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Heterogeneity, Commons, and Privatization: Agrarian Institutional Change in Goa

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9.1. Introduction

This chapter attempts to address two related questions in the context of agrarian transitions in Goa, a small western state in India. At the time of Goa's independence from Portuguese colonization in 1961, a major part of Goa's agrarian lands was owned and regulated by a community institution called the *comunidades*. In 1964, the government brought in land reforms through the Tenancy Act (1964) and Rules (1965 and 1975) which gave security of tenure to tenants and attempted to make land occupancy equitable. Subsequently, tenants were given the right to purchase land at fixed rates to convert their tenancy claim to ownership rights. This applied not only to private lands but also to the *comunidade* lands and amounted to virtual privatization of the community lands, which were till then common property in the classic sense of the term.

This chapter addresses the following two questions:

- What is the impact of heterogeneity in asset ownership on cooperation? Does a more equal ownership of (agricultural) land make agents (cultivators) more amenable to cooperate on matters pertaining to productivity improvement?
- Does privatization of commons lead to greater sustainability? By ecological sustainability we mean the maintenance of recovered lands in their current ecological status of agricultural land use and by conservation we imply undertaking protective measures (embankment maintenance) from unintended flooding by tidal waters (similar to Holden, Shiferaw, and Wik 1998). Will privatization of commons lead to better

soil conservation measures and maintenance of agricultural lands? By soil conservation we mean measures to control soil salinity particularly embankment maintenance in this case.

In Goa, most of the paddy cultivation is on 'recovered' lands (*khazans*) and a large section of these lands in the coastal zones was under the control of the *comunidades* prior to 1961 when Goa joined the Indian union. In 1964, tenancy legislation was introduced which gave security of tenure to tenants but in the process also paved the way for privatization of the *comunidade* lands. The empowerment of the tenants and disenfranchisement of the *comunidades* had ecological implications since embankment maintenance which had been done by this institution was now neglected, leaving the fields open to salinity ingress.

We find that on the one hand the new resource owners were unable to cooperate to finance public investment and on the other there was an exit mainly of *Gaunkars* who were the resource managers under the previous dispensation. The increase in reported fallows due to salinity indicates declining sustainability in this region.

In Section 9.2, which follows, we examine the existing theory on cooperation and sustainability followed by a discussion in Section 9.3 of transition in local institutions in Goa. Section 9.4 presents results of the primary survey with an econometric model of exit and sustainability. Section 9.5 concludes the chapter with a discussion on the findings.

9.2. Heterogeneity, cooperation, and sustainability

Communities with extreme inequalities or very homogenous distributions of wealth are often seen to exhibit greater cooperation than others and a Kuznets(-like) relationship could exist between inequality and conservation.¹ The so-called 'Olson effect' is valid to the extent that threshold effects exist in wealth holding. Anyone below a certain threshold level of wealth will not cooperate, irrespective of what others do. Beyond the threshold level of wealth holding, cooperation could emerge if agents find others cooperating too. However, cooperation would break down if the proportion of those below the threshold is high (Dayton-Johnson and Bardhan 2002).

On normative grounds asset redistribution may be desired, but what is also of concern are the ecological consequences when endogenous institutions are

¹ The Kuznets curve (relationship) originally examined the problem of inequality and economic growth of nations. Empirical evidence collected by Simon Kuznets suggested that at very high and low levels of inequality the rate of growth was lower than in the intermediate range. The Kuznets inverted-U relationship has since been borrowed for use in debates on environment and a similar pattern is suggested *vis-à-vis* the relationship between inequality and conservation of natural resources especially in the context of common property resources.

replaced by new inorganic ones wherein the incentives for conservation may not be optimally configured (Jodha 1980; Mukhopadhyay 2002*b*).

The impact of such changes is compounded when there are strong incentives and opportunities for exit. For example, after land redistribution or tenancy reform, alternative economic opportunities may emerge that entice the farmer off the field. Agriculture may no longer provide a sufficient incentive to the new beneficiaries while the old owners stand disenfranchised. This might defeat the very purpose of tenancy reform (to increase efficiency of farm output and provide secure incomes to the tenant) as the gainers in the redistribution may have reduced incentives in farming due to alternative income sources. The growth implications are that it might impede adoption of new technology and thereby lower the long-term growth path.

Even if one were to keep issues of institutional change and property-rights structures aside for a moment, asset redistribution in the presence of non-convexities could reduce productivity. If the technology is such that it involves high initial costs, small farmers in the presence of an imperfect credit market may not be able to bear these costs and therefore get trapped in a low productivity cycle—the so-called Olson effect (Baland and Platteau 1997).

It must be noted here that a large part of the above debate is in the context of privately owned resources—redistribution of land already in the private domain. However, we now join issue with the second question that drives this study, what happens when common property is privatized?

9.2.1. *Privatization and the commons*

The property rights school has argued that when commons have associated externalities, privatization would be the best solution because it would enable the resource owner to internalize all the costs and benefits (Demstez 1967). This obviously is an efficiency-enhancing argument because public (and resource) economics has struggled to suggest policy instruments to achieve this without privatization. The external costs which are not accounted for under community ownership are expected to be internalized under private ownership—especially individual ownership. And, of course, it does not matter who owns the resource because it would not affect the equilibrium outcome (Coase 1960).

The literature, however, is aware that there are numerous situations where privatization would not lead to efficiency gains. If contracts are incomplete, it could loosen cooperative bonds and thereby reduce the extent of efficiency gains (Seabright 1993). This could happen in two ways. Firstly, it could reduce the mutual social interdependence that creates cooperation (Ostrom 1990). Secondly, since property subsequent to privatization becomes tradeable, it makes agents less interested in long-term cooperative behaviour, and people put in less effort to build up cooperation (Grossman 2001). Under such

conditions, a self-governing local community with commons might have a more efficient production locus than if private property was established.

This of course brings us to the question that when we are targeting homogeneity, and it is done through privatizing the commons, what would be the likely outcome especially in the context of ecological sustainability (Baland and Platteau 2003; Dasgupta and Maler 1995; de Janvry *et al.* 2001; Knox and Meinzen-Dick 2001)?

The neutrality theorem suggests that a change in asset distribution should not affect the provision of public goods. This is however dependent on two crucial assumptions—the public good is pure such that all have equal access to the good and all agents contribute irrespective of asset changes. If the redistribution actually increases the number of contributors then the supply of public goods will increase and on the other hand if number of contributors decline then supply will decline (Bergstrom, Blume, and Varian 1986).

The importance of this for CPR management is crucial for two reasons. We need to understand whether asset distribution increases the number of contributors to the public good or whether it leads to its reduction. If the distribution leads to greater homogeneity in asset ownership but leads to a reduction of contributors (increase in number of free-riders) then the resultant situation though socially desirable in terms of the homogeneity goal would not be ecologically sustainable. This is a possible outcome when there is a decline in ‘institutional supply’ simultaneous with the redistribution (Ostrom 1990; Becker and Gibson 1998).

We address these questions in the context of the agrarian institutional transition in Goa, a small state in western India, which was one of the earliest (and last) European colonies in India (1510–1961). The issues that we focus on relate to the impact of inequality on cooperation and of privatization on efficiency and sustainability. In the following sections, we describe the history of agrarian institutions, their transition through the post-colonial phase and examine the impact of tenancy legislation on the land management system. The historical material is collated from existing secondary literature on Goa’s history.

9.3. Agrarian organization in Goa

Goa has a long-established tradition of community land ownership and management. A large part of the state’s ‘recovered’ lands (*khazans*) and hill tracts were owned by a community institution called the *comunidade* (or *Gaunkarias*). The original settlers of the village were called *Gaunkars* and male descendants were given that title on reaching adulthood in the system. They jointly laid claim to the ownership of village lands and cultivated them by renting lands through periodic auction. Auction rents were used

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Table 9.1. Distribution of land under private and *comunidade* ownership (prior to land reforms)

Taluka	Total area under paddy cultivation (in hectares)	Paddy area under <i>comunidades</i>	Per cent under <i>comunidades</i>
Goa	44698	14765	33.0
North Goa	23553	8624	36.6
Ilhas	6398	3569	55.8
Bardez	6664	3764	56.5
Pernem	3504	0	0.0
Bicholim	2599	548	21.1
Sattari	1609	1	0.1
Ponda	2779	742	26.7
South Goa	21145	6141	29.0
Sanguem	2422	90	3.7
Canacona	2682	42	1.6
Quepem	4838	195	4.0
Salcete	10184	5207	51.1
Mormugao	1019	607	59.6

Source: GoG 1964a: 16.

for maintenance of the embankments and sluice gates (soil-protection public works) among other things like dividends to the *Gaunkars* (Pereira 1981).

Soon after the liberation of Goa in 1961, the government appointed a land reforms commission (28 February 1963), which submitted its report in 1964. It recorded that a large proportion of the agricultural land in Goa continued to be held under the *comunidade*—approximately 33 per cent of the area (129,009 hectares) under paddy cultivation (Table 9.1 and Figure 9.1). This amounted to 65 per cent of the net sown area in Goa and in coastal areas it was nearly 92 per cent. In the *talukas* (*concelhos*) of Salcete, Bardez, Mormugao, and Goa (now known as Tiswadi *taluka*), where lies the largest concentration of the area under paddy, the *comunidade* owned more than 50 per cent of the cropped area (Table 9.1 (GoG 1964a)).

This is also the area of the 'old conquest', where the Portuguese colonization lasted the longest and the rules and regulations regarding the *comunidades* got codified.² The 'new conquest' areas which became part of the Portuguese colonial territory after a gap of almost two centuries (in the eighteenth century) did not see a similar preservation of *comunidades*' functionality. There were historical distortions to natural evolution. Pernem *taluka*, for example, was handed over to the *Ranes* to defend Goa from the aggression of *Marathas* (a neighbouring rival kingdom) (de Souza 1987).

² The Portuguese colonization which began in 1510 was in two distinct phases in Goa. The 'old conquests' (*Velhas Conquistas*) included the conquest of the areas of Tiswadi, Mormugao, Bardez, and Salcete. The 'new conquests' (*Nuovas Conquistas*) was separated by two centuries (late 18th century—between 1763 and 1788) when Ponda, Quepem, Canacona, Pernem, Sattari, and Bicholim came under the Portuguese rule (Xavier 1993).

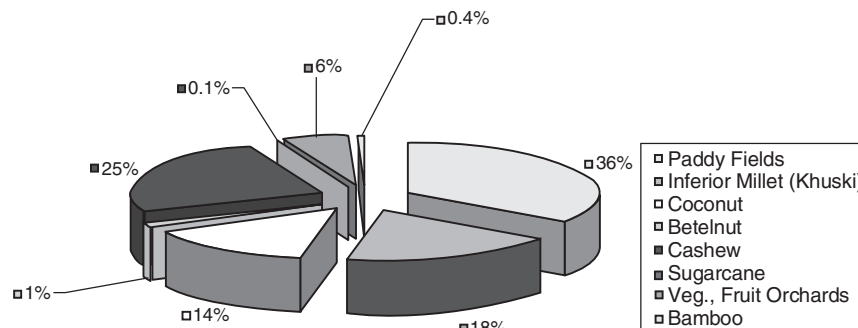


Figure 9.1. Type of cultivation in area (hectares and percentage)

Source: GoG 1964a: 12.

9.3.1. History of land management

Documentation on the *comunidades* for the colonial period indicates that these village-level institutions played a very important role in the agrarian economy of Goa. Some argue that till not so long ago, the entire agricultural area was owned by the *comunidades*. The process of creation of private cultivable lands happened mainly during the Portuguese period when land grants were made by the colonial state to expand its support base and in later decades (1540 onwards) when the Portuguese crown undertook inquisition in all its colonies to encourage religious conversion (D'Costa, undated).³ The financial buoyancy of the *comunidade* depended on the productivity of its lands, their main source of revenue and its outgoings. Table 9.2 summarizes the incomes and expenditures for the period 1954–63 under different heads undertaken by the *comunidades*.

9.3.2. Institutional transition

In 1964 the government enacted the Goa Tenancy Act, which took the powers of land auction out of the hands of the *comunidades* and transferred the responsibility for embankment maintenance to tenants. It provided for security of tenure for the tenants and through subsequent notifications and the

³ Afonso de Albuquerque who established the Portuguese colony in Goa (1510) encouraged intermarriages between Portuguese soldiers and widows of slain Muslim and Hindu soldiers. Villages which made land grants to these couples were allowed to forgo their *coxi vordo* (voluntary contribution to the king). Prior to this, private ownership of land was limited to the house plot (Xavier 1993). The second big boost to private property in Goa was at the time of the Inquisition (1541). The state confiscated all lands of temples, and those who refused to convert or conform to the edicts of the Inquisitorial authority. The confiscated lands were distributed among Christian missionary institutions for economic support and new converts to seek their cooperation.

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Table 9.2. Main sources of income and expenditures of the *comunidades*

Main income categories	Period 1954–63	Main expenditure categories	Period 1954–63
Rent from lessees of agricultural lands	86%	Land tax	18.5%
Foro (form of rent) and income from auction or lease of fishing rights, salt pans, etc.	11% approx.	Administrative expenses	20–7%
		Expenses on ordinary and extra-ordinary works—construction and maintenance of bunds, sluice gates	16%
		Contribution to Juntas de Fregusia (Village Associations)	5%
		Contribution of charity, churches and temples	6%
		Jonos (dividends) to members	16%

Source: GoG 1964a: 39.
GoG 1967a: 59–63.

issue of rules and regulations (1975) gave the tenants the right to buy land at a low fixed price.⁴

Importantly, simultaneous with the tenancy reform there was an institutional transition from one form of local self-governance—the *Gaunkaris* (or *comunidades*), to another form—the *panchayats* which created incentive-incompatibilities (Mukhopadhyay 2002a). The much-talked-about effectiveness of local self-government (in the form of *panchayats*) to undertake ecological sustenance has been put to test in Goa. Since the *panchayats* in all rural areas in Goa issue licenses for construction, there has been large-scale land conversion in the coastal zones with active help from panchayats (Alvares 2002). Construction fees and licenses contribute to the bulk of their finances, and therefore the institutional imperative is to encourage construction which is mainly non-agricultural in nature.⁵

The government presumably realized that with the reduced financial capability, the soil conservation and productivity-enhancing activities of the *comunidades* including maintenance of embankments, de-silting of rivulets, etc., had to be undertaken by a different agency. The *comunidades* used to undertake these activities out of the profits earned from the public auctions of cultivation rights.⁶ Now that there were little or no revenues accruing to

⁴ It also reduced the rent to one-sixth of the last-auctioned value prior to the Tenancy Act. Currently, tenants are reportedly not paying even this rent to the *comunidades* since they cannot be evicted.

⁵ The following *talukas* cover the coastal zone of Goa—Bardez, Tiswadi, Salcete, Mormugao, Canacona, and Pernem.

⁶ The *taluka*-wise expenditure and income statement of *comunidades* (in rupees for the period 1954–63) is provided in Table 9.11 (in Appendix 9.1) to give a measure of their financial buoyancy. Table 9.2 earlier shows the main heads of incomes and expenditures.

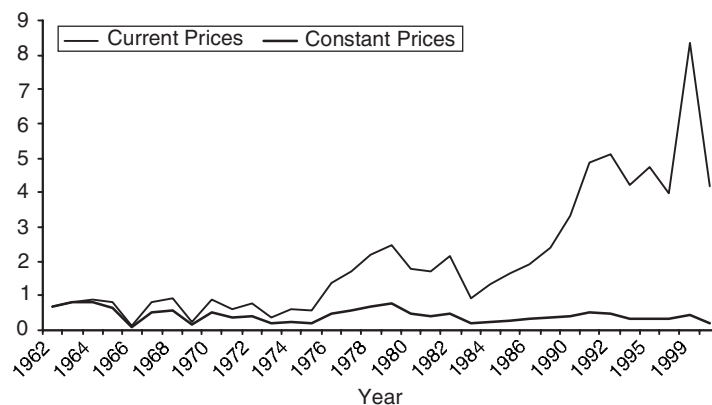


Figure 9.2. Government expenditure incurred in embankment maintenance (in Rs million)

Source: GoG (various years).

the *comunidades* they would be financially incapable of undertaking these activities.

In 1958 the Portuguese government had constituted a Bunds Committee to supervise the maintenance of embankments which oversaw the expenditure of an estimated Rs 8,34,400 in the two years prior to liberation to bring back into cultivation about 959 hectares of land. Even after liberation, this committee spent considerable sums in the first few years (GoG 1967*a*). It was replaced by the Soil Conservation Division in 1969 which was given responsibility for undertaking maintenance of embankments (GoG 1992). It was created with the purpose of assisting tenants who may not have the financial strength to execute large repairs. The total expenditure (in current prices) on embankments has gone up from Rs 0.69 million (in 1962) to Rs 4.16 million (in 2000) while the area protected by bunds has remained the same on a point-to-point basis though there are interyear variations, (see Figure 9.2). However, in real terms, the actual expenditure on embankments has declined. This is a further indicator that physical maintenance is getting worse.

Section 9 of the Agricultural Tenancy Rules (1975) details the process of execution of repairs. The managing committee of the tenants' association was empowered to undertake any immediate repairs without calling for auction of works as long as the amount did not exceed Rs 500 and the *Mamlatdar* (who is the executive and quasi-judicial authority at the subdistrict—*taluka* level) and Soil Conservation Division were informed of the same within twenty-four hours. If the expected expenses exceeded Rs 500, then all the work had to be routed through the Soil Conservation Division up to an amount

Rs 5,000. If the expenses were beyond Rs 5,000 but less than Rs 10,000 then prior sanction had to be obtained from the development commissioner. The *Mamlatdar*, on execution of the work, is expected to recover a portion of the expenses from the beneficiary farmers through the managing committee of the tenants' associations. In case the tenants do not agree then the Soil Conservation Division/*Mamlatdar* were the deciding authority. The designated public authority for overseeing public works on the embankments is the *Mamlatdar* (GoG 1964b).

It has been pointed out by some that the discovery of iron ore deposits in Goa's hinterland (in early 1950s) had a direct impact on embankment maintenance. The decline in tree cover in the upstream areas led to increased topsoil run-off in the mining areas and this was deposited at the river mouth (called sand barring) causing increased tidal movements. Secondly, the barges carrying ore from the mines to the Mormugao port increased wear and tear of the embankments abetting saline inundation (Alvares 2002). This being a new development in the 1950s, the government gave concessional loans (at the rate of 2 per cent payable in 10–15 instalments) for repair of embankments (GoG 1967a).⁷

Section 42A of the Goa, Daman, and Diu Agricultural, Land Tenancy Act (1964) outlines the procedure for discharge of joint responsibility of tenants wherever any 'conservancy, maintenance or repair of any bund, embankment' work involved more than one tenant and states that the government would frame appropriate rules for regulating the same. However, it is only the Agricultural Tenancy Rules (1975) that made it mandatory to form tenants' associations by all tenants cultivating in the vicinity of bund (embankment) and who have benefited jointly from the bund. Anticipating that the tenants may not have sufficient finances to undertake large public works, the government promised to reimburse the expenses undertaken by the tenants association to maintain the embankments (Section 35 of the Tenancy Act 1964 and Section 12A Tenancy Rules 1965). In a review of the functioning of the tenants association, the Agricultural Land Development Panel report (ALDP) found that a total of 138 tenants' associations were created (GoG 1992) and 87 per cent of these associations were in the five *talukas* of Pernem, Bardez, Bicholim, Ponda, and Tiswadi. These five *talukas* also accounted for a similar fraction of *bunds* with sluice gates, 91 per cent

⁷ The official agricultural efforts and concerns prior to liberation in 1961 can be perceived from some of the reports of the Agricultural Missions that came from Portugal to Goa. Their primary concern was with methods of increasing agricultural production, deciding on appropriate agricultural crops, soil mapping, fertilizer composition, etc. See for example H. Lains e Silva (1961) *Relatorio da Actividade da Missao de Estudos Agronomicos do Ultramar de 17 de Junho ate 31 de Dezembro de 1960*, Lisboa; and J. Sacadura Garcia (1961) 'Communicacoes' *Missao de estudos agronomicos do Ultramar*, Lisboa; Hernani Cidade Mourao (1961) *Missao de estudos Agronomicos do Ultramar—Outline of the Rice Varieties Experiments to be carried out in India*, Lisboa.

of the land, and 92 per cent of the membership of the associations. However, by 1992 most of these tenants associations were in financial distress (GoG 1992).⁸

The current situation is that even minor repairs are left to the state machinery to execute (GoG 2000). The process involved in activating the state system is cumbersome and lacks local participation. It is evident that in the new regime the tenants associations were unable to sustain collective action due to non-contribution by a critical number of members. In fact, it would be rational for them to anticipate that the state would intervene if there was a decline in embankment maintenance for the very reasons that led to redistributive measures in the first place.

This expectation, however, has not been entirely realized as the incentives for the state to undertake soil conservation are different from those of the tenants. As discussed above, even though there was an increase in expenditures for soil conservation at current prices, there has been a substantial decline in real terms. With reduced local contribution, participation, and a decline in real expenditures, it is but to be expected that embankment maintenance would decline.

9.3.3. *Impact of transition*

The above discussion indicates that an endogenous self-sustaining institution (the *comunidade*) which owned and maintained the village cultivable lands and was responsible for the administration was replaced in the post-1961 (independence) period by two local-level bodies—the *panchayats* and the tenants' association. The *panchayats* neither have the mandate, the incentive, nor the financial strength to maintain such large agrarian public works. The tenants' association, which was given the responsibility for land maintenance and was supposed to bring together the beneficiary tenants failed to sustain itself as an institution.

The Tenancy Act (1964) began the process of creating private rights of tenants on *comunidade* (or *Gaunkari*) lands to ensure distributive justice to individual tenants but did not address the question of the ecological impact of this transition. There is a fair amount of reported evidence indicating decline in embankment maintenance (Alvares 2002). In 1999, the embankments in parts of Divar Island gave way which led to setting up of the multidisciplinary committee (de Souza undated; GoG 2000). Smaller breaches have been reported on a regular basis (GoG 1992; TERI 2000).

⁸ The main sources of income of the tenants' associations were membership fees (fixed at Rs 10 for enrolment and an annual membership fee of Rs 10), earnings from fishing leases of the sluice gate, and trees (Tenancy Rules 1975, Section 7 (2 & 3)).

9.4. Field survey: a note

In order to understand the current state of the agrarian economy in Goa, 360 households from four villages were interviewed in the years 2002–3. Of the two districts which constitute the administrative division of Goa, three villages were chosen from North Goa (Goltim, Malar, and Calangute) and one from South Goa (Curtorim). The villages of Goltim and Malar are located on two sides of Diwar, an island on the Mandovi estuary, and have one of the oldest and most intricately laid systems of embankments and are rural agricultural systems. Calangute is a seafront village in Bardez *taluka* which has seen rapid urbanization impacts and has the highest visitations of tourists in Goa (GoG, various years). It is a coastal village on the Arabian Sea which still retains a fair amount of agricultural land and activity. Curtorim on the other hand is a village on the Zuari River and is regarded as one of the villages with highly fertile soils and is primarily agricultural as far as economic activity is concerned. These villages were selected to represent different agro-economic zones. The island villages were representative of an economy still largely dependent on agricultural or economic incomes being generated outside the village. Calangute has a fair degree of tourism services, therefore incomes in the village are diversified and offers exit options. Curtorim, Malar, and Goltim on the other hand are river front villages but also have direct road links with the rest of the state. The village selection was done on the basis of peer discussion and the villages were chosen for their particular characteristics which could be representative of similar coastal villages of the state. In each village ninety households were randomly selected from three categories of agents—*Gaunkars* (the male descendants of original village settlers), the tenants who rented *comunidade* lands on auction, and the *Mundkars* who were employed on private agricultural lands.⁹

The survey was meant to provide information on: (a) The current landholding structure to address the equity and redistribution question, (b) the extent of fallow lands due to salinity which relates to sustainability and conservation, and (c) the exit options of agents from the agrarian economy.

Secondary data on fallows due to salinity was not available to us either for the current period or the pre-1964 period. However, the interviewees felt that maintenance of the embankments and therefore the protection of the *khazan*

⁹ According to the Royal Decree of 1901 (24 August) the *Mundkar* is defined as 'an individual residing in a dwelling settled in another's rural property mainly with the aim of cultivating or for looking after the property' (GoG 1967a: 283). The *Munddcarato* system prevailed largely as a verbal agreement between the landlord and *Mundkars* and sometimes as unwritten conventions followed over generations. Properly drawn-up contracts were rare (GoG 1967a).

lands under the *comunidades* was more effective than under the current institutional arrangement. This is also borne out by the field results which seem to report losses of agricultural area in the post-tenancy reform period. We are aware that salinity ingress has been a concern even for the state administration since it appointed a multidisciplinary committee in 1999–2000 to study and find a solution for the protection of embankments (GoG 2000). Almost a decade earlier the Agricultural Land Development Panel (ALDP) too reviewed the functioning of the new institutions (tenants associations) (GoG 1992).

9.4.1. *Heterogeneity in land ownership*

Some basic findings that would be of interest in the current chapter are the changes in landholding pattern, extent of damage due to non-maintenance of public works in contemporary Goa, and the exit of agents from the agrarian system. We begin by briefly discussing the current landholding structure.

To understand changes in heterogeneity we must have a comparative baseline figure. However, there is no secondary data available for the landholding pattern especially for private lands by socio-economic category of owners.¹⁰ We could, however, from our survey findings attempt to reconstruct the pre-tenancy land ownership scenario. We assume that all private lands were under the ownership of the *Gaunkars* and that they continue to hold their private lands within the group. On the other hand, lands claimed by the tenants and *Mundkars* were earlier *comunidade* lands.

In our survey we find that the *Gaunkars* claimed to own an average of 0.2788 hectares (ha) of private lands and a total of 0.4877 ha. This implies by our assumption above that tenants and *Mundkars* did not own any private lands in the pre-tenancy period and the *Gaunkars* alone had private lands of 0.2788 ha each. The tenants during the survey claimed to own an average of 0.6291 ha (of which only 0.1111 ha is private or non-*comunidade* land). The *Mundkars* claimed 0.2920 ha (of which 0.0407 ha is private land and 0.2513 ha is *comunidade* land) (Table 9.3).¹¹

So while the *comunidades* lost their control over its common lands, the tenants on average gained 0.6291 ha and *Mundkars* gained 0.2920 ha. The post-tenancy legislation scenario therefore is more equitable than the pre-tenancy situation.

¹⁰ There is secondary data available from various sources on landholding by size but this is not classified according to socio-economic categories.

¹¹ There is a possibility of the different categories of respondents overstating or understating claims over land ownership for various reasons. In some cases, the tenants and *Mundkars* have not transferred the ownership titles to their names and in some cases there are legal disputes over ownership.

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Table 9.3. Average landholding by category in hectares (survey results 2002–3)

Category	Average private area	Average <i>comunidade</i> area	Average total area
<i>Gaunkars</i>	0.2788	0.2089	0.4877
Tenants	0.1111	0.5180	0.6291
<i>Munkars</i>	0.0407	0.2513	0.2920
All Categories	0.1435	0.3260	0.4696

9.4.2. Landholding size

In the eleven *talukas* of Goa, prior to the tenancy legislation, there were 31,259 plots under the *comunidades'* control and 30,551 tenants cultivated these fields before the tenancy act came into force (GoG 1967*b*; Table 9.4). Among these plots the maximum number 17,719 (over 56 per cent) were of the size 0.4 ha or more, which is the highest category of plot.

In our primary survey we found that the highest frequency of ownership was in the category 0.4–0.5 ha which is similar to the frequency of plot size prior to land reform (Figure 9.3).

We examine next the issue of migration as the survey data indicates that there has been significant out-migration. A total of seventy-seven households reported as having at least one member abroad, and fifty-three were from the category of *Gaunkars*. An employment opportunity outside the system is described as an exit option. In an agrarian economy this could be off-farm employment, or in the extreme case a physical departure or displacement from the agrarian region implying migration.

9.4.3. Exit options and the commons

The impact of exit options on commons in the presence of heterogeneity is a complex phenomenon and is said to depend on the relationship between wealth inequality and exit options. Two possibilities are cited: (a) when exit has a 'concave' relationship with wealth inequality—the value of outside option rises with wealth but at a decreasing rate as wealth rises. In this case conservation would decrease with increase in inequality, and (b) when it has a convex relationship with wealth—the value of outside option rises with wealth at an increasing rate. In this case, increase in inequality has an ambiguous effect on conservation (Dayton-Johnson and Bardhan 2002). Numerous case studies are available wherein the rich as well as poor are seen to exercise the exit option so it is inconclusive to argue whether it is the rich or the poor who break the cooperation (Baland and Platteau 1999).

We find evidence that securitization of tenure created greater homogeneity, but on the other hand might have been responsible for the exit of the

Table 9.4. Taluka-wise distribution of *comunidade* plots (in hectares) (prior to tenancy reforms)¹

Talukas	0-0.0999	0.1-0.1999	0.2-0.2999	0.3-0.3999	0.4-above	Total plots (lots)	Number of tenants in 1963	Resident Gaunkars & shareholders	Total no. of registered Gaunkars & shareholders
Tiswadi	207	257	541	758	5057	6820	6025	3457	8870
Salcete	206	217	769	1998	7112	10302	11017	4956	12473
Bardez	314	890	2729	2478	3459	9870	9494	14128	25003
Mormugao	21	44	185	281	791	1322	1601	790	2090
Ponda	93	194	315	349	767	1718	1350	1357	2321
Bicholim	19	83	136	145	417	800	641	—	1256
Pernem	—	—	—	—	—	—	41	—	0
Quepem	—	6	6	3	63	84	165	85	107
Sanguem	230	—	—	—	—	230	146	80	106
Canacona	16	11	—	12	52	109	67	63	133
Satari	—	1	1	1	1	4	4	29	38
Total	1113	1703	4700	6025	17719	31259	30551	25967	52431

Source: GoG (1967b) Annexure No: 6: 18-19.

¹Pernem is a peculiar case because all the *comunidades* of Pernem forfeited their lands and there is no inscription of Gaunkars in this taluka. During the Portuguese colonial rule, Pernem was a territory bordering the Maratha lands and the charge of the entire taluka was given to the Ranes to protect, thereby disenfranchising the *comunidades*.

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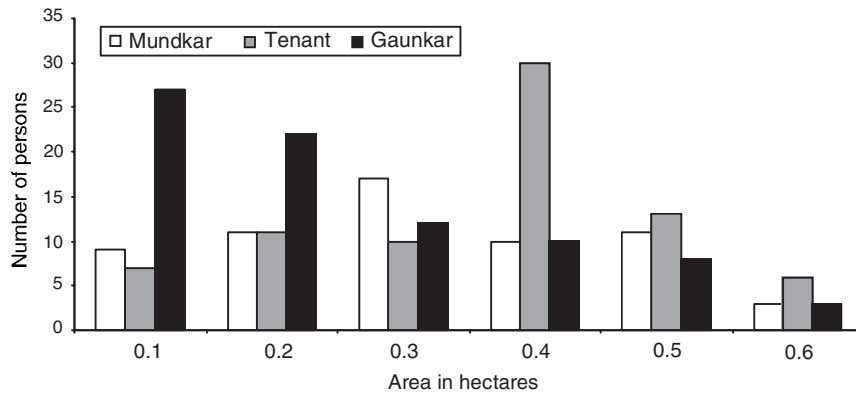


Figure 9.3. Land ownership distribution

disenfranchised *Gaunkars* from the agrarian system.¹² The change in tenancy laws caused loss of control of the *comunidade* lands and possibly increased the search for exit options.¹³

The frequency of exit by the three categories in the surveyed villages is shown in Table 9.5 and Figure 9.4. The first migration of this generation in these villages is reported in 1958 from among the *Gaunkars*. The migration from among the *Gaunkars* has been consistently higher than that of the other two categories.

The subsequent migration by tenants and *Mundkars* can be attributed to two factors: (a) the declining productivity of land, and (b) old social networks wherein the early migrants (*Gaunkars*) passed on information about job opportunities abroad.

9.4.4. Determinants of exit

In order to test for determinants of exit (here interpreted as immigration abroad) we used the decline in land productivity due to salinity ingress as a determining factor. The length of the fallow period (in years) is used as a proxy for decline in land productivity. We also wanted to test if any particular category (*Gaunkars*, tenants, or *Mundkars*) exhibited differential behaviour.

¹² Tourism was another exit option that opened up in a big way in the early 1980s (see Mukhopadhyay and Desouza 1997).

¹³ It is pertinent here to mention that out-migration is not new to Goa. For over two centuries there has been a significant diaspora of Goans living in different parts of Africa (Portuguese and non-Portuguese colonies at that time) (de Souza 1994). What makes this phase of migration significantly different is its impact on the local economy because of the development of international financial markets which permit easy transfer of remittances from abroad even to remote villages. This has had deep impacts on the local economy which we presume was not the case in the earlier phase.

Table 9.5. Persons with family abroad and receiving foreign remittances (current survey data)

Category (90 persons interviewed in each category)	Households with family abroad	Probability of having a family member abroad	Households receiving foreign income	Proportion of members abroad and remitting money
<i>Gaunkar</i>	53	0.44	25	0.47
Tenant	17	0.14	9	0.52
<i>Mundkar</i>	7	0.05	6	0.86
Total	77	0.213	40	0.38

A Logit model is set up with a dependent dummy variable indicating whether the household has a member abroad or not ($Frn_D = 1$ for yes, and $= 0$ for no). This was assumed to be a function of:

- Category to which an agent belonged—we use the *Mundkars* as the reference category and dummies for *Gaunkars* (Gaunk) and tenants (Tenant), as independent variables to test which of these categories showed greater inclination to exit (Gaunk = 1 if *gaunkar*, Gaunk = 0 if non-*gaunkar*, similarly Tenant = 1 if tenant, Tenant = 0, otherwise).

Expected sign of coefficient for Gaunkar is positive (as *Gaunkars* being disenfranchised by the land distribution system are expected to have a higher propensity to exit). The expected sign of coefficient for tenants is uncertain. As beneficiaries of tenancy legislation they should have little incentive to exit, but on the other hand, with increased fallow, search for other income would have a positive impact on exit. However, we include a variable (discussed below) for the number of years land has lain fallow and therefore the negative impact should not show up.

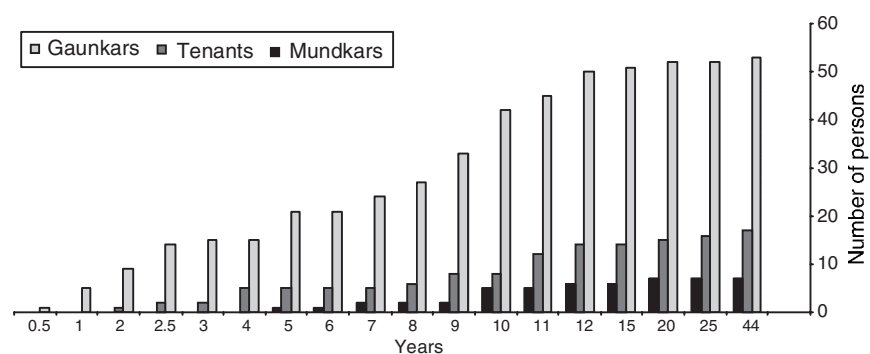


Figure 9.4. Cumulative migration abroad (survey data). Year 1958–2001

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Table 9.6. Description of variables and expected signs

Variable	Expected Sign	Description
Gaunk	+	<i>Gaunkar</i> dummy (If <i>Gaunkar</i> = 1, Otherwise = 0)
Tenant	?	Tenant dummy (If Tenant = 1, Otherwise = 0)
Fal_Yrs	+	Number of years land is fallow
Other_Y	?	Non-agricultural incomes (per month), Categories: less than Rs 500 = 0; Rs 501–1000 = 1; Rs 1001–2500 = 2; Rs 2501–5000 = 4; Rs 5001–above = 5
FSA	+	Family size (adults)

The number of years land lies fallow (Fal_Yrs) should increase the propensity to search for exit options. Expected sign of coefficient is positive.

- We tested to see if ‘Other Incomes’ (Other_Y—Non-Agricultural incomes excluding foreign remittances) have any impact on the exit of persons from the agrarian system. Expected sign of coefficient is uncertain. It is possible that the less privileged would have a higher propensity to exit. But it may also be anticipated that the opportunities for exit may be much higher for the better endowed.

Finally we also wanted to check if the size of the family (adults) was influencing the desire to exit as a push factor in migration. Expected sign of coefficient is positive (See Table 9.6).

Table 9.7 provides the summary statistics of the independent variables in the Logit function.

The logit function tested for is:

$$\text{Frn}_D = f(\text{Fal_Yrs}, \text{Gaunk}, \text{Tenant}, \text{Other_Y}, \text{FSA})$$

The results of the regression are reproduced in Table 9.8.

Among the variables presented in Table 9.8, the coefficients of family size (adults) and the category tenants (Tenant) are not significant even at the 90 per cent level. The number of years for which land lies fallow is significant at the 95 per cent level. The category of *Gaunkars* and ‘Other Incomes’ have

Table 9.7. Summary of statistics

	Gaunk (Dummy)	Tenant (Dummy)	FAL_YRS	Other_Y	FSA
N of cases	360	360	360	360	360
Minimum	0	0	0	0	1
Maximum	1	1	25	4	14
Range	1	1	25	4	13
Sum	120	120	754	256	1549
Mean	0.333	0.333	2.094	0.711	4.303
Standard Dev.	0.472	0.472	4.889	1.253	1.906
Variance	0.223	0.223	23.902	1.571	3.632

Table 9.8. Summary regression results
Dependent Variable: Frn_D
Number of Observations: 360

	Coefficient	Standard error	t-ratio	p-values	Odds ratio	Slope (at mean)
Constant	-4.192	0.647	-6.481	0.000	—	—
Gaunk	1.668***	0.491	3.397	0.001	5.304	0.1372
Tenant	0.343	0.552	0.662	0.534	1.409	0.0282
Fal_Yrs	0.070**	0.031	2.273	0.023	1.072	0.0057
Other_Y	0.883***	0.122	7.208	0.000	2.418	0.0726
FSA	0.102	0.094	0.102	0.278	1.107	0.0084

** and *** in the coefficient column represent 95% and 99% level of significance respectively.

Log likelihood: -107.643

Log likelihood of constants-only model = LL(0) = -158.943

$2*[LL(N)-LL(0)] = 102.600$ with 5 df Chi-sq p-value = 0.000

McFadden's Rho-Squared = 0.323

coefficients which are significant at the 99 per cent level. This confirms the expectation that an agent is more likely to exit if his/her land is fallow and is more likely to exit if the household belongs to the *Gaunkars* category. The Likelihood Ratio (LR test) result indicates that the model is significantly different from the 'constants only' model and the McFadden's Rho-Squared suggests a reasonably acceptable fit. The last column of Table 9.8 provides the slope at mean which measures the Marginal Effect (at mean) that each variable has on the dependent variable (in a Logit function). Expectedly 'Gaunk' has the highest slope.

We next turn our attention to the current status of public works which has direct implications on sustainability of agrarian lands. The embankments which are public goods in nature need to be maintained in order to prevent salinity ingress.

9.4.5. Impact of public works decline

Seventy-three households reported having fallow lands due to salinity ingress. This probably added to the incentive to exit the agricultural sector even in the case of the tenants who were beneficiaries of the tenancy reform. Of the three categories it is noteworthy that it is the tenants who have reported larger fallow lands in terms of total area (Table 9.9). The growth in numbers reporting fallow is shown below as a cumulative frequency graph (Figure 9.5).

The *Mundkars* however reported the highest proportion of fallow lands while *Gaunkars* reported the lowest proportion of fallow lands (Table 9.10 in Appendix 9.1).

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Table 9.9. Persons with fallow lands and having family abroad (current survey data)

Category (120 persons interviewed in each category)	Persons with fallow area	Proportion of person owning fallow area in each category	Number of persons abroad among those with fallow land	Proportion of foreign residents among fallow land holders
<i>Gaunkars</i>	21	0.17	8	0.38
Tenants	30	0.26	5	0.16
<i>Mundkars</i>	22	0.18	3	0.13
Total	73	0.21	16	0.21

The *Gaunkars* showed the highest frequency of exit from among those families that reported fallow lands. The (conditional) probability of exit (migration) by each category was *Gaunkars* 38 per cent, tenants 16 per cent, and *Mundkars* 13 per cent (see Table 9.9).

9.5. Discussion

The above results provide interesting pointers. *Comunidades* lost their monopoly over agricultural land management in the wake of post-independence tenancy legislation and this led to their decline and the reduced maintenance of public works as there was no financial support for the *comunidades*. This appears to have brought about two things: (a) increased fallowing due to salinity ingress (b) exit of agents from the agrarian economy, mainly *Gaunkars*.

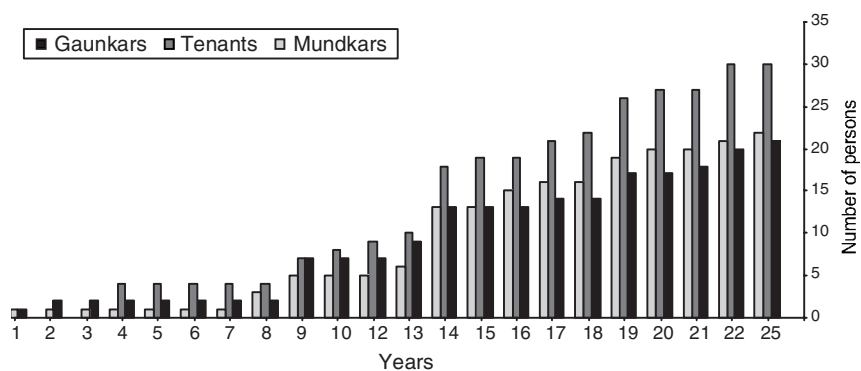


Figure 9.5. Cumulative number of persons reporting fallow area. Year 1977–2001

The major gainers in the land redistribution, the tenants and *Mundkars*, showed willingness to pay for adoption of individual increases in production by investing in mechanization (Mukhopadhyay 2005). However, there is incidence of increasing fallows which is a direct outcome of reduced local public expenditures to undertake productivity sustenance activities. This is typical myopic behaviour and indicative of institutional failure. Some of these outcomes have been anticipated in the evolutionary game-theory literature which suggests that in the absence of punishment, cooperation would break down (Sethi and Somanathan 2004). This punishment must be cheap and feasible otherwise agents may refrain from punishing thereby leading to breakdown in cooperation. In Goa, when the *comunidades* had the right to auction their lands prior to tenancy legislation, non-cooperation led to eviction and cancellation of tenures. So punishment was both feasible and inexpensive for the institution.

This brings us back to the issues of property rights regimes, redistribution, and ecological sustainability. In the literature, it is commonly argued that security of tenure is a precondition for agents to undertake conservation measures (Holden and Shiferaw 2002). So expectedly, the security of tenure should have induced better conservation in Goa. Our finding is contrary to this. In the new regime homogeneity and security of tenure increased but cooperation to maintain embankments did not.

The critical question is why did cooperation not emerge? A theoretical explanation of how and when cooperation will emerge is dealt with exhaustively by Dasgupta (this volume). Here it will suffice to state just a few instances relevant to this study. Clear punishment rules (and the willingness to impose them) which are important for ensuring cooperation were missing in the post-tenancy institutional arrangement in Goa. If the beneficiary agents did not cooperate there was very little chance of any punishment (eviction) in the post-tenancy period. Secondly, there was a withdrawal of the previous managers of the agrarian system (*Gaunkars*) from village affairs as they had a reduced role in the new scenario.¹⁴ But all of these possibilities point to one certainty—that replacement of an organic local institution with an inorganic one can at best have unanticipated (or at worst undesirable) consequences. A number of other contributions to this volume have pointed to similar outcomes. In Pakistan's Dir-Kohistan region the contestation between the traditional *jirga* and other organs of the modern state, is leading to conflict and undesirable outcomes for resource management in the region (Khan, this volume). Similarly, in Bhutan, the norms that governed *sokshings* are

¹⁴ It is possible to blame the usual suspect of an inefficient credit market which did not permit the tenants from making the financial commitments necessary to maintain public works and simultaneously undertake private investments. Except in this case as we have discussed above, the government offered to reimburse (up to a ceiling of 50%) the expenses incurred on embankment maintenance.

now in conflict with new forest rules and institutions that are being framed compromising the sustainability of forest management there (Webb and Dorji, this volume).

So what are the lessons to be drawn here? In the euphoria of asset distribution, factors of institutional incentives were not examined, as cooperation was expected to automatically emerge among beneficiary farmers. We find that this did not occur. Without a prior history of cooperation (supply of public goods—embankments), the tenants failed to create new self-sustaining institutions even though there were state incentives to do so. This, however, is contrary to Mishra's findings (this volume) in Orissa, India, where despite state neglect, forest users managed to form federating structures for conservation as well as marketing of produce.

The other question that this leaves us with is the impact of homogeneity in the sustainable management of the commons by cooperation. The literature in this area suggests that there could be a threshold-effect with regard to heterogeneity and cooperation (Dayton-Johnson and Bardhan 2002).¹⁵ In the current context, is the reduced state of cooperation indicative of a level of homogeneity beyond this threshold or is the relationship non-convex?¹⁶ This would need further investigation.

Appendix 9.1

Table 9.10. Distribution of fallow land among different categories (current survey data 2002–3)

Category	Persons with fallow area	Total of land area owned (ha)	Amount of land affected (ha)	Proportion of land in entire category
<i>Gaunkars</i>	21	58.524	5.7	9.7
Tenants	30	75.49	15.3	20.2
<i>Mundkars</i>	22	35.04	7.99	22.8
Total	73	169.054	28.99	17.1

¹⁵ It has been suggested that there could be an inverted-U relationship between heterogeneity and cooperation. This implies that initially cooperation increases as the degree of homogeneity increases but decreases after a certain point which is indicative of threshold effect.

¹⁶ However, if there are non-convexities, which are not unlikely, alternative policy solutions could emerge. Non-convexity in such a situation would imply that there could be multiple thresholds in the homogeneity-cooperation relationship. So while there would seem to be a reduction in cooperation at this level of homogeneity, a further increase in homogeneity instead of further reducing cooperation may increase it beyond a certain point. Alternatively, if the other turning points are relatively lower as far as cooperation levels are concerned, then a further increase in homogeneity even in the presence of non-convexities would not lead to greater cooperation.

Table 9.11. Taluka-wise total income, expenditures, and balances of *comunidades* (in Rupees for the period 1954–63)

Talukas	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
1	2	3	4	5	6	7	8	9	10	11
Total Income										
Coa (Tiswadi)	1940673	1840549	1541616	1610773	1449316	1213370	1748734	1488528	1131975	1106023
Salcete	1880449	1905106	1685374	1804307	1798689	1683383	1682072	1689024	1338928	1332017
Bardez	1567738	1576528	1436776	1397237	1380224	1341962	1393936	1367613	1183629	1156186
Mormugao	212757	206906	196523	201754	199774	199635	209211	215554	177571	172404
Ponda	450103	450071	410804	391446	354102	337082	354092	344734	306380	286198
Bicholim	173642	209157	137415	158412	128400	132248	145817	199809	124828	140210
Pernem	3774	9656	7905	6323	9906	6674	7165	6957	5032	4858
Quepem	28710	28473	26087	30544	31604	32776	28182	32140	28096	27200
Sanguem	21859	19915	20134	20748	21504	21654	21844	22273	22086	18582
Canacona	21469	19923	14495	15398	14703	14967	14564	15158	24224	17756
Satari	2182	2077	1902	1880	2036	2030	1841	2452	1536	2203
Total	6303356	6268361	5479031	5638822	5390258	4985781	5607458	5384242	4344285	4263637
Total Expenditure										
Coa (Tiswadi)	989382	939454	926487	952380	866668	1062103	1348830	1274212	1009164	1046470
Salcete	762267	844704	738343	820405	870103	769655	934203	965108	892750	941670
Bardez	871676	944606	803095	866308	917372	954128	1032872	1053122	1049748	1053174
Mormugao	161084	114773	112912	107781	108317	117064	136843	150778	151396	145027

Bicholim	103474	147168	93039	103407	102512	100817	120111	155666	102279	125525
Pernem	4614	6378	6216	4290	4648	3725	6802	3949	7035	5381
Quepem	25893	29607	29243	29135	30225	31096	30903	29073	26022	23876
Sanguem	23223	22654	20352	20748	21904	23382	23186	26062	19597	20183
Canacona	18915	13463	12344	12328	13056	13940	13876	14010	24224	16631
Satari	1746	1610	1816	1865	1817	1808	1719	2113	1371	1991
Total	3177622	3277633	2956800	3102810	3142839	3294732	3946275	3940449	3531404	3607531
Balance										
Goa (Tiswadi)	951291	901095	615129	658393	582648	151267	399904	214316	122811	59553
Salcete	1118182	1060402	947031	983902	928586	913728	747869	723916	446178	390347
Bardez	696062	631922	633681	530929	462852	387834	361064	314491	133881	103012
Mormugao	51673	92133	83611	93973	91457	82571	72368	64776	26175	27377
Ponda	234755	236855	197851	207283	147885	120068	57162	78378	58562	60595
Bicholim	70168	61989	44376	55005	25888	31431	25706	44143	22549	14685
Pernem	-840	3278	1689	2033	5258	2949	363	3008	-2003	-523
Quepem	2817	-1134	-3156	1409	1379	1680	-2721	3067	2074	1324
Sanguem	-1364	-2739	-218	0	-400	-1728	-1342	-3789	2489	-1601
Canacona	2554	6460	2151	3070	1647	1027	688	1148	0	1125
Satari	436	467	86	15	219	222	122	339	165	212
Total	3125,734	2990,728	2522,231	2536,012	2247,419	1691,049	1661,183	1443,793	812,881	656,106

Source: GoG (1967b)

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