CHALLENGES IN REGIONAL DEVELOPMENT OF VILLAGES WITH SCHEDULED TRIBE POPULATION IN QUEPEM SUB-DIVISION OF SOUTH GOA DISTRICT, INDIA

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Abstract

The indigenous communities of Goa, namely the Velips, Kunbis, and Gawdas, have been granted Scheduled Tribe (ST) status in 2003. Visible disparities persist among the villages inhibited by the people of these communities across the state. The state and central governments have been vigorously implementing the Tribal Welfare Schemes, but the benefits have not percolated to the needy people in a desired way due to the impediments and lack of people's participation. Hence, this study, based on primary data aims to assess the level of development at village level by analysing the physical and environmental, community and institutional and economic variables in Quepem Sub-Division of South Goa District. The study reveals that the variations in the development have arisen out of existing physical, community based, institutional and economic aspects of the people. A majority (75 per cent) of the villages have recorded a high Village Development Composite Index ranging between 0.61 to 0.80. Villages in the interior and hilly regions have recorded a lower index highlighting geographic and infrastructural constraints. Hence, community centric initiatives are essential for the overall development of the villages and this study provides valuable information for identifying the specific development needs of the scheduled tribe-inhabited villages of Quepem Sub-Division, Goa.

Introduction

India's development journey is shaped by its vast diversity, reflected in its population size and rich social, cultural and ecological variations between regions and within the rural areas (Jodhka and Shankar, 2015). Rural areas often face a shortage of basic amenities, hindering their development (Banakar and Pati, 2018). Inter-regional and intra-regional disparities have grown over the decades. The majority of the Scheduled Tribe population (89.96 per cent) living in rural areas of the country is the worst affected (MoTA, 2014).

The diverse geographical and socio-economic conditions of the rural areas significantly affect the development pathways, requiring specific strategies (Emerllahu and Bogataj, 2024; Junaidi et al., 2025). In India, the concept of model villages has been introduced to serve as a holistic approach to

rural development, integrating social, eco-nomic, and environmental dimensions (Bhattacharyya et al., 2018; Kwatra et al., 2021). Other tools such as the Human Develop-ment Index, Multidimensional Poverty Index and the Developing Village Index have been used to categorise the villages based on the levels of development (Panakaje et al., 2025; Lobwaer et al., 2024; Abreu et al., 2022). Similarly, the Coastal Vulnerability Index has been used to access the levels of development in the coastal villages of Canacona taluka in South Goa, by incorporating the physical and social dimensions of vulnerability (Nigam et al., 2024).

Digital and financial inclusion along with digital literacy accompanied by easy access to smartphones and internet connectiv-ity is emerging as the cornerstone in bridging the rural-urban divide, enabling access to services and information fostering inclusive growth and resilience (Doloi, 2025; Panakaje et al., 2023). The Smart village concept is also built upon these foundations by promoting strategic planning to mitigate the socio-economic challenges (Narkhede and Ghom, 2018). Community-based initiatives, such as microcredit schemes and active involvement in self-help groups, contribute to the self-reliance and sustainability of rural areas (Robert and Sisodia, 2021). Additionally, the unique natural potential of the villages attracts tourism, which leads to village community empowerment (Hidayat et al., 2019). Yet the rural areas continue to face challenges of depopulation and digital divide, which exacerbate spatial and social vulnerabilities (Muhtar et al., 2023). To address these challenges, studies in India have used a four-cluster strategy to capture the regional diversity and tailor development interventions

(Sha et al., 2024). Integrated approach including education, agriculture, healthcare and digital empowerment is essential for long term well-being and resilience of the rural communities (Thakur et al., 2025). In light of the above, this study focuses on assessing the level of development of villages inhabited by the scheduled tribe communities in Quepem Sub-Division of Goa.

Objectives of the Study

Major objectives of the study are:

- to analyse the key socio-economic indicators influencing the development of the scheduled tribe population, and
- to assess the levels of development in the scheduled tribe inhabited villages of Quepem Sub-Division of South Goa District, India.

Study Area

Quepem Sub-Division is located in South Goa District of the state. Geographically, it is positioned between 15° 02' 30" to 15° 16' 30" North latitudes and 73° 56' 00" to 74° 12' 00" East longitudes covering an area of 318.25 km² with diverse physical characteristics ranging from hilly areas to a relatively plain topography (Fig. 1). Administratively, the sub-division consists of 35 villages governed by 11 village panchayats, along with two municipal councils and one census town (Government of Goa, 2023). According to the Census of India (2011), the total population of Quepem is 81,193 persons comprising 50.16 per cent males and 49.84 per cent females. The sex ratio stood at 994 females per 1000 males, which is higher than the district average of 972. The population density is 255 persons per km². The sub-division has the largest proportion of the scheduled tribe population (31.15 per cent) and
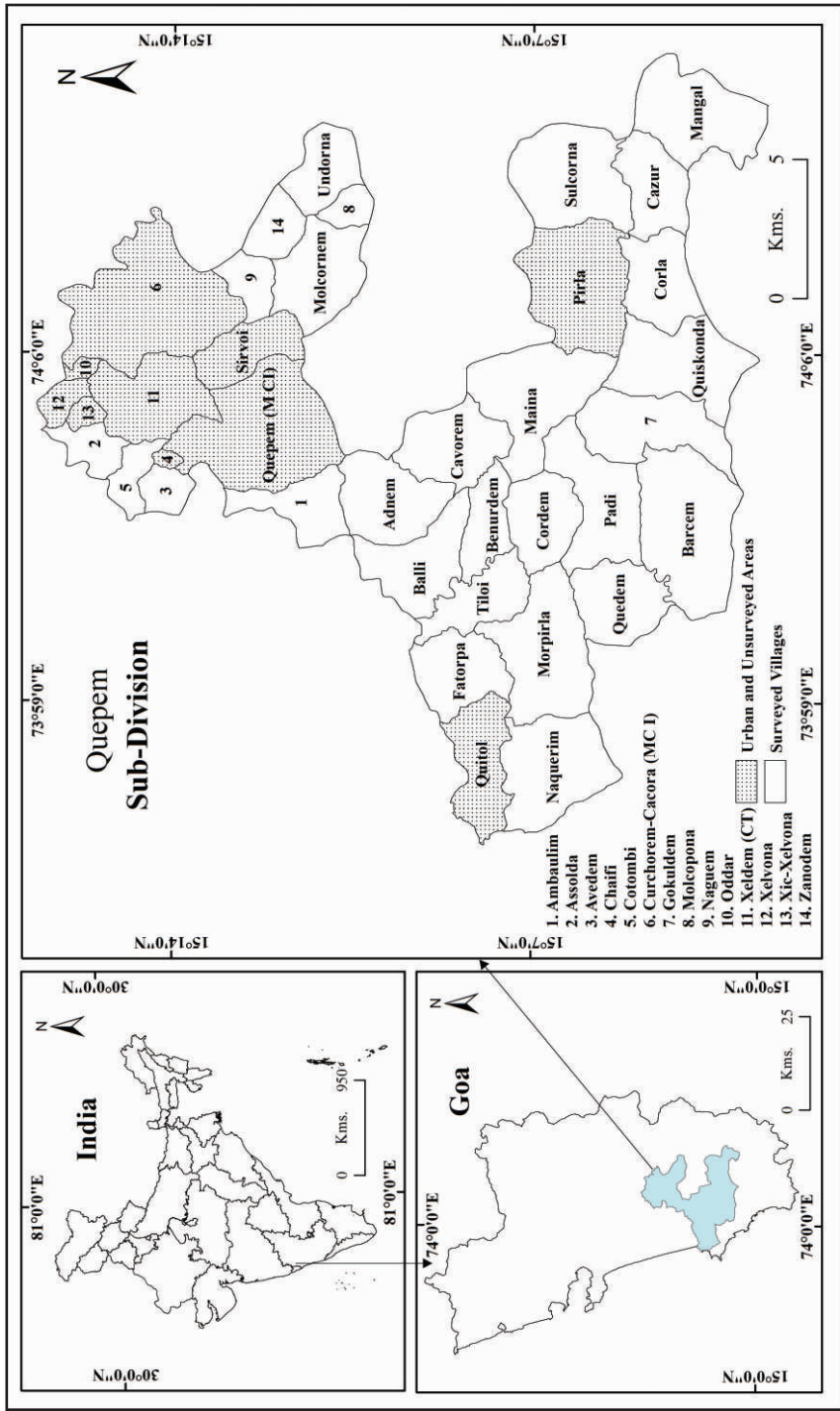
Fig. 1

a very small proportion (1.15 per cent) of Scheduled Castes population in the state. More than 90 per cent population of the villages such as Quiskonda, Benurdem, Cazur, Barcem, Gokuldem, Morpirla, and Molcopana is scheduled tribe (Census of India, 2011). Only nine villages have less than 20 per cent concentration of scheduled tribes' population. Major part of the sub-division is under the ecologically fragile zone of Western Ghats, which is a home of the tribal communities like Velips, Kunbis and Gawdas.

Database and Methodology

The study is based on primary data collected from 429 scheduled tribe households across 28 villages in the Quepem Sub-Division of Goa. The respondents for the survey have been chosen through purposive sampling. At the first stage, 28 villages with a significant proportion of scheduled tribe population ranging from 20 to 99 per cent have been selected excluding the towns and non-tribal inhabited villages. In the case of small settlements having less than 15 households, all the scheduled tribe households have been surveyed. In case of large settlements, i.e., where scheduled tribe households are more than 15, a sample of (15 per cent) have been taken for survey conducted during 2023-24.

For assessment of the levels of development of the villages, a composite index, termed here as Village Development Index (VDI) has been calculated. Three variables, such as physical and environmental resilience, community and institutional resilience and economic resilience have been selected for the calculation of the resilience indices. These variables have covered 11 dimensions, each comprising of different indicators that influenced the rural development. The

dimensions and their corresponding indicators have been grouped in Table 1.

The collected data have been classified and tabulated to prepare VDI. Each of the indicators (Column 3 of Table 1) has been assigned a value ranging between 0 to 5 towards the responses collected from scheduled tribe households in each village. The assigned value 5 reflects the highest level of efficiency of that indicator while '0' reflects the lowest efficiency towards resilience. The variable resilience index for each variable has been derived with the help of the following mathematical expression (Yudha et al., 2020).

$$VRI = \Sigma \; Indicator \; X \div Maximum \; Value \; (X) \quad (1)$$

where *VRI* is Variable Resilience Index, Σ Indicator X is the total value obtained by a village on multiple indicators under a given variable, Maximum Value (X) is the total of the maximum values, a village can get on those indicators. The variable resilience index varies between the minimum of 'zero' indicating lowest resilience and the maximum of 'one' depicting highest resilience.

Finally, the Village Development Composite Index (VDCI) for each village has been calculated by applying the following mathematical expression:

$$VDCI = (PER + CIR + ER) \div 3 \quad (2)$$

where *PER* = Physical and Environmental Resilience, *CIR* = Community and Institutional Resilience, *ER* = Economic Resilience. Highest index value indicated the highest level of development, while the lowest index indicated the lowest level of development among the villages. The maps have been prepared with the help of Arc GIS 10.8 and

Table 1
Quepem Sub-Division: Indicators of Village Development Index

Variable	Dimension	Indicator
Physical and Environmental Resilience	Relief of the village	Topographical variations
	Nearness to the forest land	Access to forest resources
	Agricultural activities	Access to sources of irrigation
	Regional openness	Public transportation, motored vehicles, type of roads
	Settlement	Access to safe drinking water
		Access to covered toilet
		Access to electricity
		Access to telephone and internet
	Health	Health care facilities
		Community empowerment for health insurance
	Education and sports	Access to primary and secondary education
		Access to the library
		Access to community hall and sports facilities
		Hazard proneness and response to hazards
Community and Institutional Resilience	Human resources	Having social solidarity (unity in the community)
		Having tolerance among the people
		A sense of security of the population
	Primary source of income	Access to salaried income
	Village autonomy institutions	Self Help Groups (SHGs)
		Community cleanliness drives
		E-Governance services
		Conflict resolution system
		Cultural and community events
		NGO engagements
		Livelihood diversification
Economic Resilience	Economic	Access to markets
		Presence of rural enterprises
		Skill development opportunities
		Access to agricultural support

Source: Compiled by Authors.

QGIS 3.34 software. IBM SPSS statistics 20 software and Microsoft Excel have been used for data analysis.

Results and Discussion
Physical and Environmental Resilience (PER)

The study reveals that among the total villages under study, Ambaulim village has recorded the highest (0.96) and Corla village the lowest (0.41) PER index (Table 2). Ambaulim village is located on a plain area facilitating a better access and maintenance of basic amenities. All the households, in this

Table 2
Quepem Sub-Division: Variable-wise Village Development Index (VDI) 2023-24

Villages	Surveyed ST Households	Variable Resilience Index			VDI
		Physical and Environmental	Community and Institutional	Economic	
Adnem	12	0.89	0.70	0.68	0.76
Ambaulim	30	0.96	0.60	0.72	0.76
Assolda	20	0.87	0.58	0.72	0.72
Avedem	16	0.89	0.58	0.64	0.70
Balli	10	0.90	0.66	0.76	0.77
Barcem	27	0.77	0.64	0.64	0.68
Benurdem	20	0.81	0.68	0.68	0.72
Cavorem	21	0.66	0.66	0.64	0.65
Cazur	20	0.56	0.78	0.48	0.60
Cordem	37	0.63	0.64	0.68	0.65
Corla	9	0.41	0.76	0.32	0.50
Cotombi	14	0.89	0.66	0.56	0.70
Fatorpa	21	0.90	0.62	0.76	0.76
Gokuldem	15	0.67	0.70	0.56	0.64
Maina	2	0.71	0.54	0.60	0.62
Mangal	10	0.54	0.78	0.48	0.60
Molcarnem	10	0.83	0.68	0.72	0.74
Molcopona	10	0.81	0.68	0.68	0.72
Morpirla	39	0.77	0.62	0.68	0.69
Naguem	8	0.84	0.70	0.64	0.73
Naquerim	10	0.53	0.56	0.44	0.51
Padi	10	0.60	0.68	0.68	0.65
Quedem	12	0.67	0.66	0.52	0.62
Quiskonda	26	0.47	0.72	0.48	0.56
Sulcorna	2	0.66	0.68	0.40	0.58
Tiloi	8	0.69	0.60	0.52	0.60
Undorna	7	0.81	0.64	0.52	0.65
Zanodem	3	0.87	0.58	0.52	0.66

Source: Compiled by Authors.

village, have facilities such as motorable road, toilet, drinking water, electricity and better network coverage. The nearness to the urban area has also provided an improved access to educational and healthcare services. The village has a sub health centre, primary school and a higher secondary school within 1 to 2 km distance. The village has community halls attached to the village temple and church used during marriage ceremonies and other social

events. Nearness to Quepem town has been an additional advantage for the villagers. These factors result in having a higher PER index for Ambaulim village. Whereas Corla village is located in the hilly and forested area having risk of landslides and forest fires. The shortage of basic amenities such as toilet, motorable roads, access to education and healthcare institutions are indicative of a poor PER.

While categorizing the villages into various classes, it has been found that a very high PER index of more than 0.80 has been recorded by 13 villages comprising 46.42 per cent of the total villages under study. These villages are Ambaulim, Adnem, Assolda, Avedem, Balli, Benurdem, Cotombi, Fatorpa, Molcornem, Molcopona, Naguem, Undorna, and Zanodem (Table 3; Fig. 2). These villages have plain topography thereby has easy access to irrigation facilities. This helps them to cultivate their fields even during summer months and enable them to sell their production in the nearby markets or along the roads by setting up small kiosks. These villages also have easy access to transport and communication, which is the added advantage. An easy access to basic amenities such as drinking water, toilet facilities, healthcare services and educational institutions is also there. Similarly, 9 villages have recorded a high PER index ranging between 0.61 to 0.80. The villages falling in this category are Barcem, Cavorem, Cordem, Gokuldem, Maina, Morpirla, Quedem, Sulcorna, and Tiloi. The households in these villages are located on the foothills; thereby having certain topographical constraints for construction of houses and level land for cultivation. Poor network coverage, shortage of public transport to access the basic services and irrigation facilities are some of the hindrances to achieve very high PER index.

On the other hand, 6 villages have recorded a moderate PER index ranging between 0.41 to 0.60. The villages falling in this category are Corla, Quiskonda, Cazur, Naquerim, Mangal and Padi (Fig. 2). These villages are located in the forested and hilly areas and therefore, are facing challenges due to higher elevation and forest cover. This makes it difficult for provision and timely maintenance of the basic services such as road construction, access to public transport, maintenance of toilet facilities and continuous electricity supply in these areas. The challenges also exist in carrying out agriculture activities due to shortage of favourable land and irrigation facilities. People are also facing problems in marketing the produce due to lack of designated market areas in and around the villages as well as limited consumer demand at the roadside kiosks. However, PER index below 0.41 has not been recorded by any of the villages, suggesting that most of the villages have favourable physical environment for their development.

Thus, the study reveals that a larger proportion of the population have a better physical and environmental resilience. The topography of the area plays an important role by affecting all other indicators of development. The nearness to the towns and infrastructural growth have also proved to be an advantage to the scheduled tribe population. The findings indicate that the villages with lower elevation have performed better due to easier provision of physical infrastructure as compared to those on the areas with higher elevation.

Community and Institutional Resilience (CIR)

The study reveals that among the total

Table 3
Quepem Sub-Division: Villages Recording Various Levels of Resilience Indices

Level	Index	Villages
Physical and Environmental Resilience		
Very High	More than 0.80	Ambaulim, Adnem, Assolda, Avedem, Balli, Benurdem, Cotombi, Fatorpa, Molcornem, Molcopona, Naguem, Undorna and Zanodem.
High	0.61-0.80	Barcem, Cavorem, Cordem, Gokuldem, Maina, Morpirla, Quedem, Sulcorna and Tiloi.
Moderate	0.41- 0.60	Cazur, Corla, Mangal,Naquerim, Padiand Quiskonda.
Low	0.21- 0.40	Nil
Very Low	Less than 0.21	Nil
Community and Institutional Resilience		
Very High	More than 0.80	Nil
High	0.61-0.80	Adnem, Balli, Barcem, Benurdem, Cavorem, Cazur, Cordem, Corla, Cotombi, Fatorpa, Gokuldem, Mangal, Molcornem, Molcopona, Morpirla, Naguem, Padi, Quedem, Quiskonda, Sulcorna and Undorna.
Moderate	0.41- 0.60	Ambaulim, Assolda, Avedem, Maina, Naquerim, Tiloi and Zanodem.
Low	0.21- 0.40	Nil
Very Low	Less than 0.21	Nil
Economic Resilience		
Very High	More than 0.80	Nil
High	0.61-0.80	Adnem, Ambaulim, Assolda, Avedem, Balli, Barcem, Benurdem, Cavorem, Cordem, Fatorpa, Molcornem, Molcopona, Morpirla, Naguem and Padi.
Moderate	0.41- 0.60	Cazur,Cotombi,Gokuldem, Mangal, Maina, Naquerim, Quedem, Quiskonda, Tiloi, Undorna and Zanodem.
Low	0.21- 0.40	Corla and Sulcorna.
Very Low	Less than 0.21	Nil
Levels of Village Development		
Very High	More than 0.80	Nil
High	0.61-0.80	Ambaulim,Adnem, Assolda, Avedem,Balli, Barcem, Benurdem, Cavorem, Cordem,Cotombi, Fatorpa, Gokuldem, Maina, Molcornem, Molcopona, Morpirla, Naguem, Padi, Quedem, Undorna and Zanodem.
Moderate	0.41- 0.60	Cazur, Corla, Mangal, Naquerim, Quiskonda, Sulcorna and Tiloi.
Low	0.21- 0.40	Nil
Very Low	Less than 0.21	Nil

Source: Compiled by Authors.

Quepem Sub-Division
Physical and Environmental Resilience
(Data by Village)

PER Index

More than 0.80
0.61 - 0.80
0.41 - 0.60
0.21 - 0.40
Less than 0.21
Urban and Unsurveyed Areas

1. Ambaulim
2. Assolda
3. Avedem
4. Chaifi
5. Cotombi
6. Curchorem-Cacora (MC I)
7. Gokuldem
8. Molcopona
9. Naguem
10. Oddar
11. Xeldem (CT)
12. Xelvona
13. Xic-Xelvona
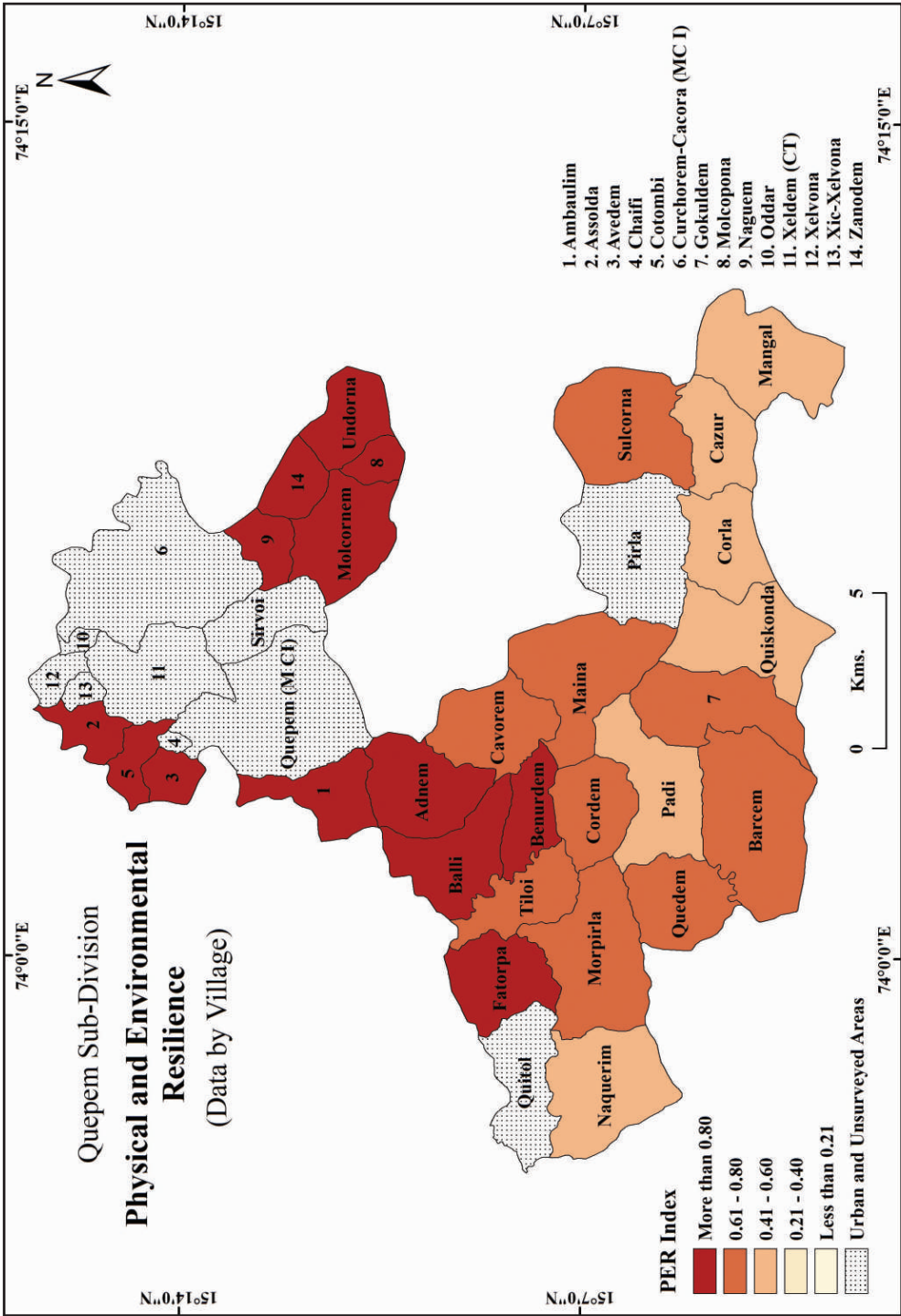14. Zanodem

0   Kms.   5

Fig. 2

villages under study, Cazur and Mangal village have recorded highest (0.78) and Maina village have witnessed lowest (0.54) CIR index (Table 2). The Cazur and Mangal villages practice gaonkari system which ensures strong social solidarity and security among villagers. The male members perform traditional dances during sigmo festival, while the females perform fugdi and dhalo dance during dhillo and Ganesh Chaturthi. They have sports and cultural clubs which organise activities that promote and preserve their culture and skills. The women self-help groups in these villages have small enterprises for selling their products. They sell products such as handicrafts, agricultural produce, homemade sweets and also set up small tea/snack stalls at local festivals or tribal events. The people are not only involved in farming activities but are also employed in the government as well as private sectors. All these factors contribute in having a higher CIR index for Cazur and Mangal villages. However, Maina village has only few scheduled tribe households living in isolation. They face problems due to land disputes and minor conflicts with other communities. There are no self-help groups in the village and the villagers are mostly dependent on the farming activities such as cashew, coconut and arecanut plantations.

While categorizing the villages in to various classes, it has been found that no village falls in the category of very high (more than 0.80) CIR index. However, 21 villages, comprising 75 per cent of the total villages under study, have witnessed high CIR index ranging between 0.61 to 0.80 (Table 3; Fig. 3). The members of the community, in these villages, actively participate in tribal events and festivals. They follow a distinct cultural calendar, celebrating festivals such as sigmo, parab, intruz and annul feast at the village temples or churches. The participation in folk dances and folksongs helps in fostering unity among the people. These villages have active sports and cultural clubs organising annual sports and cultural activities along with village cleanliness drives. Additionally, most of the females in these villages are a part of registered self-help groups. They participate in monthly saving schemes, and in the tribal event or competition organised at the taluka or state level. Apart from the services in the government and private sector, the people in these villages have different livelihood opportunities such as agriculture, daily wage labour and small business. These villages also have autonomous institutions headed by a person often called as Budhvant (clever man) who resolves the conflict, if any, among the people in the villages.

Similarly, 7 villages have recorded a moderate CIR index ranging between 0.41 to 0.60. The villages included in this category are Assolda, Avedem, Maina, Naquerim, Zanodem, Ambaulim, and Tiloi. There is a noticeable shift occurring in these villages, as few household members participate in tribal dances and celebrations. The younger generation is showing little interest in these cultural practices due to increasing exposure to modern methods of entrainment and urban influence. Only few females are actively involved in self-help groups and many have discontinued their participation due to minimal economic returns and lack of cooperation. Land disputes, minor village conflicts and lack of unity among the people are some of the hindrances to achieve higher CIR index. However, CIR index below 0.41 has not been recorded by any of the villages, suggesting that most of the villages have active cultural and community engage-
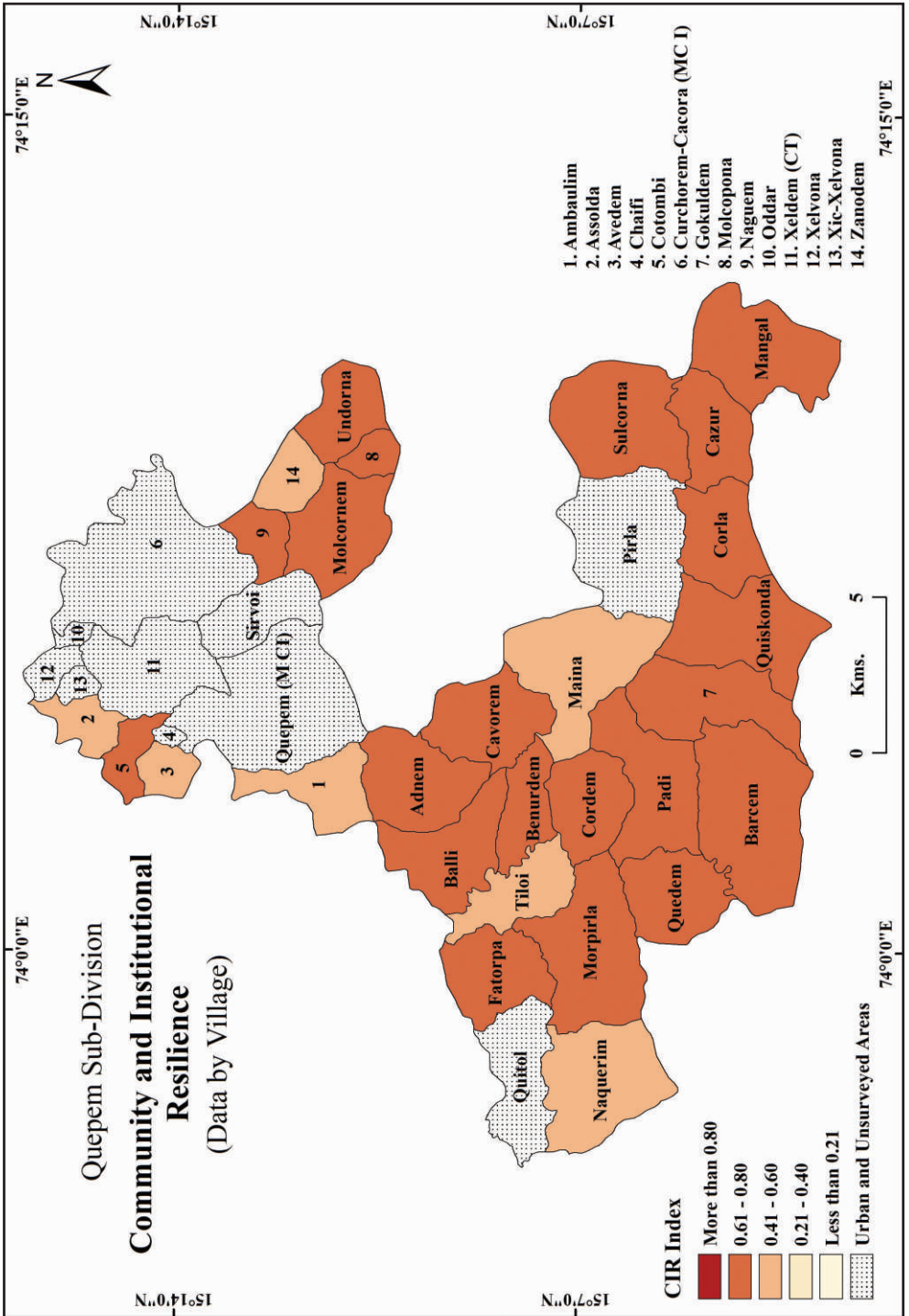
Quepem Sub-Division

Community and Institutional Resilience

(Data by Village)

1. Ambaulim
2. Assolda
3. Avedem
4. Chaifi
5. Cotombi
6. Curchorem-Cacora (MC I)
7. Gokuldem
8. Molcopona
9. Naguem
10. Oddar
11. Xeldem (CT)
12. Xelvona
13. Xic-Xelvona
14. Zanodem

CIR Index

- More than 0.80
- 0.61 - 0.80
- 0.41 - 0.60
- 0.21 - 0.40
- Less than 0.21
- Urban and Unsurveyed Areas

Kms. 0 5

Fig. 3

ments (Fig. 3).

Thus, the study reveals that majority of the villages inhabited by the scheduled tribe communities have a strong community structure and institutional resilience. The heart of the tribal community lies in the sense of togetherness shaped by their rituals and festivals. The indigenous village institutions are deeply rooted in their cultural sentiments and community identity. This contributes significantly to their overall development potential.

Economic Resilience (ER)

The study exhibits that among the total villages under study, Balli and Fatorpa villages have recorded highest (0.76) and Corla village has registered lowest (0.32) ER index (Table 2). Balli and Fatorpa villages have better economic opportunities due to nearness to Cuncolim town. These villages are well connected by NH 66 and other roads helping them to reach other important urban centres like Margao and Panjim. The residents of these villages also have access to skill development workshops or courses conducted in the towns helping them for job opportunities. The women of the community, participate in exhibitions or special tribal markets to sell their products. The farmers carryout paddy cultivation in monsoon and horticulture crops during winters. They are provided with irrigation facilities along with subsidies on seeds and fertilizers. All these factors result in provision of better economic opportunities for the people thereby having a higher economic resilience. On the other hand, Corla village is located in a hilly area sur-rounded by dense forest with poor network coverage. The population in the village ward such as Kazugotav do not have access to motorable road. Apart from this, a large number of people have been found engaged in marginal agricultural activities and daily wage employment with handful of the youth having regular jobs in public or private sectors. Due to shortage of public transport, the people face hardships in accessing skill development programs. An access to market is the major hindrance for the people to sell their produce leading to a lower economic resilience.

While categorizing the villages in to various classes, it has been found that no village falls in the category of very high (more than 0.80) ER index. However, 15 villages comprising 53.57 per cent of the total villages under study, have witnessed a high ER index ranging between 0.61 to 0.80 (Table 3; Fig. 4). These villages are Adnem, Ambaulim, Assolda, Avedem, Balli, Barcem, Benurdem, Cavorem, Cordem, Fatorpa, Molcornem, Molcopona, Morpirla, Naguem and Padi. These villages have an easy access to market along with the presence of some rural enter-prises such as handicraft making, grocery shops and other small business within the settlements. The nearness to towns such as Cuncolim, Quepem, Curchorem and the presence of the industrial estates provides employment opportunities to these villagers. These villages also have a better access to the skill development opportunities in the nearby towns. The villages are well-connected with road network helping the people to commute to urban centres such as Margao and Panjim for employment opportunities. The farmers in these villages receive agriculture subsidies and schemes for farming activities such as paddy cultivation, cashew plantation and growing of horticultural crops.

There are 11 villages that have recorded a moderate ER index ranging between 0.41 to 0.60. The villages falling in
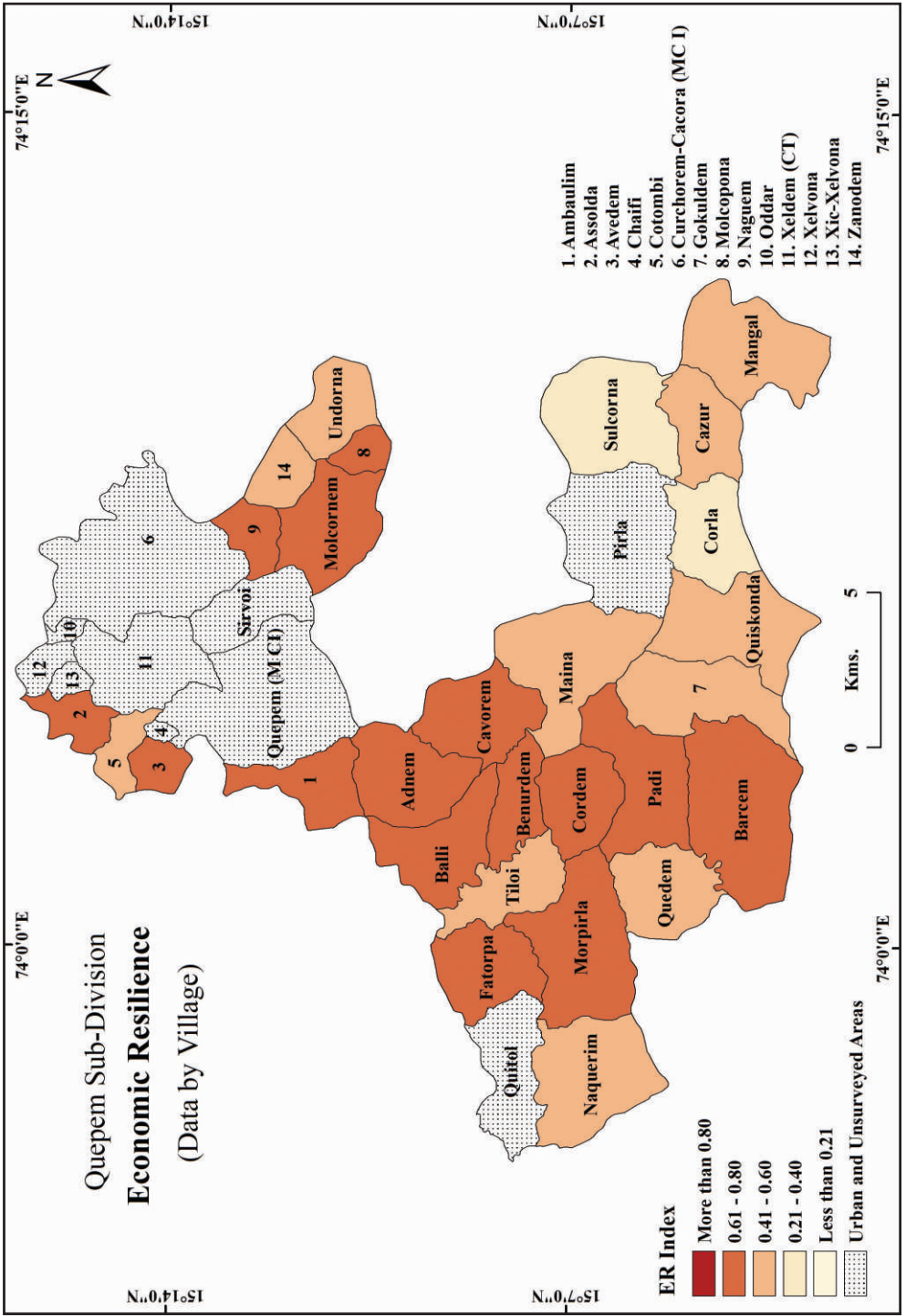
Quepem Sub-Division
Economic Resilience
(Data by Village)

ER Index
- More than 0.80
- 0.61 - 0.80
- 0.41 - 0.60
- 0.21 - 0.40
- Less than 0.21
- Urban and Unsurveyed Areas

1. Ambaulim
2. Assolda
3. Avedem
4. Chaifi
5. Cotombi
6. Curchorem-Cacora (MC I)
7. Gokuldem
8. Molcopona
9. Naguem
10. Oddar
11. Xeldem (CT)
12. Xelvona
13. Xic-Xelvona
14. Zanodem

Fig. 4

this category are Cazur, Cotombi, Gokuldem, Mangal, Maina, Naquerim, Quedem, Quiskonda, Tiloi, Undorna and Zanodem. These villages face shortage of public transport in accessing the nearby markets and towns. There are limited rural enterprises such as small tea stalls and basic grocery shops within the village. The agricultural activities are mostly carried out for self-sufficiency and a limited number of farmers claim agriculture support due to low land availability or absence of Krishi cards. On the other hand, 2 villages have recorded a low ER index ranging between 0.21 to 0.40. The villages falling in this category are Corla and Sulcorna. These villages are located in the remote areas surrounded by a dense forest cover. Some wards in Corla village (Kazugotav) do not have access to motorable road, thereby affecting their access to public transport and educational institutions. People are engaged in subsistence agricultural activities such as kumeri and paddy cultivation on lease in other villages. The challenges also exist due to limited access to skill development programs, low paid jobs, absence of any rural enterprise and subsistence agriculture create hindrances to achieve high ER index. Notably, ER index less than 0.21 has not been recorded by any of the village, indicating an improving economic resilience in most of the villages.

Thus, the study reveals that the scheduled tribes' households exhibit varying levels of economic development. The economy of the area is controlled by the factors such as access to market, the presence of rural enterprises, availability of skill development opportunities and agricultural support mechanisms. Additionally, the villages face issues due to poor road connectivity, shortage of irrigation facilities, ownership of land and remote locations which affects their economic activities. The villages located on the plain areas and near the towns have higher economic resilience.

Levels of Village Development

Scrutiny of Table 2 reveals that among the total villages under study, Balli has recorded highest (0.77), while Corla village has registered the lowest VDCI (0.50). Balli village has achieved a higher PER, CIR and ER indices as compared to the other villages. The village has easy access to facilities such as healthcare, banking services, nearness to industrial estate, access to market and presence of rural enterprises. Moreover, this village has better connectivity and involvement of the people in primary as well as non-primary activities. While, Corla has recorded lower PER and ER indices due to topographical constraints and forest cover. The village has remained deprived of the essential services affecting their socio-economic growth. It has a lower economic resilience as a large proportion of the population is either unemployed or involved in marginal agricultural activities. Shortage of basic facilities, poor connectivity, access to education and health care services are the other hindrances to achieve higher VDCI.

While categorizing the villages into various classes, it has been found that no village falls in the category of very high (more than 0.80) VDCI. However, 21 villages, comprising 75 per cent of the total villages have witnessed high VDCI ranging between 0.61 to 0.80 (Table 3; Fig 5). The villages included in this category are Ambaulim, Adnem, Assolda, Avedem, Balli, Barcem, Benurdem, Cavorem, Cordem, Cotombi, Fatorpa, Gokuldem, Maina, Molcornem,
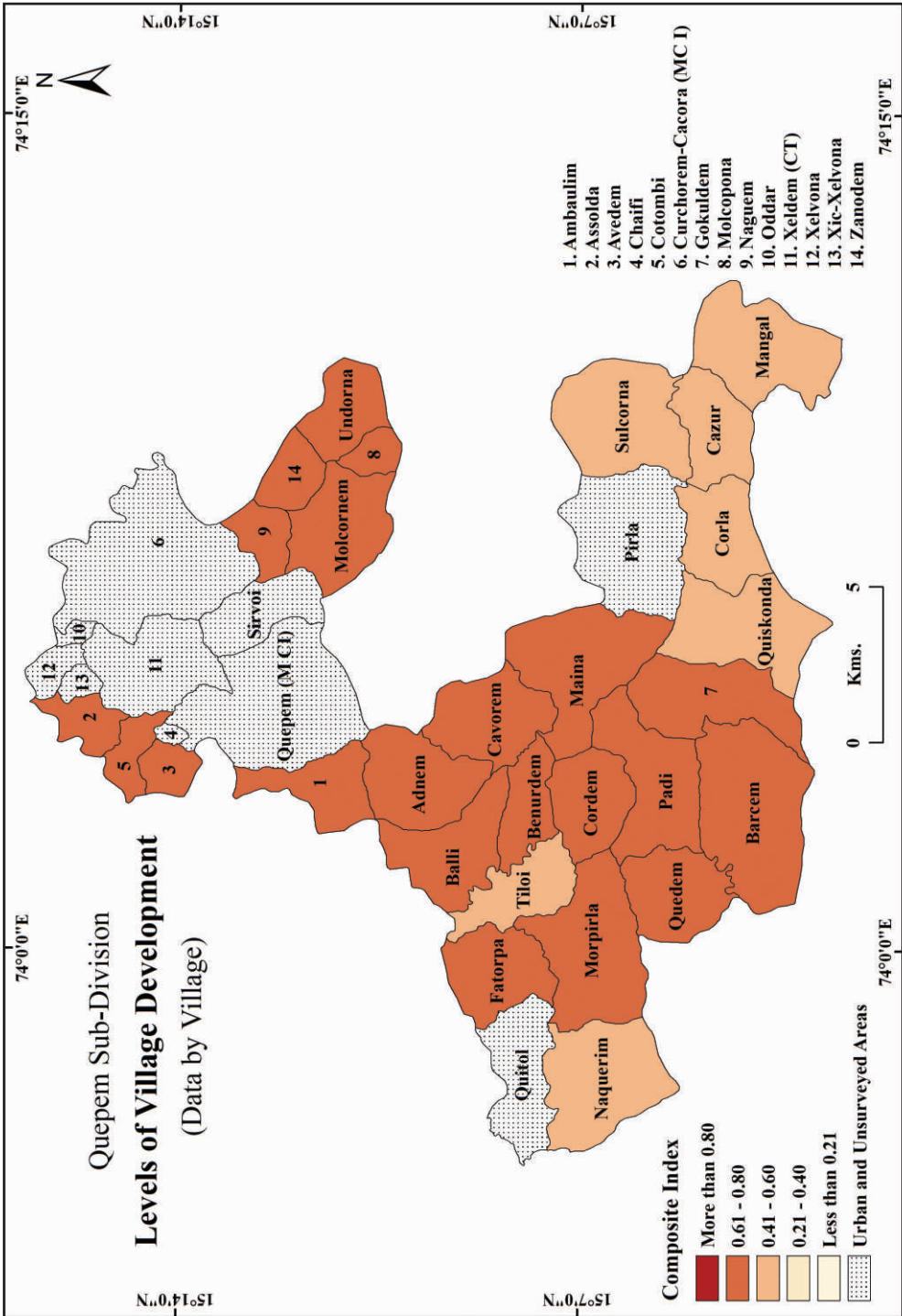
Quepem Sub-Division
Levels of Village Development
(Data by Village)

Composite Index

More than 0.80
0.61 - 0.80
0.41 - 0.60
0.21 - 0.40
Less than 0.21
Urban and Unsurveyed Areas

1. Ambaulim
2. Assolda
3. Avedem
4. Chaifi
5. Cotombi
6. Curchorem-Cacora (MC I)
7. Gokuldem
8. Molcopona
9. Naguem
10. Oddar
11. Xeldem (CT)
12. Xelvona
13. Xic-Xelvona
14. Zanodem

Fig. 5

Molcopona, Morpirla, Naguem, Padi, Quedem, Undorna and Zanodem. These villages have recorded higher PER, CIR and ER indices, indicting the development of the physical and the human resource. The location, relief, connectivity, economic opportunities and the access to essential services such as education and healthcare are significant in determining the development of these villages.

The moderate VDCI ranging between 0.41 to 0.60 has been recorded by 7 villages. These villages are Cazur, Corla, Mangal, Naquerim, Quiskonda, Sulcorna and Tiloi (Table 2; Fig. 5). These villages have recorded PER and ER indices ranging between low to moderate. This is mainly due to their location in the hilly and forested area. This makes it difficult for provision of facilities such as roads, toilets, access to drinking water, public transport and access to market. Low paid jobs and no favourable land for agriculture practices are the additional hindrance to achieve high or very high VDCI. However, these villages have recorded a high to very high CIR index due to their involvement in the traditional dances and tribal festivals. Apart from this, the people have a strong community bond resolving any conflicts with the assistance of the gaonkari system. The study further reveals that VDCI below 0.41 has not been recorded by any of the villages, indicating favourable performance of the development indicators.

Thus, it has been observed that the villages with better PER, CIR and ER indices have recorded a higher VDCI. The topography of the villages has been an important indicator of development. Apart from topography, the access to essential services such are roads, network coverage, transport facilities, healthcare facilities, economic activities, water and irrigation facilities are some of the other factors affecting VDCI. It has been further observed that the villages closer to the town are more developed due to the availability of employment opportunities and other infrastructural facilities. Thus, the urban influence is impacting the cultural heritage and indigenous practices of the scheduled tribe population.

Conclusions

The study has analysed the development status of scheduled tribe inhabited villages in Quepem Sub-division of Goa, by integrating PER, CIR and ER indices to prepare the VDCI. The study reveals that 13 villages located on the plain terrain and near urban centres have recorded a very high PER index. This is due to better transport infrastructure, access to basic amenities, educational and healthcare services. While, 6 villages situated in the hilly and forested area have recorded a moderate PER index, reflecting infrastructural constraints and shortage of basic amenities. Similarly, 21 villages comprising 75 per cent of the villages have recorded a high CIR index. These villages have a vibrant cultural calendar, autonomous conflict resolution mechanism strengthening their resilience. While, 7 villages have recorded a moderate CIR index due to declining youth participation in cultural practices, weakened self-help group activity and internal disputes that hinder community solidarity.

Over half (53.57 per cent) of the villages have recorded high ER index indicating better economic resilience. These villages have rural enterprises, access to employment in nearby industrial estates and improved agricultural support. While, 11 villages have recorded moderate ER index, often constrained

by limited transport, minimal market access and subsistence level agriculture. Notably, 2 villages have recorded a low ER index due to remote forested locations, poor infrastructure and lack of economic growth. The study further reveals that 21 villages comprising 75 per cent of the total villages, have recorded high VDCI. This indicates a favourable development condition in terms of infrastructure and community engagement. These villages have favourable topography, access to essential services and active community participation, indicating a balanced growth of physical infrastructure and human resource develop- ment. While, 7 villages have recorded a moderate VDCI. due to topographical constraints, limited access to basic amenities and economic marginalization. Villages in remote locations continue to face challenges due to poor connectivity, limited economic opportunities and infrastructural shortages. However, these village have recorded a strong community solidarity and cultural engage- ment, reflecting a high CIR. It is interesting to note that none of the villages has witnessed low or very low VDCI.

Thus, the analysis reveals significant inter-village disparities due to topography, infrastructural access, community solidarity and economic opportunities. Villages located in plain areas and near urban centres have recorded a higher development index due to better connectivity, access to services and different livelihood opportunities. Whereas, remote and hilly settlements face constraints in physical infrastructure and economic resil- ience, despite strong community institutions. The findings underscore that physical- environmental resilience alone does not ensure comprehensive development. The community participation, cultural continuity and economic growth are equally important. The study highlights the need for strengthening local institutions, improving market access and promoting skill development to design village specific development strategies.

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