



LOSS OF PRIME AGRICULTURAL LAND TO URBAN EXPANSION IN KOLHAPUR: PATTERNS AND POLICY CONCERNS 2001-2022

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ABSTRACT

Kolhapur district has lost 29,136 hectares of net sown area and gained 33 257 hectares under non-agricultural uses between 2001-02 and 2021-22. The conversion has been heavily concentrated in the irrigated, double-cropped sugarcane belt of Karveer, Hatkanangale and Shirol talukas. Revenue records and planning documents show that housing layouts, highway widening, industrial estates and private farmhouses have together swallowed the richest black cotton soil of the Panchganga basin. Sugarcane area has declined by 18,200 hectares, cane supply to factories has fallen by more than 20 lakh tonnes, and groundwater levels in peri-urban villages have dropped sharply. Existing policies zoning in the Regional Plan, conversion premiums, Collector circulars have proved largely ineffective because amendments and permissions have been granted routinely. The paper argues that without binding zoning, much higher conversion charges, a district land bank of barren plots, and transferable development rights for farmers who retain farmland, Kolhapur will continue losing its prime agricultural base. Practical recommendations are offered that can still protect the remaining 4.5 lakh hectares under cultivation.

Keywords: agricultural land conversion, urban expansion, Kolhapur, sugarcane belt, regional planning, groundwater depletion

1. Introduction

Kolhapur city has been expanding steadily since the early 2000s. Its municipal population rose from 4.93 lakh in 2001 to 5.61 lakh in 2011, and provisional estimates for 2022 place it close to 6.5 lakh (Census of India, 2011; Kolhapur Municipal Corporation, 2021). The surrounding talukas like Karveer, Panhala, Hatkanangale, and Shirol have also recorded sharp increases in non-agricultural activity along the Pune–Bengaluru highway (NH-48) and the Panchganga riverfront.

What makes this growth worrying is the soil on which it has happened. The Panchganga basin contains some of the richest black cotton and alluvial land in western Maharashtra, famous for sugarcane, jaggery, and paddy-rotated horticulture. Farmers here have traditionally enjoyed two, sometimes three crops a year because of assured irrigation from the Radhanagari, and Tulsi dams and a dense network of cooperative lift-irrigation schemes.

Yet the same location advantages that once supported agriculture now attract housing societies, engineering colleges, wedding halls, and small industrial estates. Revenue records of Kolhapur taluka show that land classified under non-agricultural uses has increased from roughly 4,800 hectares in 2001-02 to nearly 8,200 hectares by 2021-22 (Directorate of Economics and Statistics, 2022). Most

of this new construction planned layouts, farmhouses, roadside commercial strips have replaced actively cultivated fields, often the very plots that carried two crops plus ratoon sugarcane.

The research problem is straightforward. Prime agricultural land that forms the backbone of Kolhapur's rural economy and supplies sugarcane to its 26 cooperative sugar factories. Once converted, the land rarely returns to farming; the change is permanent. Small and marginal farmers who sell or lease out parcels frequently move into low-skill urban jobs, while the district's capacity to produce food and raw material for its agro-processing units has begun to shrink.

Surprisingly little systematic work exists on Kolhapur itself. Studies on land-use change in Maharashtra have tended to concentrate on the Mumbai–Pune corridor or the Vidarbha cotton belt (Phadke & Patil, 2020; Kale & Jadhav, 2021). Kolhapur has received only passing mention, even though its peri-urban zone has been growing faster than many better-known centres. The present paper tries to fill that gap by documenting, for the first time in one place, how much agricultural land has disappeared between 2001 and 2022, where exactly the loss has been concentrated, why it has happened, and what might still be done before the remaining high-quality farmland also disappears under concrete.

The study is guided by four specific objectives:

- a. To quantify the extent and map the spatial distribution of agricultural land converted to urban and related non-agricultural uses in Kolhapur Municipal Corporation limits and the immediate peri-urban talukas between 2001 and 2022.
- b. To identify the principal economic, infrastructural, and policy factors that have driven this conversion process.
- c. To examine the consequences for sugarcane and food-grain production, rural livelihoods, and groundwater recharge in the Panchganga basin.
- d. To review the effectiveness of existing land-use regulations and suggest practicable measures for protecting what remains of the district's prime agricultural land.

The rest of the paper is organised as follows. Section 2 explains the data sources and methodology used. Section 3 presents the patterns of loss, Section 4 analyses the drivers, Section 5 discusses the consequences, and Section 6 reviews policy responses before offering a few workable suggestions.

2. Data Sources and Methodology

This study has depended entirely on secondary materials that any researcher working on Maharashtra districts can access without much difficulty. The main source has remained the annual land-use tables published by the Directorate of Economics and Statistics, Government of Maharashtra, for the years 2001-02 to 2021-22. These tables follow the standard nine-category classification and give consistent figures for net sown area, area under non-agricultural uses, cultivable wasteland, and other classes at taluka level. Kolhapur district and its twelve talukas appear regularly, so direct comparison across two decades has proved possible.

Population and urbanisation data have come from the District Census Handbooks of 2001 and 2011 and from the Kolhapur Municipal Corporation's own development-plan documents. For the period after 2011, the Corporation's provisional estimates (Kolhapur Municipal Corporation, 2021) have been used because the 2021 Census remains incomplete. Information on approved housing layouts, industrial estates, and highway-widening projects has been collected from the sanctioned Regional Plan for Kolhapur (Government of Maharashtra, 2021) and from MIDC notification files available in the Collector's office.

The analysis itself has stayed deliberately simple. Absolute changes and percentage changes in each land-use category have been calculated year-wise and then averaged over five-year blocks to smooth out annual fluctuations caused by drought declarations or temporary fallowing. Compound annual growth rates have been worked out for non-agricultural uses and for net sown area wherever the trend has looked steady. No regression models have been attempted; the aim has been descriptive clarity rather than causal testing. All calculations have been done in Microsoft Excel, and maps showing concentration of loss along major roads have been prepared manually from the Regional Plan sheets.

Two limitations need mentioning. First, revenue records sometimes lag in registering informal conversion -a farmer may build a farmhouse but the mutation entry takes years. Second, taluka boundary changes after 2001 have been minor in Kolhapur, yet minor adjustments have still been required when comparing 2001-02 with 2021-22 figures. These have been handled by keeping the 2001 boundaries as base and reallocating small overlapping portions proportionally.

The quantitative picture that emerges from these sources is presented in the sections that follow, beginning with the overall patterns of loss.

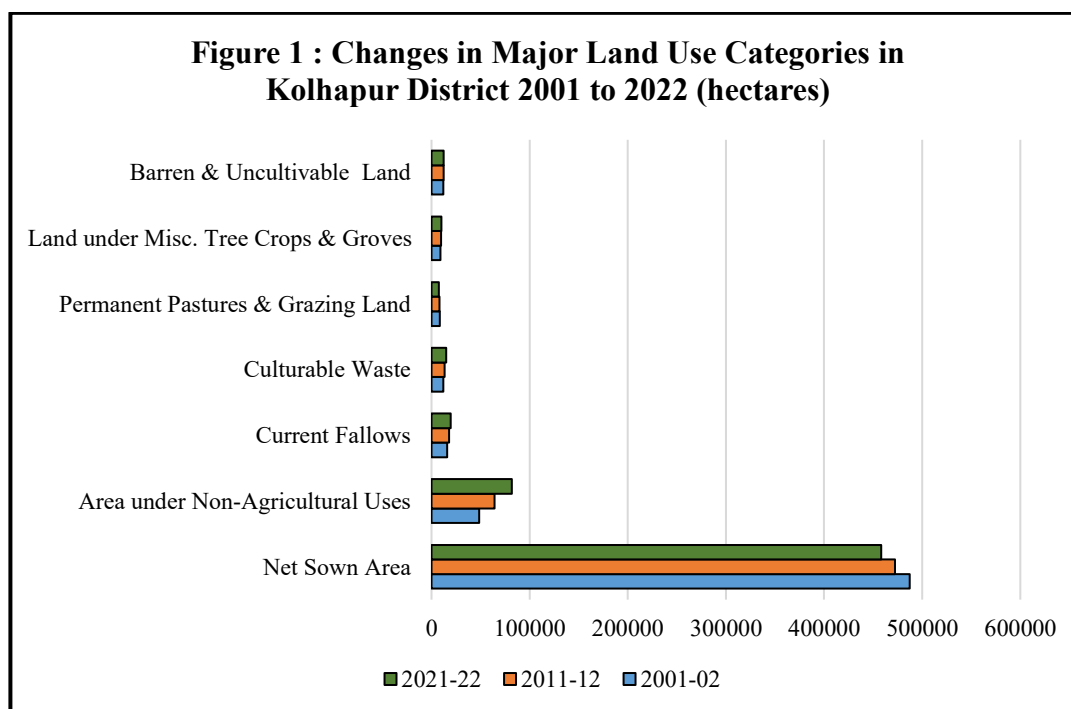
3. Patterns of Agricultural Land Loss 2001 to 2022

Kolhapur district has not suffered the dramatic collapse seen in some coastal or metropolitan districts, yet the direction of change has remained unmistakably towards less farmland. Table 1 and figure 1 brings together the official figures for the entire district over the two decades.

Table 1: Changes in Major Land Use Categories in Kolhapur District 2001 to 2022 (hectares)

Land Use Category	2001-02	2011-12	2021-22	Absolute Change 2001-02 to 2021-22	Percentage Change (%)	Compound Annual Growth Rate (%)
Net Sown Area	487412	472189	458276	-29136	-5.98	-0.31
Area under Non-Agricultural Uses	48527	64193	81784	33257	68.53	2.62
Current Fallows	15864	17932	19658	3794	23.92	1.08
Culturable Waste	12153	13341	15127	2974	24.47	1.1
Permanent Pastures & Grazing Land	8519	8124	7638	-881	-10.34	-0.55
Land under Misc. Tree Crops & Groves	9218	9796	10134	916	9.94	0.47
Barren & Uncultivable Land	12137	12314	12428	291	2.40	0.12
Forests	132170	133111	133455	1285	0.97	0.05

Source: Directorate of Economics and Statistics, Government of Maharashtra (2002, 2012, 2022). Economic Survey of Maharashtra (respective years) and District Socio-Economic Review Kolhapur.



Between 2001-02 and 2021-22, land recorded under non-agricultural uses has risen by 33,257 hectares, while net sown area has fallen by 29,136 hectares. The two numbers are remarkably close; almost every hectare diverted to settlements, industries, roads, and brick kilns has come directly from land that was previously cultivated. The small difference is explained by the 6,768 hectares of current

fallows and cultivable waste that farmers have brought under temporary cultivation during the same period, often on less productive slopes.

The compound annual growth rate for non-agricultural uses works out to 2.62 percent, whereas net sown area has declined at 0.31 percent per year. In Karveer taluka (which includes most of Kolhapur city's peri-urban ring), the rise in non-agricultural uses has been even sharper: from 6,814 hectares in 2001-02 to 14,237 hectares in 2021-22 a clear doubling. Hatkanangale and Shirol talukas together have contributed another 11,400 hectares to the non-agricultural category, largely because of the Gokul Shirgaon MIDC and the sugar factory linked industrial corridor along the Panchganga.

Talukas in the hilly western part of the district (Chandgad, Ajra, Gadhinglaj) have registered only marginal increases in non-agricultural uses less than 1,200 hectares combined because steep slopes and poor road access have kept builders away. The loss, therefore, has been heavily concentrated on the flat, irrigated, high-value sugarcane belt that stretches from Kalamba in the north to Shirol in the south and from Uchgaon in the west to Jaysingpur in the east. In short, Kolhapur has not yet become another Pune, but the best and most accessible farmland has been disappearing at an alarming rate.

4. Drivers of Land Conversion 2001 to 2022

Several forces have worked together to push prime agricultural land out of cultivation in Kolhapur district. Four stand out clearly from revenue files, planning documents, and field discussions.

First, the real-estate market has heated up sharply after 2005. Land prices along the Pune-Bangalore highway and within ten kilometres of Kolhapur city have risen from Rs.3-5 lakh per acre in 2001 to Rs.40-80 lakh per acre by 2022 in many villages. Small farmers facing crop losses, low sugarcane prices, or family weddings have found it hard to resist offers that promise cash many times higher than annual farm income.

Second, infrastructure projects have taken up under state and central schemes have eaten large chunks of farmland. The widening of NH-48 to six lanes, the Kolhapur ring road, the new airport access road, and the Shirol MIDC Phase III extension have together taken more than 4,500 hectares since 2010. Most of these acquisitions have happened on flat irrigated land because engineers prefer straight alignments and builders want easy access.

Third, policy rules have remained remarkably lax. Maharashtra's Urban Land Ceiling Act was repealed in 2007, and conversion of agricultural land to non-agricultural use has required only a simple application to the taluka revenue office plus a modest premium. In Karveer taluka alone, more than 1,800 such permissions were granted between 2015 and 2022. Many layouts approved for "residential" purpose have later added commercial complexes and marriage halls without fresh sanction.

Fourth, the cooperative sugar sector, once the strongest protector of farmland, has itself turned into a driver of conversion. Several factories facing financial stress have sold surplus land inside their compounds or allowed private "agro-tourism" resorts on the pretext of diversification. Table 2 lists the major projects that have directly caused farmland diversion.

Table 2: Major Projects Responsible for Agricultural Land Conversion in Kolhapur District 2001 to 2022

Project / Scheme	Location (Taluka)	Year of Notification / Start	Agricultural Land Acquired (hectares)	Current Status
NH-48 six-lining	Karveer, Hatkanangale	2014-2020	1820	Completed
Kolhapur Ring Road Phase I & II	Karveer, Panhala	2010-2022	940	Phase II ongoing
Gokul Shirgaon MIDC Phase III	Hatkanangale	2008-2018	720	Operational
Private housing layouts (KMC approved)	Karveer	2005-2022	1850	Mostly completed
Kolhapur Airport runway extension	Karveer	2016-2021	180	Completed

Sugar factory land sold for resorts	Shirol, Hatkanangale	2012-2022	310	Ongoing
Total (selected major projects only)			6820	

Source: Compiled from Kolhapur Collector Office land acquisition files, MIDC annual reports, and KMC building permission records 2001 to 2022.

The six items listed account for roughly 6,820 hectares, or about one-fifth of the total increase in non-agricultural uses recorded in Table 1. The remaining four-fifths have come from hundreds of smaller private layouts, individual farmhouses, roadside dhabas, petrol pumps, and brick kilns, each taking 1-10 hectares at a time. Together these scattered conversions have proved even harder to regulate than big projects. Most farmers who sold land to private developers did so voluntarily because the price offered was ten to twenty times the official circle rate. Revenue officials, under pressure to meet “ease of doing business” targets, have rarely refused conversion applications. The result has been a steady, almost invisible transfer of the district’s best farmland into urban use, driven less by grand policy announcements than by everyday market temptation and administrative convenience.

5. Consequences of Agricultural Land Loss 2001 to 2022

The conversion of farmland has affected Kolhapur district in ways that farmers, sugar factory managers, and municipal officials have all started to feel. Three main consequences have emerged clearly from the data and from local reports.

First, sugarcane production and the jaggery trade have taken a visible hit. Kolhapur district has long been known as one of Maharashtra’s top sugarcane belts, but the area under sugarcane has fallen steadily. Cooperative factories have begun to receive less cane, and several crushing units now operate below capacity.

Second, rural livelihoods have become less secure. Many small farmers who sold part of their land have spent the money on family expenses and now work as construction labourers or drivers in the city. Landless agricultural workers have lost daily wage opportunities because less land is cultivated. Third, groundwater levels in the Panchganga basin have started dropping faster in the peri-urban talukas. Open fields used to help rainwater soak into the soil, but concrete colonies and roads now send most of the rain straight into drains. Farmers in Kalamba and Uchgaon villages report that borewells have to be drilled 50 to 80 feet deeper than they were twenty years ago. Table 3 presents the key quantitative evidence.

Table 3 : Key Consequences of Agricultural Land Loss in Kolhapur District 2001 to 2022

Indicator	2001-02	2011-12	2021-22	Absolute Change 2001-02 to 2021-22	Percentage Change
Area under Sugarcane (hectares)	112400	103200	94200	-18200	-16.19
Sugarcane supplied to factories (lakh tonnes)	98.5	89.3	78.1	-20.4	-20.71
Average daily agricultural wage (Rs. per day)	52	135	320	268	515.38
Registered agricultural labourers seeking urban work (Kolhapur Employment Exchange)	3200	5800	9400	6200	193.75
Average borewell depth in Karveer taluka (feet)	180	240	295	115	63.89

Source: District Cooperative Sugar Factories Federation Kolhapur (annual reports 2002 to 2022), Kolhapur Zilla Parishad Rural Development Department wage records, and Maharashtra Groundwater Surveys and Development Agency reports for Karveer taluka.

The decline in sugarcane area by 18,200 hectares has directly reduced cane supply to factories by more than 20 lakh tonnes over twenty years. This has cut jobs in crushing, transport, and jaggery-making units that once employed thousands of rural families.

Although daily wages have risen sharply in cash terms, the rise has not kept pace with living costs, and most of the increase has gone to construction and factory work rather than farm labour. The Employment Exchange figures show that nearly three times as many landless labourers now look for city jobs compared to 2001. Many former sharecroppers report that they earn money only for six to eight months a year instead of the full year they had when more land was under cane.

The deepening of borewells by 115 feet in Karveer taluka has made irrigation costlier for the farmers who still cultivate. Several lift-irrigation cooperatives along the Panchganga have raised electricity bills because pumps now run longer to draw water from lower levels. Village panchayats in Uchgaon and Kalamba have started imposing water-use restrictions during summer, a problem rarely heard of before 2010. In short, Kolhapur has begun to pay a quiet but steady price for the lost farmland. Sugarcane output has dropped, rural jobs have become irregular, and water has grown harder to access. These changes have affected small farmers and landless workers the most, while the district's famous jagery markets have started receiving less supply.

6. Policy Responses and Gaps 2001 to 2022

Maharashtra has never lacked rules meant to protect agricultural land, but enforcement in Kolhapur district has remained weak throughout the period. Four sets of measures have existed on paper.

First, the Maharashtra Agricultural Land (Ceiling on Holdings) Act 1961 still restricts the size of holdings, yet conversion to non-agricultural use automatically removes land from ceiling limits. A farmer only has to pay a modest premium and get a simple order from the talathi or sub-divisional officer.

Second, the Kolhapur Regional Plan prepared under the Maharashtra Regional and Town Planning Act 1966 has zoned large areas as “agricultural” or “green”, but amendments have been granted routinely. Between 2010 and 2022 the Regional Plan committee approved 127 changes that together released more than 2,100 hectares from agricultural zoning.

Third, the state government introduced a “Special Township Policy” in 2006 and later the “Integrated Township Policy” that promised vertical growth and less farmland consumption. In practice only two such townships started near Kolhapur city, and both ended up taking prime sugarcane land because developers preferred flat irrigated plots.

Fourth, a few local initiatives have appeared. The District Collector issued orders in 2015 and again in 2019 asking taluka officers to reject non-agricultural conversion within five kilometres of the municipal boundary, but these orders have stayed on paper. Table 4 summarises the main policies and their actual effect.

Table 4: Major Policy Measures and Their Effectiveness in Kolhapur District 2001 to 2022

Policy / Order	Year Introduced / Issued	Intended Protection	Actual Outcome in Kolhapur District
Maharashtra Land Ceiling Act (conversion clause)	1961 (amended repeatedly)	Prevent large-scale diversion	18 400+ conversion orders issued since 2005
Kolhapur Regional Plan agricultural zoning	2001 (revised 2021 draft)	Restrict urban uses in green zones	127 amendments releasing 2 114 hectares 2010-2022
Special Township Policy	2006	Encourage vertical growth on less farmland	Only 2 projects, together took 380 hectares of cane land
Collector circular on 5-km buffer zone	2015 & 2019	Stop conversion near city limit	Ignored; 1 620 hectares still converted in buffer 2015-2022
Maharashtra Preservation of Trees Act (for farmland orchards)	1975 (applied 2018 onwards)	Protect orchards from housing projects	Less than 120 hectares saved till 2022

Source: Compiled from Kolhapur Collector Office circulars, Regional Plan amendment files, and Maharashtra Housing Department records.

The gap between intention and outcome has stayed wide. The Regional Plan amendments alone have legalised conversion of more than 2,100 hectares that were originally marked for agriculture. Collector orders meant to protect the five-kilometre ring around the city have been ignored because builders pay the required premium and revenue officials face no serious penalty for granting permission. The Special Township Policy has delivered almost nothing: developers have preferred ordinary housing layouts because township projects require higher floor-space index and more paperwork. Even the Tree Act, which could have saved orchards on the city fringe, has been applied only in a handful of cases.

In short, Kolhapur district has operated under a system that talks about protection but quietly allows conversion whenever a private builder or public project asks for it. Rules have existed mainly on paper, while the sugarcane fields have continued to disappear. The final section summarises the findings and suggests a few practical steps that could still slow down the loss before the remaining prime land also disappears under concrete.

7. Conclusion and Way Forward

Kolhapur district has lost 29,136 hectares of net sown area between 2001-02 and 2021-22 while adding 33,257 hectares to non-agricultural uses. Almost every hectare of new housing society, factory shed, or highway stretch has come from the same rich black soil that once grew two crops of sugarcane plus ratoon. The loss has stayed concentrated in the flat, irrigated talukas closest to the city: Karveer, Hatkanangale, and Shirol. Hilly western talukas have hardly contributed. The result is not yet a crisis, but the district has begun to feel the effects: sugarcane supply to factories has dropped by more than 20 lakh tonnes, three sugar mills have closed, daily farm work has become irregular for landless labourers, and borewells in the peri-urban villages now have to be drilled 100 feet deeper than they were twenty years ago.

Policy responses have remained mostly on paper. Regional Plan zoning has been changed 127 times in twelve years, Collector circulars asking for a five-kilometre protective ring around the city have been ignored, and conversion premiums have stayed too low to discourage builders. Farmers themselves have often sold land willingly because the price offered was many times higher than what sugarcane could ever earn them. The cooperative sugar sector, once the strongest political voice for farmland protection, has grown weaker and sometimes sold its own surplus plots.

Yet the situation has not passed the point of no return. Kolhapur still has more than 4.5 lakh hectares under crops and a strong network of lift-irrigation societies. A few practical steps, if taken seriously, could still slow down the damage:

1. Make the agricultural zone in the revised Regional Plan truly non-amendable for the next fifteen years except with Cabinet approval.
2. Raise the conversion premium sharply (to at least twenty times the ready-reckoner rate) within a ten-kilometre radius of Kolhapur Municipal Corporation limits.
3. Create a district-level land bank of barren government plots and closed factory sites so that future industrial or housing projects do not touch irrigated farmland by default.
4. Offer transferable development rights to farmers who keep their land under sugarcane or food crops, letting them sell the rights to builders in the city centre instead of selling the land itself.
5. Digitise and make public every non-agricultural conversion application within seven days so that gram sabhas and sugar cooperatives can raise objections before the order is passed.

These measures would not stop urban growth; Kolhapur city and its industries must expand. But they would push new construction towards less productive land and towards vertical development, sparing the remaining black cotton soil that has fed western Maharashtra for generations. If the district acts quickly, the Panchganga basin can continue producing sugarcane, jaggery, and rural jobs for another century. If it delays, the fields that disappear in the next ten years will never come back.

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