this Act ; or
- b. in respect of any matter which the Tehsildar or gairan samiti is empowered by or under this Act to determine].

18) Penalties and procedure:-

- (1) No person shall unless entitled or authorized so to do, by law or by an instrument or by order executed or issued by a competent authority under law, enter into the possession of any land vested or deemed to have been vested in a Panchayat under this Act or having lawfully entered into possession of such land ; unlawfully remain in possession thereof, on or after the expiry of the term of such lawful possession, if any.
- (2) Any person who contravenes the provisions of sub-section (1) shall, notwithstanding any thing contained in any other law, be punished with imprisonment for a term which may extend to two years or with fine which may extend to one thousand rupees or with both.
- (3) Any person who abets an offence punishable under this Act, shall be punished with the punishment provided for the offence.
- (3) Notwithstanding, anything contained in the Code of Criminal Procedure 1973, an offence under this Act, shall be cognizable.

20) Provisions of this Act to be overriding:-

The provisions of this Act shall have effect, notwithstanding to the contrary in any law or any agreement, instrument, custom, or usage or any decree or order on any court or other authority.

21) Indemnity:-

No suit, prosecution or other legal proceedings shall lie against the Government or any person or authority for anything done or intended to be done in good faith, in pursuance of the provisions of this Act.

21) Repeal and Saving:-

Provided that anything done or any action taken under any law so repealed shall be deemed to have done or taken under the corresponding provisions of this Act and shall continue to be in force accordingly unless and until superseded by anything done or any action taken under this Act

SCHEDULE-A

1.Short title:

These rules may be called the Maharashtra Village Common Lands (Regulation) Rules, 2010.

2.Definitions:-

In these rules, unless the context otherwise requires-

- a. "Act" means the Maharashtra Village Common Lands (Regulation) Act,2010.
- b. "Form " means a form appended to these rules..

3. The panchayat may make use of the land in gairan vested in it under the Act, either itself or through another, for any one or more of the following purposes:-

- i. Grazing of cattle ¹[animals] ;
- ii. Tree plantation or any other purpose related to forestry ;
- iii. Dyeing and tanning of skins and hides ;
- iv. Storage of fuel, fodder and/ or grain ;
- v. Bricks kilns ²[Pottery], extraction of shora 'sand stones, kankar, bajri, other minerals defined in the Maharashtra Minor Mineral ³(Concession) Rules 1964 ;
- vi. Manure pits ;
- vii. Model farm ;
- viii. Seed farm ;
- ix. Nursery garden or any other horticultural purpose ;
- x. Production of food, fibre or fodder crops ;
- xi. Diary farm ;
- xii. Public latrines and / or urinals ;
- xiii. Pathways [streets and lanes], roads, drains or water channels ;
- xiv. Playground, recreation parks or children' park or (balwaris);
- xv. Leasing out, for the purposes of abadi to a family having insufficient housing accommodation or ;
- xvi. School building, school library or any other structure for educational Purpose ;
- xvii. Maternity or first-aid centres ;
- xviii. Hospital or dispensary ;
- xix. Veternary Hospital or dispensary ;
- xx. Vehicle Park ;

- xxi. **Panchayatghar [or village Chaupal] [or Community Center] ;**
- xxii. **Ponds and fisheries ;**
- xxiii. **Wells, hand pump, water works, or any water lifting devices ;**
- xxiv. **Thrasher floor [Thrashing ground] ;**
- xxv. **Leasing out for cultivation ; or**
- xxvi. **Thrashing Floors;**
- xxvii. **Any other kindred common purpose with the approval of the Panchayat Samitis;**

4.A panchayat may unite with any other body or bodies being a Gram Panchayat, local authority or an institution or branch of institution' established for the development of Panchayat and recognised by Government in taking up any of the purpose specified in sub rule (2).

5.Method for allocation of gairan:

- a. **The land should be allocated to all the villagers who have cattles in the village.**
- b. **No grazing fee should be collected for grazing on the land.**

X. Conclusion:

The long held policy assumption that the incentives created by private ownership ,or coercive state regulation ,are the only forces capable curbing destructive self –interested resource use have now for long been drawn into question⁵⁹It should be noted that the success of the property rights regime depends upon the congruence of ecosystem and governance boundaries, the specification and representation of interests, the matching of governance structures to ecosystem characteristics, the containment of transaction costs, and the establishment of monitoring, enforcement and adoption processes at the appropriate scale⁶⁰ Thus the approach of comanagement with a focus on enhancing People's participation will ensure that the interests of the stakeholders are represented.An important pre-condition for the success of the proposed bill is effective implementation. The Commons Act, 1965 though created a governance framework for the conservation of the Commons in England; it suffered from some of the following problems 1. Which include firstly, incorrect registration, the process relied on objections to discount unsubstantiated registrations which otherwise became final. The registration authority was not obliged to contact landowners or users and therefore many legitimate interests were not registered. This was compounded by the short length of the registration period, clerical errors and poorly drawn common land maps.Secondly, over quantification of grazing rights - this occurred where rights were clearly and lawfully in existence at the time of registration but the numbers of stock claimed was far in excess of the carrying capacity of the land. A typical problem which arose was the registration of rights on contiguous areas of land i.e., where commoners duplicated rights for two parishes which shared a common. Thirdly, validity of registers - although the Act intended that registers should be maintained regrettably this has not been the case.

These are problems which could be encountered by the proposed bill as well, which could be prevented if the Gram Samiti and the Collector maintain a harmonious checks and balance relationship as contemplated in the bill whereby the Gram Samiti could submit the registrar to the Collector for inspection on a half-yearly basis.Any form of irregularities could be regularly be corrected and any claims could be

⁵⁹ Justin Rose;Community Based Biodiversity Conservation in the Pacific: “Cautionary lessons in “regionalizing” Environmental Governance.”

⁶⁰ .(Eggertsson, 1990; Ostrom, 1990; Bromley, 1991; Hanna, 1992; Hanna and Munasinghe,1995).

decided expeditiously thereby giving authenticity and keeping the registers well updated.

a. Recommendations

We have proposed a policy called the ***Mananagement and Maintenance of gairan in Maharashtra, 2010 Bill***. The key highlights of the Policy are, firstly transfer of ownership of lands to the Panchayat. This will give them more autonomy to take decision with respect to the use of the land and will give them an incentive to act responsibly. Local government's decisions have a great impact on the environment. As Tidsell notes, "there is often little incentive for local communities to conserve biodiversity ... because they often appropriate little, if any of the economic benefits from such conservation .because of externalities many of the benefits from this conservation flow to wider communities."⁶¹ Vesting of ownership of land with Panchayat would bring about the necessary change required in the outlook of people towards common pool resources. Since the policy making power is also being vested with the Panchayat ,the state government will have very little role to play .The incentive of ownership of land will induce the Panchayat to make such rules which lead to sustainable use of the land. The transfer of ownership would also purport that the permission required to change the existing use of land to some other land ,will then have to be mandatorily taken from the gram Panchayat and this will prevent encroachment of private, industrial companies on the land meant for community purposes. Thus the right to livelihood of villagers will be safeguarded and the land can be used for various community purposes This will ensure better conservation an management of resources.

To involve the people in the process of decision making, a Gairan Samiti shall be formed, which will consist of five members of which three would be villagers. This is in consonance with the principle of collective choice arrangements.⁶² The participation of villagers will ensure that rules can be modified at their convenience and will. Thus the design principle of monitoring illustrated by Ostrom is complied with. The auditors(gairan samiti, who also consist of appropriators) will be accountable to villagers(appropriators) in small communities.The samiti will maintain a Gairan Common Land register which will contain all the land records regarding gairan. The main functions of the Samiti will be to determine the terms and conditions on which the use and occupation of any such land is permitted, allot the rights to graze on gairan, the manner and the circumstances in which any such land may be disposed of, transferred or sold ;establishing and maintaining boundaries; rules to remove animals unlawfully permitted to graze, maintain Gairan, make fodder available at a low price when its not grazing season or Gairan land is insufficient. The allotment of gairan will no more be based upon auction and the villagers will have an equal right of access to land for grazing of their cattle. Also no grazing fee shall be collected by Panchayat or the collector.

The Gairan samiti is required to take every decision regarding Gairan with the prior consent of villagers. For changing the existing use of land the Gairan samiti is required to hold a meeting of villagers and obtain their consent for whatever it proposes to do. The Gairan samiti is required to note down the minutes of the meeting in the register so as to ensure transparency and fairness in the process. The Gairan samiti will have a Panchayat fund in which they will receive state grants. The money collected from allotment of grazing land shall also be a part of the Panchayat fund. It can also be used to buy fodder for the villagers incase the gairan available is less or has degraded The money collected can also be used for create various facilities for the animals to improve the milk and meat quality and treatment of diseases, Fencing can be done to demarcate the area and prevent the entry of encroachers and to make provision for water on Gairan for animals, and for hilly areas *Shet Tele* (Village Lake) should be formed which will help conserve ground water also. The villagers shall have free access to information (Gairan land register). This shall make them more aware and they can be effective participants in the decision making process.

⁶¹ C.A. Tidsell, *issues in Biodiversity Conservation including the Role of local Communities*, (1995) 22(3) Environmental conservation 216 at 218

⁶² Design principles illustrated by Elinor Ostrom. Refer to Pg. No. 40

All the disputes and claims shall be decided by Gairan samiti and an appeal shall go to the Tahsildar. This will be an effective conflict resolution mechanism as it is low-cost, and consists of local arenas to resolve conflict among appropriators or between appropriators and officials. Various rules have also been provided to make use of surplus gairan land. The design principle numbered seven is also incorporated in the policy which will ensure that state government intervention is less and the gairan samiti along with Panchayat will have the required autonomy to draft rules for governance of community land.

Thus in a country like India with diverse set of values and beliefs, and different traditional practices for governance of commons, it seems more pragmatic to make customized legislations for different areas, keeping in mind the existing practices. Thus it can be concluded that the approach of *comanagement* in which sufficient authority over resource management is vested with the community people, will certainly help to develop a system of governance which is sustainable, efficient and equitable.

As Woodhill contends "regions are the scale at which processes of community participation can most effectively mesh with the broader scale processes of the government. Regions are big enough for state for the State and commonwealth Governments to deal with, yet small enough so that the local people and communities can feel a part of what is going on, participate in decision making, and have a sense of ownership of regional initiatives."⁶³

References:

- Suunil Dighe, Advocate High Court,.; *The Maharashtra land Revenue Code*, 1986 with important Rules and Brief Notes. Snow White Publications.
- D.R. Chaudhary, A.N. Chaudhary, *The Maharashtra land revenue Code, 1966* (Mah. Act No 41 of 1966) (along with rules Notifications and Allied laws).
- Halsburys laws of India, *Environment, Misrepresentation and fraud*, Lexis-Nexis Butterworths Publication, Vol. 14, New Delhi, 2003
- Halsburys laws of India, *Property and Easements*, Lexis-Nexis Butterworths Publication, volume 12, New Delhi 2003
- A. Dan Tarlock, Daniel Barstow Magraw, Stepehn Mcaffrey, Edith Brown Weiss, *International Environmental law and Policy*, Wolters Kluwer, Law and business, Second Ed., 2007
- Paula M. Pevato, *International Environmental law*, Ashgate Dartmouth, Volume 1, 2003
- Natalie p. Stoianoff, *Accessing Biological Resources*, Kluwer law International, London, 2004
- Stuart Bell, Donald McGillivray, *Environmental Law*, Oxford University Press, 2006
- David Campbell and Robert Lee, *Environmental Law And Economics*, Ashgate, 2007
- Michael I. Jeffery, Jeremy Firestone, Karen Bubana, *Biodiversity Conservation, Law +livelihoods*, Cambridge University Press
- Michael Faure, Goran Skogh, Edward Elgar, *The Economic Analysis of Environmental Policy and Law :An Introduction*, 2003
- Gautam Gupta, Santanu Mitra, *The logic of community Participation: Experimental Evidence from West Bengal*, *Economic And Political Weekly*, May 2009
- The Maharashtra Land Revenue (Disposal Of Government Trees, Produce Of Trees, Grazing And Other Natural Products) Rules, 1969

⁶³ J. Woodhill, *Natural Resources decision Making Beyond the Landcare Paradox*, (1996) 3(1); *Australian Journal of Natural Resources Law and policy* 91 at 108-09

APPENDICES

1. APPENDIX 1: Table 1: Availability and Depletion of Common Pool Land Resources by Agro-Climatic Zones
2. APPENDIX 2: Questionnaire used by us for the Case study 1 and Case study 2.
3. APPENDIX 3: Methodology for the NSSO Survey of Common pool resources in India
4. APPENDIX 4: Table 2: Taluka wise Classification of Major Land use in Pune District
5. APPENDIX 5: Table 3 : Taluka wise Livestock in Pune District (As per census 1997)

APPENDIX 1.

Table 1: Availability and Depletion of Common Pool Land Resources by Agro-Climatic Zones

<i>Agro-Climatic Zone</i>	<i>% of common pool Land to geog.area</i>	<i>Reduction in common pool Land (per 100ha)*</i>
Lower Gangetic Plains (LG)	1	2.6
Upper Gangetic Plains (UG)	2	2.8
Middle Gangetic Plains (MG)	8	7.2
Trans-Gangetic Plains (TG)	5	2.1
All Islands (Isl)	9	0.5
East Cost Plains and Hills (EG)	12	1.3
Western Coast Plains and Hills (WC)	10	0
Eastern Himalayas and Brahmaputra Valley (Ehm)	5	2.3
Southern Plateau and Hills (DP)	9	4.3
Western Plateau and Hills (WHg)	10	1.3
Eastern Plateau and Hills (Ehg)	19	5.0
Western Himalayan (WHm)	33	0.2
Central Plateau and Hills (CHg)	20	1.5
Gujarat Coast Plains and Hills (GC)	27	0.1
Western Dry Region (TD)	38	0.2
India	15	1.9

* This column gives the percentage reduction in CPLR during the five years preceding the survey.

*Source: Kanchan Chopra and Purnamita Dasgupta; “*Common pool resources in India:evidence ,significance and New Management Initiatives*”;March 2002

APPENDIX 2

QUESTIONNAIRE:

A separate set of questions had been prepared for panchayat and the villagers. Based on the responses of the Respective Panchayat heads and people from the villages, two case studies were prepared.

For Panchayat:

1. How much of land has been allocated for grazing of cattle?
2. How many cattle are allowed to grazing on the land & are there any condition/restrictions on land while grazing?
3. The rights title and interest whatever in the land vests with the village people or with the Panchayat head?
4. What is the procedure for acquisition of Private Land for grazing purpose?”
5. Whether gairan, is being used for grazing of cattle or is it being used for any other purpose?
6. If yes then, how does it affect the grazing right of villagers?
7. Are there any arrangements made by the government for procuring fodder?
8. What is the amount of compensation to be provided?
9. What is the role of the panchayat head vis a vis the collector?
10. How are the grazing land maintained (by the panchayat or village people)?
11. Where do the funds flow from? Does the state government provide any grants?
12. What is the scheme of allocation of grazing land in the community?
13. What is the scheme for dispute resolution?
14. Is there any separate enactment dealing with land of the commons?
15. Is the grazing land a source of revenue Collection. What is the approximate amount of revenue collected?
16. Is there any kind of preventive mechanism to immune these lands for acquisition for any purpose?

VILLAGERS:

1. What are the various problems one faces when it comes to grazing land?
2. Is the existing scheme of allocation/governance accepted to by all?
3. How dependant are the villagers on grazing land(indirectly asking how much are they dependant on cattle). Are there any other alternatives for villagers incase the grazing land is not available? Is it viable?

4. Is any amount of tax being levied on the villagers for the use of land?
5. Discuss about the role Patils have to play vis a vis the working of grazing land system.
6. Have they been deprived of any old pasture lands/lands taken by government?
7. Any changes to be suggested?

APPENDIX 3

Methodology for the NSSO Survey of Common pool resources in India:

A stratified multi-stage sampling design was adopted for the survey. The first stage units for the sampling were census villages while the ultimate stage units were the households that were to be surveyed. The survey period was January – June 1998. In all 10,978 villages were planned to be surveyed of which, 5242 were allocated to the Central sample and the rest to the State sample. The former was surveyed mainly by the NSSO field staff while the latter was surveyed by State agencies. For purposes of the present discussion, the focus is only on rural areas and is therefore based on the data collected from villages in the Central sample only. The main schedules used in the 54th round were schedule 1 on consumer expenditure, schedule 3.3 on village facilities and common property resources, and schedule 31 which related to Cultivation Practices and Common Property Resources apart from other heads. For schedule 31, 16 households were planned to be surveyed in each village and in all 78,990 rural households were surveyed for the study.

The list of census villages of the 1991 population census for each state formed the sampling frame. From these list of villages, three strata were initially identified by identifying villages with no population, very small population (range 1 – 50) and very high population (more than 15000). The remaining villages were subsequently considered for the formation of the general strata. The total All India sample of 5242 villages for the Central sample was allocated to the different states in proportion to their investigator strength. Whereas for villages with a very small or no population the sample size allocated ranged between 2 to 6 villages, the number of villages for stratum 3 with high population was either 2 or 4, depending on whether the number of such villages in the stratum was less than 20 or more. The remaining sample was allocated to the general strata in each state in proportion to their population.

For selecting households, all the households of a sample village were first classified into three strata. These were households engaged in free collection (other than fuelwood and marine fishing), households possessing land less than 0.40 ha and all the rest formed strata 3. As mentioned earlier, for schedule 31 a sample of 16 households from each selected village was surveyed. The 16 households selected from such a sample village, were allocated among these three household strata in proportion to the number of households in each sampling frame subject to a minimum allocation of 4,2 and 2 households respectively in strata 1, 2 and 3. The 63 sampled households were selected by circular systematic sampling with random starts in each stratum.

It becomes fairly obvious from the above brief description of the sampling procedure that the sampling was done in a comprehensive and unbiased manner, keeping in view the need to develop a dataset that would accurately reflect the state-level macro picture. It is of interest to see how far these overall state and all India level estimates on contribution of Common Property Resources compare with the evidence gathered by micro studies conducted in different states of India.

APPENDIX 4

Table 2: Talukawise Classification of Major Landuse in Pune District

Taluka	Permanent pasture and other Grazing Land
Pune City	-
Khed	9,457
Ambegaon	3,000
Junnar	1,714
Shirur	2,197
Daund	2,728
Indapur	1,447
Haveli	9,808
Baramati	3,171
Purandhar	4,726
Bhor	20,168
Velha	1,022
Mulshi	2,029
Maval	4,110
TOTAL	65,577

*It should be noted that only relevant part in the table has been illustrated above.*Source: www.mpcb.gov.in (Refer to *Annexure – 1: Supporting Data for District Environmental Atlas of Pune.*)

APPENDIX 5

Table 3. Talukawise Livestock in Pune District (As per census 1997)

Sr.No	Taluka	Oxen	Sheep	Goat	buffalo	Cow	poultry	others	Total livestock
1	Pune City	1,613	1,672	11,525	23,313	3,225	58,326	11,597	111,271
2	khed	33,674	9,199	46,727	124,279	15,654	88,093	67	317,693
3	Ambegaon	19,668	13,076	51,497	85,524	10,892	58,161	946	239,764
4	junnar	27,652	7,006	67,423	104,834	11,014	73,459	1,675	293,063
5	Shirur	21,047	55,715	55,988	93,671	10,163	114,095	2,615	353,294
6	Daund	16,266	85,061	83,378	129,006	15,110	125,867	6,057	460,745
7	Indapur	13,715	31,575	102,731	121,411	14,194	242,121	5,571	531,318
8	Haveli	14,786	43,412	35,096	82,118	12,359	424,381	4,683	616,835
9	Baramati	10,069	92,226	93,858	122,129	9,339	240,884	4,773	573,278
10	Purandhar	17,542	66,283	54,584	72,331	9,573	116,255	6,231	342,799
11	Bhor	11,919	2,470	13,350	61,381	8,808	81,881	430	180,239
12	Velha	7,635	978	4,689	38,003	6,628	26,525		84,458
13	Mulshi	13,526	2,202	10,771	56,018	9,265	74,394	246	166,422
14	Maval	20,472	1,862	13,209	68,171	10,824	440,152	814	555,504
	Total	229,584	412,737	644,826	1,182,189	147,048	2,164,594	45,705	4,826,683

*Source: www.mpcb.gov.in (Refer to *Annexure – 1: Supporting Data for District Environmental Atlas of Pune.*)