

Revisit to functional classification of towns in Nepal

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The present study on functional classification of the towns in Nepal is a revisit to the study made in 1980 applying the similar methodology. The previous study was based on census data of 1971 and the present study on census data of 2011. The percentages of surplus labour force in proportion to national level were computed considering five activities groups involved in non-agricultural sectors. Then, the arithmetic means of each activity group were calculated and the standard deviations from the means were taken for measuring the functional specialization. The study revealed that both the degree of urbanization and level of functional specialization have considerably increased during a period of four decades. There were only 16 towns in 1971, which increased to 58 in 2011. The number of specialized towns has increased by six folds from 4 in 1971 to 26 in 2011. The level of urbanization has now been a prominent phenomenon as compared to that in 1971. In 1971, even the then large towns were with high agricultural labor force. Now, the proportion of agricultural labor force has declined considerably. However, agriculture labor forces constitute to be dominant in more than 15 smaller towns. It indicates that urban economic base is not being taken into account while incorporating places as municipalities in several cases.

Keywords: Basic and non-basic components; goods and services; functional base; incorporated towns; range; threshold population.

Introduction

Urban centers exist where people gather in close proximity in order to carry on certain activities and satisfy certain needs which cannot be performed without such proximity. These may be commercial, industrial, administrative and others of like nature, which

support urban settlements. The measurement and interpretation of economic and functional bases of towns are as important as the studies of other urban aspects.

One major concept in connection with urban economic and functional bases is that urban centers exist because such activities are performed within them which provide services to the populations of areas within and outside the towns. Therefore, urban centers have focal or nodal character (Shrestha & Manandhar, 1994), and depend to a considerable extent on the outside area for their support. Determination of the extent to which each of the urban functions services the population outside the urban center, in contrast to the production of goods and services for consumption inside the towns, is an important part of most studies of the urban economic base (Alexander, 1954).

Another concept closely linked with the urban functional base is threshold and range (Alber, Adams & Gould, 1971). Threshold refers to the latent body of consumers of the goods or services provided by the towns. It can be expressed simply in terms of the population of the service area or in terms of purchasing power of the people. In those areas whose incomes are relatively homogenous, threshold can be referred to the population serving as consumers for a specific good and service. If there are significant differences in income levels, it would be desirable to consider gross income levels whether or not the threshold population is available to a certain function. At a particular location there is again a range of goods or services. Range is the distance beyond which the local cost to the consumer becomes greater than the value of good or service to him/her.

Another important line of thinking of the urban economic base is the notion of basic and non-basic components of urban functions (Mayer and Kulan, 1959). This notion persists that the activities which the urban centers perform for outside areas are labeled as basic to be different them from those which service the people engaged in basic activities. The activities serving to local population inside towns are non-basic.

Closely linked with the basic and non-basic concept is the approach developed for functional classification of towns (Harris, 1943; Nelson, 1955). Such studies are of two types (Sharma, 1969). One type includes studies which have followed qualitative methods, and the another type is based on quantitative method. One popular quantitative method is the use of arithmetic means and standard deviation (SD) from the means (Sharma, 1990). The quantitative method could be well linked with the national proportion technique for assessment of functional classification of towns (Watanabe, 1961; Shrestha, 1971; Shrestha, 1980; Yucesahin, Bayar & Ozgur, 2006; ESPON & Leuven, 2013; Shrestha & Rijal, 2016; Sharma nd). The notion inherent in functional

classification of towns is that no two towns are alike; nevertheless many towns are similar enough to warrant a classification. In this context, this writing is primarily based on national proportion technique. The functional classification of the towns in Nepal is a revisit to the study made in 1980 and both adopted the similar methodology. The previous study was based on the census data of 1971, and the present study on the census data of 2011.

Methodology

In the study of urban functions, employment data are more suggestive, and such data are commonly used in making functional classification of towns. Some have advocated the notion of the minimum requirement in measuring the functional base of the towns, and this notion has also been linked with arithmetic mean and statistically defined quantities. In the present study, this method is followed.

In this study, by employing the national proportion technique, the basic and non-basic functions were identified. The percentages of surplus labour force in proportion to national level were computed. The arithmetic means of these percentages for each activities group were calculated. The standard deviations from the means were taken for measuring the functional specialization. In both the studies six functions group were established, by regrouping related functional types. The functional groups established are: i) agriculture, forestry and fishing, ii) manufacturing, iii) services, iv) transport and communication, v) finance and insurance, and vi) trade and commerce. Agriculture, forestry and fishing, though not urban function was considered in assessing the extent of agricultural support to the towns. In both the studies, mining and quarrying was omitted, as the proportions of labour forces in this group were highly minimal.

Three types of data were generated: mean plus one standard deviation and above, value above the mean and value below the mean. The first data category measures the level of functional specialization, and the second category indicates the presence of basic activity without the functional specialization, and the third category is related to non-basic function which does not theoretically constitute to the growth of towns.

The arithmetic means adopted in the studies is the most important reference point, the importance of which is well appreciated by some scholars (Sharma, nd; Yucesahin, Bayar, & Ozgur, 2006). Though some have questioned its validity in the context of understanding urban-rural interactions (ESPON & KU Leuven, 2013), it is quite pertinent because one tend to feel that as much as expression supposedly is

representative of the average. The classification scheme of mean values and standard deviation (SD) of urban functions in non-agricultural sector are presented in Table 1.

Table 1. Classification scheme of urban functions

Categories	Criteria	Description
1	< Mean	Urban centres without basic urban functions
2	Mean to 1 SD	Urban centres with specialized urban functions
3	Mean + 1 SD to 2 SD	Urban centres with higher order of specialization in urban function
4	>Mean + 2 SD	Urban centres with strong economic base

Results and discussion

Present scenario

The notion of the functional classification of towns implies that the level of functional specialization is the extent of functional strength of the towns. The high degree of functional specialization measured in terms of the number of specialized towns and specialized functional components tends to reflect the sound economic bases of the towns, with high growth potentials.

The calculated value of mean and standard deviation for different indicators of non-agricultural sectors for 2011 is presented in Table 2. The mean score of services is 24.4 percent of labour force.

Table 2. Mean and standard deviation in non-agricultural sector, 2011 (% of labour force)

Classes	Manufacturing	Services	Transport and Communication	Finance and Insurance	Trade and Commerce
<Mean	10.1	24.4	5.1	6.9	16.0
Standard Deviation (SD)	3.2	5.2	1.3	1.7	4.5
Mean + 1 SD	13.3	29.6	6.4	8.6	20.5
>Mean + 2 SD	16.5	34.8	7.7	10.3	25.0

Source: Derived from 2011 Census Data, (CBS, 2012).

Likewise, the numbers of towns with different value groups for different functional categories are as presented in table 3.

Table 3. Number of towns under different value groups, 2011

Value Groups	Manufacturing	Services	Transport and Communication	Finance and Insurance	Trade and Commerce
< Mean	37	28	31	27	28
Mean to 1 SD	9	8	17	15	18
Mean + 1 SD to 2 SD	8	18	15	11	10
>Mean + 2 SD	4	4	5	5	2
Total	58	58	58	58	58

Source: Derived from 2011 Census Data, (CBS, 2012).

Specialization in urban function has been on rise as compared to levels during the past decades. Out of the 58 incorporated towns for which the data are reported by 2011 census (CBS, 2012, Subedi, 2014), 26 towns appear to be functionally specialized at least in one function. None of the specialized 26 towns have specialization in all five functional components (Table 4 and 5). Even Kathmandu Metropolis is with specialization only in four functional components (service, transportation and communication, finance and insurance, and trade and commerce). It is not yet specialized in manufacturing. There are other three cities which are specialized in four functional types and these are all sub-metropolitan cities (Pokhara, Lalitpur and Dharan). There are five other urban centers which are specialized in three functional components. Of those five towns, four are sub-metropolitan cities (Biratnagar, Birgunj, Butwal, and Bharatpur) and one is the Kirtipur municipality. Butwal and Bharatpur sub-metropolitan cities are very close to convergence to specialization in manufacturing and service components respectively.

Of the remaining four sub-metropolitan cities, three are with specialization in two components and Itahari is with specialization in one component only. Other municipalities with specialization in two to three functional categories are Banepa, Rajbiraj and Bhaktapur. There are 10 towns including Itahari sub-metropolis with specialization in one component. Eight other towns which are not presently specialized are closer to convergence to specialization in one or two functional categories.

Table 4. Number of specialized urban places, 2011

Functional category	Urban Places (Number)			
	Metropolis	Sub-Metropolis	Other Towns	Total
Five	0	0	0	0
Four	1	3	0	4
Three	0	4	1	5
Two	0	3	4	7
One	0	1	9	10
Total	1	11	14	26

Table 5. Functionally specialized urban places by functional sectors, 2011

Urban places with status	Manufacturing	Services	Transportation and Communication	Finance and Insurance	Trade and Commerce	Total
Kathmandu*	nq	x	x	x	x	4
Pokhara **	nq	x	x	x	x	4
Lalitpur**	nq	x	x	x	x	4
Dharan**	nq	x	x	x	x	4
Biratnagar**	x	x	x	nq	nq	3
Birgunj**	x	nq	x	nq	x	3
Butwal**	nq	nq	x	x	x	3
Bharatpur**	nq	nq	x	x	x	3
Kirtipur	nq	x	x	x	nq	3
Nepalgunj**	x	x	nq	nq	nq	2
Janakpur**	nq	x	nq	nq	x	2
Hetauda**	x	nq	x	nq	nq	2
Bhaktapur	x	nq	nq	nq	x	2
Banepa	nq	nq	x	x	nq	2
Siddharthanagar	nq	nq	x	nq	x	2
Rajbiraj	nq	x	x	nq	nq	2
Itahari**	x	nq	x	nq	nq	1
Bhadrapur	nq	nq	x	nq	nq	1
Lahan	nq	nq	x	nq	nq	1
Madhyapur	x	nq	nq	nq	nq	1
Ratnanagar	nq	nq	x	nq	nq	1
Tansen	nq	x	nq	nq	nq	1
Tulsipur	nq	nq	x	nq	nq	1
Malangawa	nq	x	nq	nq	nq	1
Mechinagar	nq	nq	x	nq	nq	1
Kalaiya	x	nq	nq	nq	nq	1

Note: *Metropolis, ** Sub-Metropolis, X indicates qualified urban centre having values more than mean plus 1SD, and nq indicates not qualified.

Among 58, there are 16 urban centers which have value of mean + 2 SD and above (Table 6). This is reflective of stronger economic base as compared to other towns without such values. Of the 16 urban centers, seven are large cities (metropolitan and sub-metropolitan cities) and the other nine are municipalities. Three sub-metropolises (Lalitpur, Dharan and Birgunj) and two municipalities (Kirtipur and Banepa) have such values in two functional categories.

Table 6. Proportion of population by urban centers with values of mean + 2 SD and above

Urban centers	Functional Categories				
	Manufacturing	Services	Transportation and Communication	Finance and Insurance	Trade and Commerce
Kathmandu	nq	37.8	nq	nq	nq
Lalitpur	20.6	35.8	nq	nq	nq
Pokhara	nq	nq	nq	11.5	nq
Tansen	nq	37.3	nq	nq	nq
Dharan	nq	nq	8.4	10.6	nq
Biratnagar	16.5	nq	7.8	nq	nq
Birgunj	nq	nq	7.8	nq	25.7
Butwal	nq	nq	8.4	10.7	nq
Kirtipur	nq	35.8	nq	10.3	nq
Bhaktapur	23.6	nq	nq	nq	nq
Madhyapur	16.7	nq	nq	nq	nq
Hetauda	nq	nq	10.3	nq	nq
Banepa	nq	nq	nq	10.7	25.7
Lahan	nq	nq	8.0	nq	nq
Itahari	nq	nq	8.4	nq	nq
Mechinagar	nq	np	8.8	nq	nq

Note: nq indicates not qualified

Source: Calculation based on Table 1 and Census Data.

It is quite clear that most of the larger cities are with sound economic base and likely to grow. There are 18 urban places which are close to convergence to specialization in one or more functional categories, nine are the new comers in the specialized group and nine others are acquiring specialization in one or more additional components. Kathmandu is likely to acquire specialization in manufacturing and with this achievement

the metropolitan city is being acquired specialized in all the five functional categories. Towns which are close to convergence to specialization are shown in Table 7.

Table 7. Urban centers with their convergence points to specialization by functional categories

Manufacturing (M)	Services (S)	Transportation and Communication (T)	Finance and Insurance (F)	Trade and Commerce (C)
Kathmandu Butwal Nepalgunj	Illam Bhadrapur Inaruwa Bharatpur	Malangawa Nepalgunj Dhangadhi	Itahari Malangawa Dhulikhel Tansen	Bhadrapur Mechinagar Jaleswor Birendranagar

Conceptually, the urban centers with values of mean + 2 SD and above are with stronger economic bases. It is to be noted that the strength as reflected in values is closely related to labor force size of the urban places. Therefore, the level of importance of towns with higher values cannot be interpreted directly in relative context.

Comparative scenario

The degree of urbanization and level of functional specialization have considerably increased from 1971 to 2011 (Table 8). In 1971 (Shrestha, 1980), there were only 16 incorporated towns (Figure 1), the number increased to 58 in 2011 (Figure 2); more than threefold increase. It is also found that the number of towns with specialization in functional categories also increased considerably. In 1971, there were only four towns with specialized functions namely Pokhara, Banepa, Janakpur and Biratnagar (Figure 3) and even Kathmandu did not then appear as the specialized city. The number of specialized towns in 2011 was 26 (Figure 4), nearly six time increased. Functional diversification of towns also has been on rise remarkably. All four functionally specialized towns in 1971 had functional specialization in one functional category only and functional diversification did not exist. In 2011, 16 urban places have been with specialization in two or more functional categories (Figure 4). Thus, the growth of specialization in multiple functional types has increased considerably during the period from 1971 to 2011.

Table 8. Number of towns with level of functional specialization in 1971 and 2011

Description	1971	2011
Category Five	0	0
Category Four	0	4
Category Three	0	5
Category Two	0	7
Category One	4	10
Values above the mean in at least one functional sector	12	20
Values below the mean	0	12
Total number of incorporated towns	16	58

Source: Shrestha (1980) for 1971 and computed from CBS for 2011.

It shows that the level of urbanization has now been a prominent phenomenon as compared to that in 1971, and several urban centers have now stronger economic base. In 1971, even the then large towns were with high agricultural labor force. Even in Kathmandu, agricultural labor force constituted then more than 15 percent of the total labor force. Other towns (50 percent of the towns) were with more than 50 percent agricultural labor force. Of them, three towns including Pokhara were with more than 60 percent agricultural labor force. Now, the proportion of agricultural labor force has declined considerably. In Kathmandu Metropolitan city, the agricultural labor force constitutes only 2.2 percent of the total and in eight sub-metropolitan cities the agricultural labor forces are less than 20 percent in each. As against stronger economic bases in the larger cities, agriculture labor forces constitute to be dominant in 15 smaller towns, with more than 50 percent of the total. Of the 15 towns, six are with more than 60 percent agricultural labor force. It indicates that urban economic base is not being taken into account while incorporating places as municipalities in several cases.

It is also notable that in 1971, all the 16 towns had values above the mean in at least one functional sector. It reflects that they had some economic base which would contribute to the urban growth. On the other hand in 2011, there are 12 towns without values above the means in the urban functional categories. It indicates that these towns do not theoretically have urban economic base.

Conclusion

Urbanization is a good indicator of economic development in the country. It becomes realistic, when the degree of urbanization is correctly measured. The labour forces engaged in proportion to national level force were compared considering five activities groups

other than non-agricultural sectors. During the four decades, the level of urbanization has considerably increased in Nepal. Even large towns were largely agricultural in nature in the past. Recent data clearly indicates that the proportion of labour force engaged in agricultural sector declined sharply in a few urban centres. However, agriculture labor forces constitute to be dominant in almost one-fourth of smaller towns in the country. The present practice of incorporating places into municipal towns without considering economic bases of the localities is unlikely to provide a basis for constructing cause-effect relationship of urbanization with the economic development in the country. In this respect, what will be the present scenario in the context of recent incorporation of a large number of places as municipal towns is yet to be assessed.

References:

- Alber, R., Adams, J. S., & Gould, P. (1971). *Spatial organization: The geographers view of the world*. Englewood Cliffs: Prentice-Hall
- Alexander, I.N. (1954). The basic and non-basic concept of urban functional analysis. *Economic Geography*, (30), pp. 246-261
- Central Bureau of Statistics (CBS). (2012). *National population and housing census 2011*. Kathmandu: CBS.
- ESPON & KU Leuven (2013). *Town: Small and medium sized towns in their functional territorial context*. Luxembourg: ESPON Coordination Unit.
- Harris, C.D. (1943). A functional classification of cities in the United States. *Geographical Review*, (33), pp. 86-99.
- Mayer, H. M., & Kulan, C. F. (1959). The economic base of cities. In H. M. Mayer and C. F. Kulan (Eds.), *Readings in Urban Geography*, Chicago: Chicago University Press.
- Nelson, H.J. (1955). A service classification of ancient cities. *Economic Geography*. 33 (2), pp. 33-42.
- Sharma, P. (1969). Urbanization in Nepal, Paper of the East West Population Institute, No 10, Honolulu: East West Center
- Sharma, P. (1990). Market towns and economic development. In Rondineli, O. (Ed.) *Proceedings: Role of Market Towns Nepal's Economic Development*. Kathmandu: USAID.

- Chandra B. Shrestha & Shiba P. Rijal / *The Geographical Journal of Nepal* Vol. 10: 15-27, 2017
- Sharma, S. (nd). *Functional classification of towns in India*. Retrieved from <http://www.yourarticlelibrary.com/geography/classification-of-towns-in-india/40025/>
- Shrestha, C.B. (1971). National proportion as a technique of urban functional analysis. *The Himalayan Review*, 4, pp. 72-82.
- Shrestha, C.B. (1980). Functional classification of towns in Nepal. *Himalayan Economist*. 6 (3), pp. 5-15.
- Shrestha, C.B. (1981). *Cultural geography of Nepal*, Bhaktapur: Shrestha and Joshi
- Shrestha, C.B., & Manandhar, M.S. (1994). *Settlement systems, small towns and market centers in the Bagmati zone sub-region*, Unpublished Report, Kathmandu: ICIMOD
- Shrestha, C.B., & Rijal, S.P. (2016). *Nepal: Cultural Geography*. Kathmandu: Prakash Shrestha & Sunil Shrestha
- Subedi, B.P. (2014). Urbanization in Nepal: Spatial pattern, social demography and development. In CBS (Ed.) *Population Monograph of Nepal, Vol. III (Economic Demography)*, Kathmandu: CBS, pp. 95-154.
- Watanabe, Y. I. (1961). An analysis of the function of urban settlement based on statistical data: A functional differentiation vertical and lateral, Science Report of the Tokyo University.
- Yucesahin, M. M., Bayar, R. & Ozgur, E. M. (2006). Urban functional specialization and the changes of functional structure characteristics of cities in Turkey. *Firat University Journal of Social Science*, 16(2), pp. 19-41.

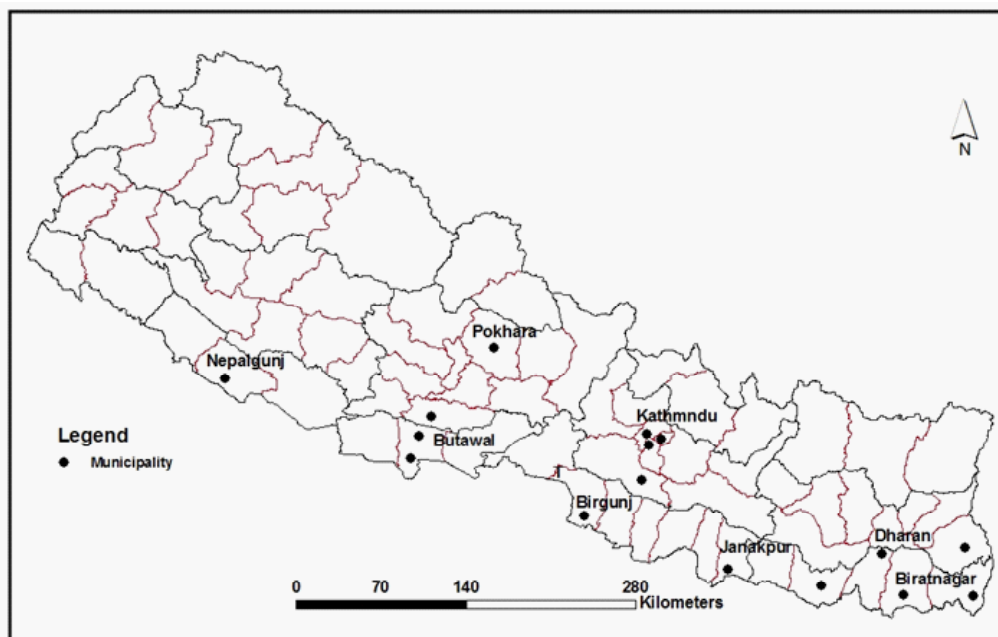


Figure 1. Distribution of towns, 1971

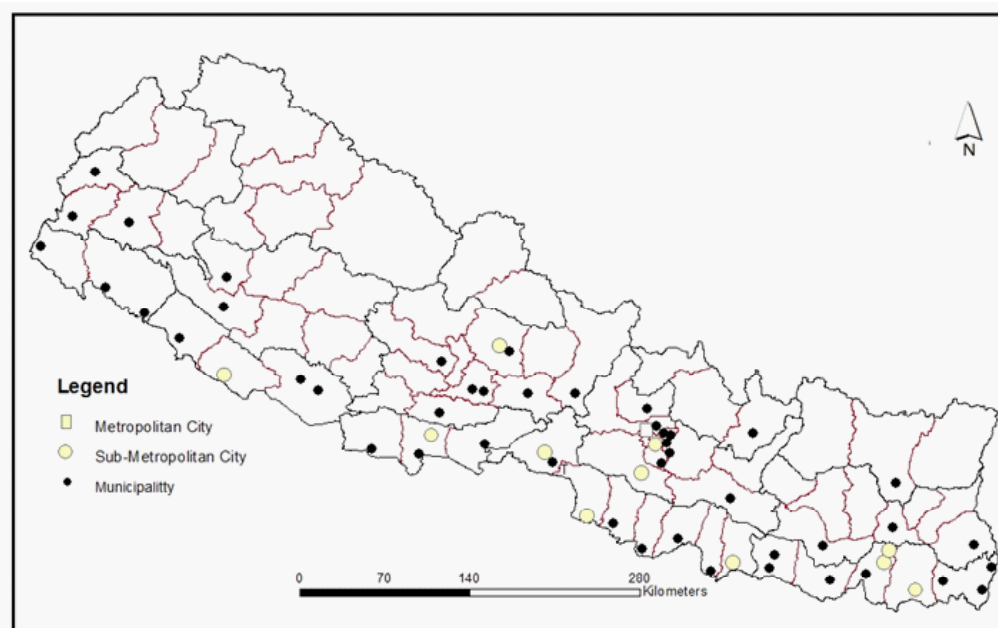


Figure 2. Distribution of towns, 2011

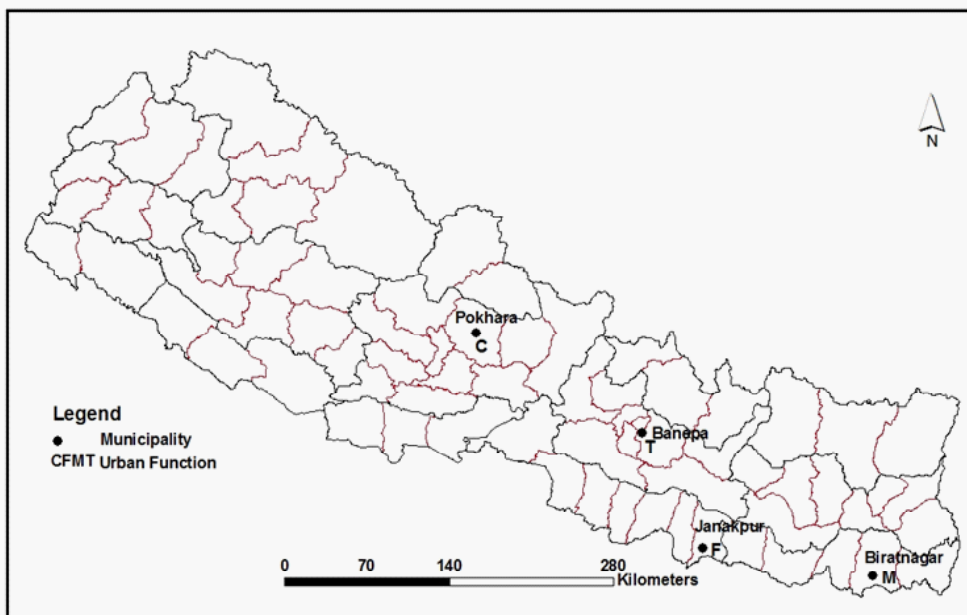


Figure 3. Distribution of towns with specialization categories, 1971

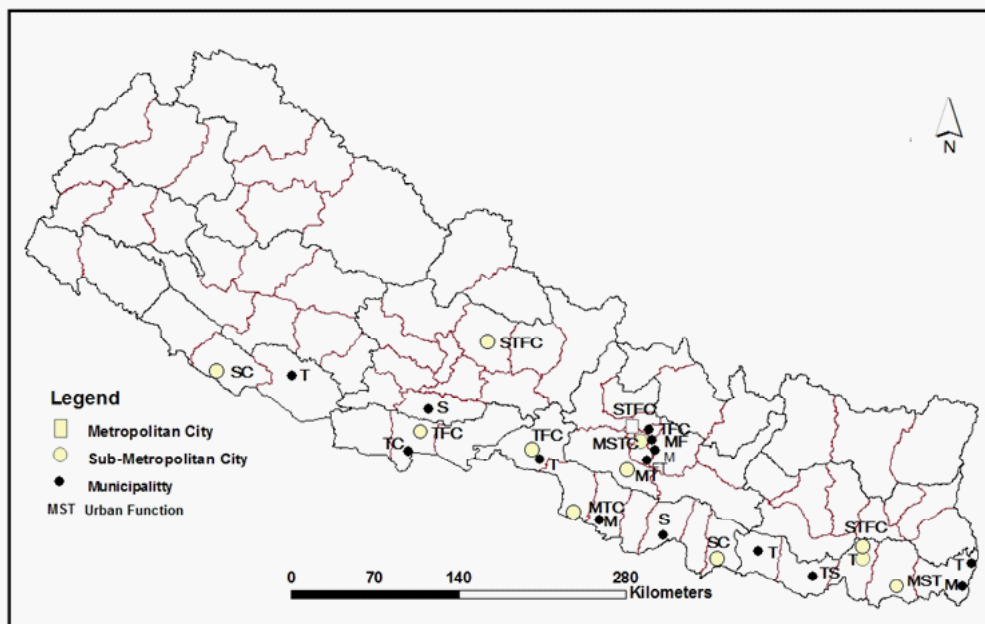


Figure 4. Distribution of towns with specialization categories, 2011

Note: Urban Functions: M- Manufacturing, S- Services, T- Transportation and Communication, F- Finance and Insurance, and C- Trade and Commerce