REGION AND REGIONALIZATION

Geography Honours Semester 5;

Core Paper-CC-11(Regional Planning & Transport Geography)

Dr. Writuparna Chakraborty, Associate Professor, Department of Geography, A.B.N. Seal College, Cooch Behar

1.1 CONCEPT OF REGIONS:

A Region according to dictionary may mean: (i) Any considerable and connected part of a space or surface; specifically, a tract of land or sea of considerable but indefinite extent; a country; a district; in a broad sense, a place without special reference to location or extent but viewed as an entity for geographical, social or cultural reasons. (ii) An administrative sub-division of a city, a territory, a country or the European Union. (iii) A place in or a part of the body in anyway indicated. (iv) Place, rank, station, dignity. So, the term **'Region'** has a wide usage. It has been used for a variety of purpose satisfying both popular and scientific handling. A common man finds a Region as an area having some characteristics which suit some kind of entrepreneurship or administration. But to a scientist or a geographer in particular, 'a Region is an area which is homogeneous in respect of some particular set of associated conditions, whether of land or of the people, such as industry, farming, the distribution of population, commerce, or the general sphere of influence of a city' (Dickinson, 1947:1). Therefore, Regions are the areas within which homogeneity prevails in terms of single or multiple criterion (such as Physiography, Soil, Climate, Language, Religion etc.); or they may have functional coherence in terms of some inter-related and interacting categories of phenomena (such as linkages, nodality etc.); or they may be characterized according to economic attributes i.e. agricultural productivity, cropping intensity, crop combination or even imply areas having access or non-admittance to certain amenities for civic life. Every region is unique by its own characteristics. The geographical personality of a region is marked by its location, boundary and limits; the scale of the unit of study may range from a few villages to a number of countries.
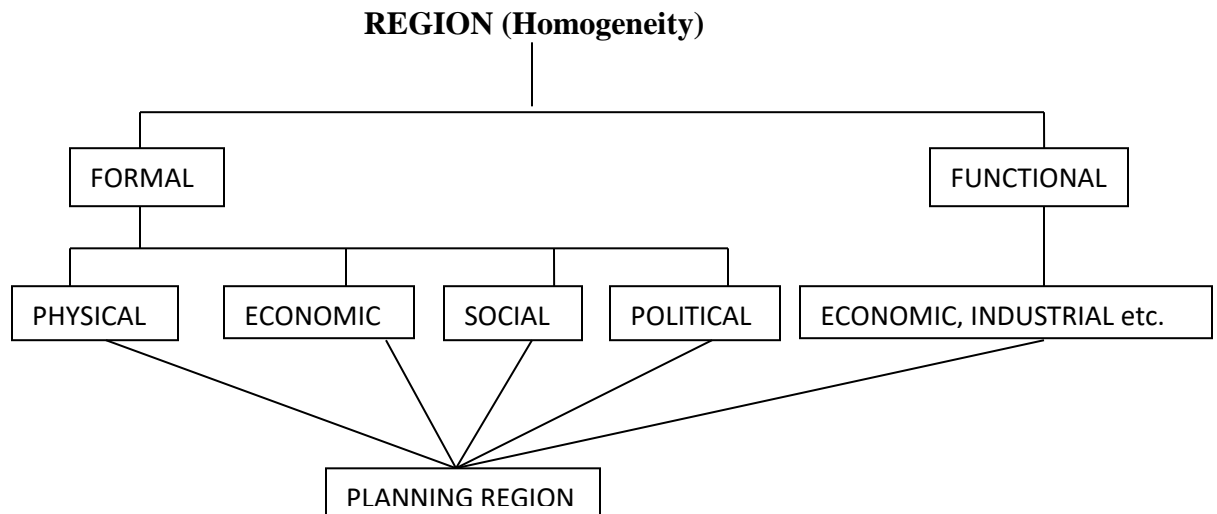
The concept of Region is very much linked with 'Space'. This aspect of study has given the Region a spatial dimension. To follow Glasson (1975), the first step in sketching out the concept of Region deals with understanding it either as a natural phenomenon or mental constructions. There are two opposing views regarding Region. The first one sees the *Region as an end in itself*, a real entity, an organism, that can be sensed or mapped. This is known as the **Objective view** of the Region and it puts forward the idea that Regions do exist in reality. A.J. Herbertson adopting this approach has promulgated the regional study whereby he divided the world into 'natural regions' based chiefly on four criteria – land configuration, climate, vegetation and population. Unstead and Vidal de la Blache also held similar beliefs which had manifestation in their studies.

The **Subjective view** on the contrary portrays the *Region as a means to attain an end* or an idea (or mental constructions), a model, to help in the study of the world. It is a method of classification, a device to segregate areal features, with the only natural region being the surface of the earth on which man finds his home (Glasson, 1975: 19). Hartshorne was one of the chief proponents of this view and saw Region as descriptive tools defined from the point of view of purpose.
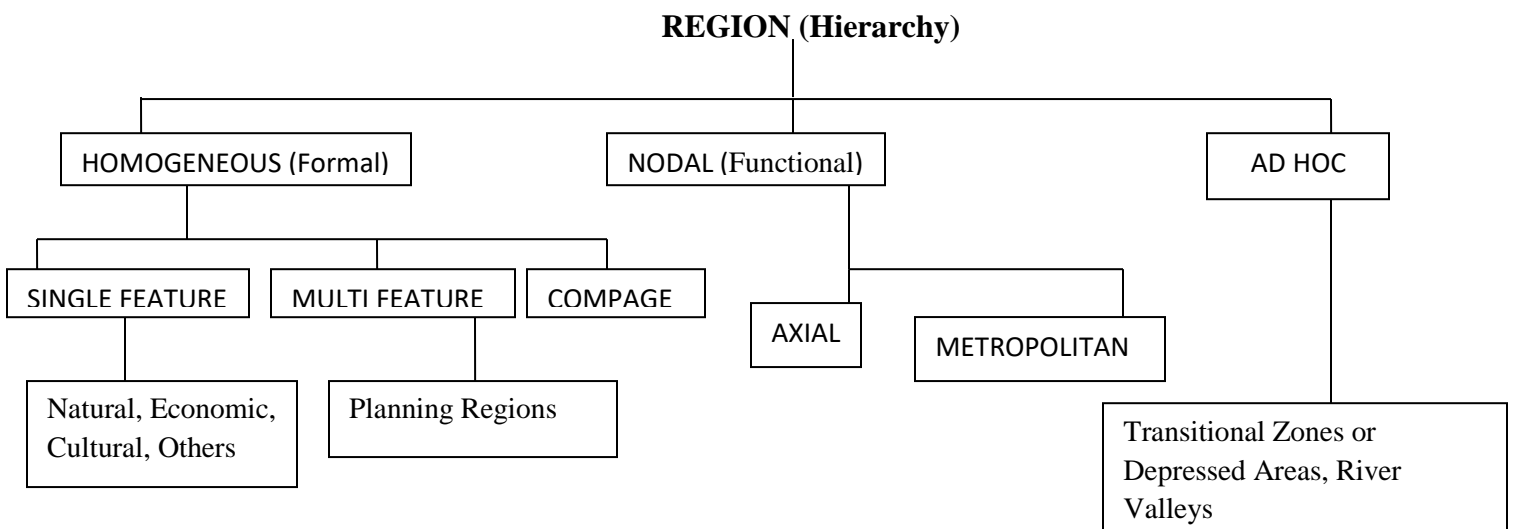
1.2 TYPES OF REGION:

Regions may be classified in a varied way on different bases. 'The regions conceived by geographers are of various types ranging from a single feature region to compage, depending upon the bases or the criteria used for delineation' (Misra, 2002: 45).

- On the basis of **Homogeneity** Regions may be classified into the following types:

REGION (Homogeneity)

```
                    REGION (Homogeneity)
                            |
          ┌─────────────────┴──────────────────┐
        FORMAL                              FUNCTIONAL
          │                                     │
   ┌──────┼──────┬──────────┬──────────┐        │
PHYSICAL ECONOMIC SOCIAL POLITICAL  ECONOMIC, INDUSTRIAL etc.
   └──────┴───────┼──────────┴──────────┘
              PLANNING REGION
```

- On the basis of **Hierarchy,** Regions may be classified into the following types:

REGION (Hierarchy)

```
                    REGION (Hierarchy)
                            |
     ┌──────────────────────┼──────────────────────┐
HOMOGENEOUS (Formal)   NODAL (Functional)         AD HOC
     │                        │                      │
 ┌───┼────────┬──────┐    ┌───┴────────┐             │
SINGLE  MULTI     COMPAGE AXIAL    METROPOLITAN      │
FEATURE FEATURE                                      │
  │       │                                          │
Natural, Economic,  Planning Regions    Transitional Zones or
Cultural, Others                        Depressed Areas, River
                                        Valleys
```

Keeping the basic property of Region being homogeneous, it may be parted into two distinct segments reflecting the economic advances of the society from a simple agrarian economy to a complex industrial system. On the first hand, the former phase saw the formulation of the concept of the **Formal Region** concerned with uniformity. A geographical area is recognized which is homogeneous in terms of some selected criteria. The delineation of the Formal Regions initially involved physical (natural) measures such as topography, landscape, climate, vegetation, soil etc. linked basically with the concept of geographical determinism. When the natural regions are taken up as formal regions, they can be renamed as **Physical Formal Regions**. This form of regionalization was very popular among the geographers because of the fact that the physical criteria had remained more stable than that of the dynamic economic variables; and partly because of the impact of the Darwin's theory of evolution which justifies the concept of natural selection where environment has been held high even for the question on man's adaptation and his survival. Later, a shift in the selection of the criteria has been witnessed, wherein the economic considerations like industrial or agricultural types and even social and political criteria have come up (with obvious physical undertones). When formal regions are delineated on the basis of economic criteria such as income levels, rate of unemployment, rate of economic growth etc. they are termed as **Economic Formal Regions**. When purely cultural factors such as language, religion, tribal population etc. are considered as the bases for delineating the formal regions, they are called the **Socio-cultural Regions**. It has been correctly observed by Ray Chaudhuri (2001:15) that an increasing emphasis has been found over the choice of multiple criteria for regionalization rather than that of a single criterion. This shows the concern of the planners and their comprehension about the developing complexities that exist over space.

The second phase of economic development has been accorded with the appearance of the **Functional Region**. Functional Region is recognized on the basis of functional integration between geographical areas. In other words, when functional coherence and resultant interdependence on the basis of some criteria is displayed over a region, it gives rise to functional regions. The functional relationships are sometimes hierarchically arranged or may be based on the linkages and are heterogeneous in nature (like villages, towns, cities etc.). These are sometimes referred to as Nodal or Polarized Regions. The functional relationships can be revealed in the form of socio-economic flows (movements) as in the form of journey to work, shopping trips, supply of perishable and non-perishable commodities, newspaper circulation, phone calls, e-linkages etc. So, unlike the formal regions, the functional regions rely more on the dynamic elements involving the motion of commodities, capital, information, technology and human resource. In due course of the flow, the nature of relationship between the areas involved in the function gets oriented towards the progress and their interconnection gets due importance as well. It can be noted here, that homogeneity and functionality can never be conceived as two opposing patterns. As the concept of 'unity in diversity' is held complementing 'areal differentiation', it may lead on to distinctiveness and specialization of production. For example, a

region may have better yield in one particular crop and it may develop proper interconnection with another region specializing in another crop so as to become self sufficing. The intensity of the interconnection or the potentiality of a functional centre depends on two factors: the dominant centre (supplier) from which the flow lines emanate; and the distance from the dominant centre to the recipient centres (sub-centres). The potentiality determines the attraction and the sphere of influence of the functional centre.

A combination of both Formal and Functional Regions give rise to **Planning Regions.** Planning Regions are the geographic regions suitable for designing and implementing development plans for dealing with the regional problems. Administrative importance is the prime concern of this method of regionalization. Since spatial differences do exist in the distribution of natural resources and levels of economic development, it may result into social differentiation as well. Multifaceted disparity in the country like ours is an inadvertent outcome since the historical antecedence, cultural, racial, linguistic backgrounds differ greatly throughout the length and breadth of the country. This has contributed for the uneven socio-economic development of the country. So, Planning Regions are sought to equalize the discrepancies what so ever, in order to usher in development to the backward areas and to maintain the existing level of economic development of the already developed zones. Thus, the ultimate aim of the planning region is to fetch welfare to the entire society in general.

There are a host of definitions regarding Planning Regions. Boudeville (cited in Glasson, 1975: 39) defines it as areas displaying some coherence or unity of economic decisions. Keeble sees a Planning Region as an area which is large enough to enable substantial changes in distribution of population and employment to take place within its boundaries, yet which is small enough for its planning problems to be seen as a whole. Klaassen (1965) believed that 'a Planning Region must be large enough to take investment decisions of an economic size, must be able to supply its own industry with the necessary labour, should have a homogeneous economic structure, contain at least one growth point and have a common approach to and awareness of its problems'. Pathak and Kundu (1973: 169) chalks out the characteristics of a Planning Region: (i) it should be large enough to contain a range of resources, conditions and attributes so as to serve a desired degree of economic viability and at the same time not too large to make the comprehensive approach too general, (ii) its resource position is such that a satisfactory level of product combination for consumption and for exchange would be feasible, (iii) the internal homogeneity of resources structure should logically link up the anticipated future so as to make future relevant to the present, (iv) the region should be internally cohesive area, and lastly, (v) planning region should be essentially operational in character, therefore a high degree of flexibility and elasticity should be maintained in the process of regional delineation.

R.P. Misra (2002) has classified **four types** of Planning Regions in India considering both the physical and economic factors. The typology has been intended to give due attention to the 'dual economic' character of the national economy. Dual economy has a technical connotation explained by Ray Chaudhuri (2001) as existence of a slow growing traditional sector with low

technological level (barter economy) along with a modern rapidly growing highly productive sector both in agriculture and industry (market oriented economy). The Planning Regions according to Misra, are:

1. **Metropolitan or City Regions:** A Metropolitan has an urban centre flanked by a peripheral area. This area may contain smaller settlements or satellites. It develops functional dependency from the centre to the peripheral area (a s mentioned in functional region) and behaves like an organism.

2**. River Valley Regions:** River valley regions of our country can perform as a functional unit. The entire river valley may be viewed as an organic whole comprising of the catchment area, the flowing area and the mouth area. The excess water in the upper reaches of the river valley will eventually increase the water level downstream. So, the control and management of the entire basin area is worthwhile for a successful and longterm planning. In doing so, planners must take the riverside population into consideration since they reside with the rivers and are inseparable part of it.

3. **Axial Development Regions:** These develop along transport lines and irrigation channels. They tend to develop as elongated zones generated on both the sides of the lines. They are fast growing regions characterized with new economic activities.

4. **Transitional or Depressed Regions:** The Transitional or Depressed Regions often lie between the growth centres. These regions experience outflow of natural or human resources. They may belong to an agricultural region (as in India) or to a mining region (as in USA) but the sub-regions within them definitely contribute to the poverty of the other. They experience scarcity of knowledge as well.

Compage is a concept developed by Derwent Whittlesey envisaged in a Report on Regional Geography of USA. He recommends that a geographer should investigate the Compage Region in regional studies as it helps to understand a region from a totalitarian view point. Human activity integrates the physical, biological and social perspectives of a region. So, studying a region from different aspects yet integrated as a whole lead to the formation of Compage Region. His investigation in Rhodesia in South Africa (1956) regarding this deserves special mention and he deduced that a Compage region is a complex unit which posses diversified characteristics.

1.3 HIERARCHY OF PLANNING REGION:

While delimiting regions for the purpose of planning, the most commonly faced problem is related to the size of the region i.e. how big a region should be to make the plan economically viable so that the scale of the intended development can be achieved within the convenient administrative framework. The planners have to work at different spatial levels in order to address the problems, needs and necessities of the region. For example, our country has a vast

stretch by virtue of which differ greatly having different geographical scopes. An area (such as a village) may be located in a humid climatic regime while another may experience extreme aridity; some may have continental location while others enjoy maritime climate – so, each one is unique in its own way and individually form a micro-region. Since the problems and prospects of the micro-regions diverge from each other, prescriptions would obviously vary for its development. Furthermore, these micro-regions may coalesce to form a larger area having integrated planning vision. The success of regional planning therefore partly depends on the formulation of the objectives and policies at the respective spatial levels and thereby integrating them to have a holistic approach. According to Misra, Sundaram and Prakasa Rao (1974), it is possible to visualize three major area levels of operation: Macro, Meso and Micro. On this basis, it would be possible to derive planning regions on various taxonomic ranks by grouping areas according to the purpose and scale of development. This is also referred to as hierarchy of Planning Regions.

(a) Macro Regions: This level calls for a comprehensive development decision involving progress related to hydrographic resources (such as river basins and irrigation system), food self sufficiency, power supply, supply of industrial fuels, location of industries having national importance, infrastructure development(transport system etc.) and the like. Since the scale of these problems may involve areas covering more than one state, the planning unit may bother state and local government jurisdictions.

The Macro regions should not only address to the requirements in particular but also should posses a complex matrix of all the resources necessary for the integrated development. For an instance, power resources of any region remain responsible for the development of the economic profile of the same which in turn help in attaining a balanced regional growth. So, "each macro region should have at least one major existing or potential industrial nucleus rooted in a strong power base" (Misra, Sundaram and Prakasa Rao, 1974: 79). This industrial nucleus would become the pivotal point of development, which will have its linkages in a hierarchy of urban industrial development. So, the emergence of a higher order central place in each macro-region has been visualized in the materialization of the planning regions. Nevertheless, with the appearance of the higher order central place in a macro region, the metropolises continues to remain as foci of innovation, large scale industries, financial entrepreneurship, trade etc.

Macro regions are desirable to have "economic unity". There should be areas within which a high degree of mutual dependency persists. In other words, each macro-region should be characterized with a high level of internal cohesion, forming an economic system by itself and having an ability to generate exchanges between other regions of the country. This denotes economic specialization; complementarity of resources and also the growth of ancillary economic activities within each macro region.

"The macro regions should possess high degree of self-sufficiency in matters such as food, level of employment and potential ability to produce goods and services which can be exchanged with

other areas in order to meet the tertiary needs of both rural and urban life" (Misra, Sundaram and Prakasa Rao, 1974: 80). This refers to the concept of self sufficiency of the macro regions, whereby they would put up the objective of getting developed intra regionally so that they would enable themselves to draw up inter regional balances of production and distribution of commodities. This concept does not imply isolation of region rather envisages a balance through intra-regional and inter-regional development that targets overall progress of the country.

A prevalent belief was that planning regions of macro scale would possess 'ecological balance'. But later, it was said that it must be heterogeneous in character rather than being homogeneous having 'unity in diversity' upto a certain degree to strike an ecological balance.

Therefore, macro regions are suitable units for resource investigation and analysis. They are conceived for regional development. They have the objective to meet the requirements of rational planning and calls for inter-regional coordination (especially for infrastructure building entailing irrigation, power, transport development etc.) towards the all round development of the country at large.

(b) Meso Regions: Meso Regions are the sub divisions of the macro regions. In other words, macro regions can be sub divided into several secondary regions to form the Meso regions. They are also known as the regions of second order. The meso regions are actually the primary economic units delineated for the purpose of planning; several of the districts administratively comprise the meso regions. The aim of delimiting the meso region is to identify the economically viable areas for the proper exploitation, conservation and utilization of resources. The economic viability of the meso regions indicate that these regions have adequate resource potential to create a production pattern which is capable of meeting the employment needs over a period of time and simultaneously can produce enough food or offer goods which can be exchanged for subsistence, meeting the consumption needs of the people of those areas. Economic viability of the meso regions can be tested by examining the indicators like per capita income of the component units or districts, per capita usable land, productivity index and manufacturing potential. The resource pattern of the meso region can be developed in such a manner that it leads to specialization of some means of production and even by grouping together areas having similar resource base or linking areas having complementary resource characteristics by intra-areal activities or flows. For example, the coastal plain of Kerala can be combined with the sub-montane plantation districts as then ir resources would supplement and complement each other. Similarly, the Telengana area can be linked with the Krishna-Godavari coastal plain to give more stability to the Telengana area.

(c) Micro Regions: The Micro region is usually smaller than the conventional Planning Regions. Micro region looks after more particular issues compared to that of the former two. They are focused or oriented towards a common goal and also cater to amalgamated problems addressing common interest. The micro regions should avoid conflicting interests emanating within them. Its population should share in common certain qualities like attitudes, values, needs and desires.

Thus, it should represent a community of interests, especially related to production, market relationships, labour supply and demand. In other words, Micro regions are the appropriate sites of area development plans since they can observe the interaction between people and administration at the grass root level as well as can pinpoint the needs and necessities therein. Einhard Schmidt- Kallert (2005) writes about the characteristics of Micro regions in "A Short Introduction to Micro-Regional Planning" published by the Food and Agricultural Organization of the United Nations Sub-regional Office for Central & Eastern Europe:

The Micro region may be

- An existing territorial unit

- A formal planning unit gazette under the planning law of the country

- The living space of a particular ethnic group or an area with a common history

- Defined by physical features like water catchment areas

- Defined by functional inter-relationships like market-hinterland relations

- Defined by the resource base of a particular territorial unit.

Einhard Schmidt- Kallert further opines about the population strength of a micro region wherein he states that it varies between a few villages having few thousand people and large area comprising of many villages even small towns with few hundred thousand people; encompassing both rural and urban settlements.

Three broad types of Micro regions can be recognized according to Misra, Sundaram and Prakasa Rao (1974: 82):

(1) They may be nodal regions consisting of urban centres and their influence zones. In case of big cities (such as Delhi, Kolkata etc.), the influence zones can be very large embracing a considerable part or the whole of a Macro region! The nodal region in that case may be restricted to the 'Metropolitan Area' and not the total hinterland.

(2) The micro regions may primarily be rural areas having a large number of smaller nodes devoid of hierarchy influencing the entire region. In this case, these areas may be considered as service areas of the potential growth centres, which may develop in the subsequent times.

(3) The micro regions may essentially be problem areas or backward areas for example, a coal belt, a famine-prone area or a reclamation area. The Rayalseema area, the Chambal ravines, the Terai tracts may be cited as Indian examples. A micro region may also be an administrative district provided it must possess the essential criteria for its eligibility.

1.4 DELINEATION OF REGION:

Delineation of region means delimiting the region on the basis of some identifying criterion. The method of regionalization varies depending on the objective of delimitation. Regionalization by different methods may not result similarly. Earlier techniques involved some qualitative insightful methods to delimit regions but those resulted in sketchy and vague boundaries. So, a shift in the regionalization process involving quantitative approaches became evitable. There are several methods that could be deployed for delimiting regions:

1.4.1 The Method of using Superimposed Maps:

This method attempts to identify regions based on some criteria for instance: supply of perishable items like milk and vegetables; medical facilities; educational institution etc. establishing the interdependence of the city with its surrounding region. For each criterion, separate maps may be drawn. All the maps are then superimposed on each other. A common area would emerge out of this superimposition. Thus, a boundary may be drawn based upon such superimposition and judgment. This method, though simple, involve certain problems: the boundaries of the region would vary from person to person; moreover, this method lacks scientific approach; lastly, excessive reliance on magnitude of variables has been given but interdependence among the variables is not thought of.

1.4.2 Nodal Method:

The nodal method owes its origin to Transport studies. A node particularly means the intersection point of two or more roads. In Topology, the nodes and arcs form the communication network. The nodes have significance since they are the points of attraction of activities like shops, service stations and break-of-bulk points. These nodal points are highly active in their functions and sometimes the intensity of functions is seen more at the nodal points than at the city centre. So, the proliferation of the nodes marks the degree of influence of the urban centre surrounding which they grow. Their functions remain connected to the urban centre also. Thus, if a person joins the nodal points around a city he may get an area highly influenced by the city. This can be one of the methods for delineating regions but it is also not free of lacunae. It does not take into account other important variables that determine the interdependence between city and region.

1.4.3 Hexagonal Method:

This method is used by August Lösch and Walther Christaller and subsequently used for regional delimitation. This method is usually adopted to discern the central places on the basis of functional hierarchy. An urban unit may be selected which is found to be catered by six other sub-centres of lower urbanization level than that of the pivotal city. These sub-centres would be located in such a manner that it would lead to a geometrical shape i.e hexagon (when the sub-centres remain more or less equidistant on all sides of the main urban unit at the centre).

Although in practice, perfect hexagon may not be yielded. It must be kept in mind that the spread of all the *k* variables are uniform in all directions emanating from the centre; the degree of importance would decrease as one goes away from the centre to the periphery. In order to delineate regions on the basis of this, one may join the six sub-centres to get a hexagonal area. The middle point of which is occupied by the urban centre of higher order. Each of the sub-centre is then joined with the central city. The mid points of each line joining the sub-centre and the city is marked. A line is drawn to joining the mid-points surrounding the central city. Thus, a region is evolved. This method sometimes goes far from practicable in the sense, the sub-centres may not be found equidistant to the central city and the transport cost and nodes are determined by market forces.

1.4.4 Gravity Model:

Gravity relation of Physics can become an effective tool for understanding movement of people and commodity especially in the urban areas. In metropolitan cities, the growth of cities (in various directions with a number of satellites settlements surrounding it) may be designated as potential extended urban settlements. Gravitational analysis is based on a probability view of human interaction and it is significant so far as the functional regionalization is concerned.

The simple gravity model presumes that the interaction between two centres is directly proportional to the 'mass' of the centres and inversely proportional to the square of the 'distance' between them. In recent planning development, 'mass' is represented by variables like population, income, expenditure, employment, retail turnover etc. while 'distance' mean the physical proximity, time, price, intervening opportunities. Mathematically:

$$T_{ij} = k [P_i P_j / d^2_{ij}]$$

Where, T_{ij} is the gravitational force between towns i and j, P_i and P_j are the masses of the two centres, d_{ij} is the distance between them and k is the constant.

The concept of demographic or gravitational potential is a development of the original concept of particular relevance for regionalization. The demographic potential at a centre i caused by a mass at centre j, (iV_j) is defined as:

$$iV_j = k [P_j / d_{ij}]$$

if i is surrounded by a number of centres, n, the total potential at centre i will be:

$$tV = k \sum_{i=j}^{n} [P_j / d_{ij}]$$

By calculating the potential for centres in a study area, isopleths of equal potential can be plotted on a map, depicting the relative attractiveness, spheres of influence of the various centres. From such interpolation, functional regions can be identified.

1.4.5 Classificational Method:

This method may be borrowed from the biologists who have tried to classify the floral and the faunal species according to their identifying characteristics. These may be designated as Operational Taxonomical Units (OTU) having unique and individual characteristics. This method may be employed in regional delineation as well. The OTUs can be replaced by certain characteristics (homogeniety) and individual taxonomic groups may be replaced by micro regional units such as villages. All classificational methods involve some kind of ranking which is based either on magnitude of characteristic features or correlation between the variables.

a. Ranking Method: Ranking is the method of replacing quantitative data by natural numbers. For instance, if there are different settlements present over a region, one may think of ranking them on the basis of certain criterion. If population be the basis, then all the settlements may be ranked according to population of decreasing order. Mention may be made of Zipf's Rank Size Rule, wherein several towns may be classified on the basis of their ranks designated by the population of the highest ranking town. Thus population adherence of each ranking town denotes the ability of that particular town to hold population, to provide resources and civic amenities to the residents. In this manner the formation of micro-regions may result. Therefore, for regionalization this method of ranking may be taken into consideration.

b. R-Type Classification: This method of classification is a step forward of regionalization of the OTUs. In biological classification, R-Type classification denotes groups that are internally homogeneous and inter heterogeneous. In the context of regional delineation, this may lead to the grouping on the basis of variables like education, cultural activities, health and medical care, transport and communication and the like.

c. O-Type Classification: This method of classification implies grouping of units into groups that are internally heterogeneous and intra-homogeneous. This method is based on quantitative data. In the context of regionalization, these micro-regions are to be grouped into homogeneous units.

d. Distance Method: The concept of distance may be borrowed from Geometry, which may be defined as the shortest length between any two points. It may be expressed as:

$$d_{ij} = x_i - x_j$$

where, i and j are the two points on a plane and x_i and x_j are the lengths between those points measured in a given direction. Similarly, distance could be defined in case of relevant variable such as income, population etc. for which the relation may be expressed as:

$$d^2_{ij} = (x_{1i} - x_{1j})^2 + (x_{2i} - x_{2j})^2$$

where, d^2_{ij} represents the squared distance between i and j; x_1 and x_2 are variables. This concept may be extended to K variables, in which a number of variables can be taken into consideration

and regionalization can be done. But this method may not be relied upon as there is no clear cut method of recognizing the number of variables; all the variables if given same weight can give flawed results; the regions included in a cluster may not be geographically contiguous.

e. Combinatorial Method: As explained earlier that the task of delineating region is based on the criterion involving homogeneity; in doing so one may become interested in identifying regions based on certain criteria. The criterion in this case may be commodity flow from villages to villages and from villages to the urban core. The commodity flow involves transport cost, carrier capacity, processing centre etc. which in actual pose hindrance to planned movement. This method on the other hand helps to find out the optimal village cluster(s) which can ensure the presence of convenient envelope assisting the urban core. Furthermore, this method is useful in delimiting the planning regions.

1.4.6 Composite Index Method:

In most of the regionalization problems no single variable is sufficient enough to portray some of the complex characteristics which are not directly observable. As such characteristics are only partially reflected by several variables and we have to measure them through all the related variables. A composite picture from these properly chosen variables may be extracted by working out a Composite Index from them (Mahmood, 1993: 89).

The computation of Composite Index involves the recognition of a host of variables which may be designated as X_1, X_2, X_3.........X_n. These variables on the first hand are made value free to remove the biasness of scale. The biasness of scale may be eliminated by following any of these procedures:
a. By ranking the observations.
b. By dividing the observations by Mean or by Standard Deviation or by any other suitable value.
c. Standardization of variables.
After the observations have been divided by their respective Mean values, their scale effect gets neutralized; the Mean of new variable (after the division by their Mean values) equals unity; this new transformation retains the relative variability of the original variable. Then the results may be added row-wise. The sum of these figures is then put in the last column and it is known as the Composite Index Score. The higher value of the Composite Index Score indicates the higher level of development. Then these can be spatially interpolated for regionalization on the basis of the selected variables.
For more refinement in calculation equal weights and unequal weights can be imposed upon the variables.

1.5 REGIONALIZATION IN INDIA:

1.5.1 Schemes of Natural Regions:

Several professional attempts for regionalization of India have been witnessed from the initial decades of 20th Century. Many workers have tried to carve out regions on the basis of single feature or even considering multiple features. But the geographical factors have long been not recognized which unite or diversify the country. The Meteorological Department took initiative for regionalization but their criterion was essentially based on single feature for example: temperature, pressure, rainfall etc. or even some composite features of climate in general, or the maps prepared by the Census Department which have limited value to the geographers.

Perhaps the earliest effort has been put forward by **Mc Farlane** to regionalize India in his volume *Economic Geography*. More substantive work was produced by **L. D. Stamp** (1922-24) wherein he presented 3 primary or macro-level regions and 22 sub-regions of India. His classification was primarily based on homogeneity of physiography and structure and secondarily on climate. Stamp designated these regions as 'Natural Regions' which are:

a. The natural regions of the Mountain Wall
b. The natural regions of the Northern Plain; and
c. The natural regions of the Indian Plateau.

The Mountain Wall that falls within the present boundary was divided into 4 sub-divisions on the basis of elevation and climate –
i. The Eastern Hill region or the North-East Hills
ii. The Himalayan Region comprising of the height above 1500 metres
iii. The Sub-Himalayan Region covering the foot hills between the plains and the mountains as well as the lower slopes of the Himalayas.
iv. The Tibetan Plateau falling within the Jammu and Kashmir boundaries.

The Northern Plain has also been classified into 8 sub-divisions (of which 5 lie within the present boundary of the country) wherein climatic variation formed the dominant basis for such division although Stamp recognized the differences between the older alluvium region of the Punjab & Uttar Pradesh and the newer alluvium deposits of the deltas. The sub-divisions are:
i. The Punjab Plains (Indo-Gangetic Plain West)
ii. The Upper Gangetic Plain with an annual rainfall of 100cms and comprising two-thirds of the erstwhile state of Uttar Pradesh.
iii. The Middle Ganges Plain- an intermediate region with a mixture of wet zone and dry zone crops.
iv. The Lower Ganges Plain or the Delta Region – the wet region of the newer alluvium corresponding roughly with the former province of Bengal.
v. The Brahmaputra Valley (Assam Valley) – the region of heavy rainfall like the deltas.

The Indian Plateau is the term preferred by Stamp which is otherwise known as the Peninsular India and the Deccan. This macro-level region has 10 sub-divisions:

i. Coastal Region around the plateau proper (Kutch, Kathiawar and Gujarat Coasts) forming a transition between the dry Indus valley and the Thar Desert on one hand and very humid West Coast on the other.

ii. The West Coast Region lying between the crest of the Western Ghats and the Arabian Sea comprising a narrow coastal plain and the slopes of the Western Ghats.

iii. The Karnatak or Tamil Region also referred to as the East Coast South encompassing a broad coastal plain and an inland hilly tract.

iv. The Northern Circars Region including Orissa and also referred to as the east Coast North lying between the eastern Ghats and the Bay of Bangal.

v. The Deccan Plateau (using the term Deccan in the strict sense) covering the high southern portion of the plateau.

vi. The Deccan Lava Region in the north western portion of the plateau corresponding with the Black Cotton Area

vii. The North East part of the Plateau being a complex region and comprising five further sub-divisions (namely: the Central Indian Highlands, Chotanagpur Plateau, Eastern Ghats, Chhatisgarh Plain or Mahanadi Valley and the Godavari Valley)

viii. The Central Indian lying between the Ganges Plain and the Narbada-Son trough

ix. The Rajput Upland Region – a complex region of hills and plateaus between the Vindhyas in the south and the Aravalli hills in the North-West; and

x. The Thar or the Great Indian Desert.

Stamp's work has remained as one of the valuable source of regionalization for a long time since it has been most convenient, easily comprehensible and perceptible from the viewpoint of physical or cultural factors or a combination of both.

Almost simultaneously to Stamp, **J.N.L. Baker** (1928) came up with another independent scheme of regionalization of India wherein Baker incorporated some unpublished ideas of W. Arden Wood. Baker's proposal had co-incidental resemblance with that of Spate's scheme especially with regard to the broad regional divisions.

Towards the end of 1930s i.e. in 1939, **M.B. Pithawala** published a work on the regional division of India in the Journal of Madras Geographical Association and he critically appreciated Stamp's and Baker's schemes. Spate observed Pithawala's work and found inconsistency especially dealing with the plains, whereby the Indus and the Ganga Plains have been confused and misinterpreted. This scheme was also put to criticism by Kazi S. Ahmad.

Kazi S. Ahmad added a fourth macro-level division to the most popular scheme put forward by Stamp. He separated the Coastal Plains from the Indian Plateau. Although he gained support from Spate, but was heavily criticized by Pithawala since the scheme lacked hierarchical order.

O. K. H. Spate presented a detailed scheme of physiographic regions of India in 1954 but a slight modification to it was done in 1967. He divided the entire country into 3 'paramount' macro-level regions based on structure. The most commendable part of his method is that it deals with enough flexibility and dynamicity while recognizing regions. His empirical work brought forth 35 regions of First Order (under 3 macro-level regions excluding islands), 74 Second Order Regions and 225 sub-divisions. The three Paramount Macro-level Regions are:

i. The Mountain Rim,

ii. The Indo-Gangetic Plains; and

iii. The Peninsula

Inspired by Spate, **R.L. Singh** developed a scheme of regionalization of India on physical basis (gelogy, structure, relief and physiography). The classification stresses onto 4 broad divisions or Macro-Regions, which are further sub-divided into Meso Level Regions (Meso level regions are subsequently parted into First Order and Second Order Regions respectively). The Macro Regions are:

i. Great Plains,

ii. Himalayan Mountain,

iii. Peninsular Uplands; and

iv. The Indian Coasts and Islands

TABLE 1.1: Detailed Classification of R.L. Singh's Scheme of Regionalization (Macro-Meso-Micro Regions)

MACRO LEVEL REGIONS	M ESO LEVEL REGIONS	FIRST ORDER REGIONS	SECOND ORDER REGIONS
A. Great Plains	I. Rajasthan Plain	1. Marusthali	a. Jaisalmer Marusthali b. Barmer Marusthali c. Bikaner-Churu Marusthali
		2. Rajasthan Bagar	d. Ghaggar Plain e. Shekhawati Region f. Nagaur Region g. Luni Basin
	II. Punjab Plain	3. Punjab Plain North	a. Hoshiarpur-Chandigarh Plain b. Upper Bari Doab c. Jullundar Plain d. Punjab Malwa

		4. Punjab Plain South	e. Ambala Plain f. En Haryana (Kurukshetra Plain) g. Wn Haryana h. Sn Haryana
	III. Upper Ganga Plain	5. Upper Ganga Plain North	a. Rohilkhand Plain b. Awadh Plain
		6. Upper Ganga Plain South	c. Upper Ganga-Yamuna Doab d. Trans Yamuna Plain e. Lower Ganga-Yamuna Doab
	IV. Middle Ganga Plain	7. Middle Ganga Plain North	a. Ganga-Ghaghara Divide b. Sarayupar Plain c. Mithila Plain d. Kosi Plain
		8. Middle Ganga Plain South	e. Son-Ganga Divide f. Magadh Anga Plain
	V. Lower Ganga Plain	9. North Bengal Plain	a. Duars (Barind Tract) b. Tista Flood Plain
		10. Delta Proper	c. Moribund Delta d. Mature Delta e. Active Delta
		11. Rarh Plain	f. Mayurakshi Plain g. Bankura Upland h. Midnapur Upland
	VI. Assam Valley	12. Upper Assam Valley	a. Upper Assam Valley North b. Upper Assam Valley South
		13. Lower Assam Valley	c. Lower Assam Valley North d. Lower Assam Valley South

The Table 1.1 shows the detail of the scheme of classification prepared by R. L. Singh, here for convenience the divisions and the sub-divisions of the first Macro-Region have been elaborated. The Meso- Regions of the rest of the Macro-Regions are listed below in Table 1.2.

Table 1.2: Classification of R.L. Singh's Scheme of Regionalization (Macro-Meso Regions)

MACRO LEVEL REGIONS	M ESO LEVEL REGIONS
B. Himalayan Mountain	VII. Kashmir Region VIII. Himachal Region IX. U.P. Himalaya X. Eastern Himalaya XI. Purvanchal Region
C. Peninsular Uplands	XII. Udaipur-Gwalior Region XIII. Malwa Region XIV. Bundelkhand Region XV. Vindhyanchal-Baghelkhand Region XVI. Chotanagpur Region XVII. Meghalaya-Mikir Region XVIII. Maharashtra Region XIX. Chhattisgarh Region XX. Orissa Highland Region XXI. Dandakaranya XXII. Karnataka Plateau XXIII. Andhra Plateau XXIV. Tamilnadu Uplands & South Sahyadri
D. The Indian Coasts and Islands	XXV. Gujarat Region XXVI. West Coast Region XXVII. East Coast Region XXVIII. Indian Islands

Another scheme in this connection deserve special mention is that of **Prof. S.P. Chatterjee,** who presented his scheme of regionalization of India which was published in the Gazetteer of India Vol I. (1965). Chatterjee divides the country into 7 major physiographic divisions on the basis of topography, which have also been sub-divided furthermore:

i. Northern Mountains including the Himalayas and the mountain ranges in the north-east
ii. Great Plains
iii. Central Highlands
iv. Peninsular Plateaus
v. East Coast
vi. West Coast and
vii. Bordering seas and Islands.

1.5.2 Schemes of Planning Regions:

Planning Regions can be carved out on the basis of the Natural Regions keeping certain factors such as: homogeneity, nodality, production specialization, energy resources utilization etc. in consideration and accepting the importance of state boundaries (from the points of view of administration and political grounds). **P. Sengupta** has divided the country into 7 Planning Regions which eventually coincides with the drainage basins. The regions are:

i. The North Eastern Region comprising Assam, Nagaland, North East Frontier Agency (NEFA), Manipur and Tripura

ii. The Eastern Region covering West Bengal, Bihar and Orissa

iii. The North Central Region including Uttar Pradesh

iv. The Central Region comprising Madhya Pradesh

v. The Western Region consisting of Maharashtra, Gujarat, Daman, Diu, Dadra and Nagar Haveli

vi. The North Western Region encompassing Rajasthan, Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir

vii. The Southern Region embracing Andhra Pradesh, Mysore, Kerala, Goa, Pondicherry, Karaikal, Mahe, Yanam, Andaman and Nicobar Islands, Laccadive, Minicoy and Amindivi Islands.

Sengupta delineates Meso Regions under these Macro Regions paying particular attention to the core of economic growth, multipurpose projects, cities, industrial centres which radiates their production impulses to their surrounding areas. These are elaborated in the following table (Table 1.3).

Table 1.3: Planning Regions of India after P. Sengupta

MACRO REGIONS	MESO REGIONS
i. The North Eastern Region (Assam, Nagaland, NEFA, Manipur and Tripura)	1. Upper Brahmaputra Valley, 2. Lower Brahmaputra Valley, 3. Mineralized Plateau, 4. Eastern & Northern Hills
ii. The Eastern Region (West Bengal, Bihar and Orissa)	1. Calcutta-Hooghly Region, 2. Damodar Valley Area 3. Chotanagpur & Northern Orissa Plateau 4. Southern Hills & Plateau of Orissa 5. Lower Ganga Plain, Deltas & Coastal Plain 6. Darjeeling hills & submontane tracts (Duars)
iii. The North Central Region (Uttar Pradesh)	1. Northern Himalayan Area 2. Western Ganga Plain 3. Eastern Ganga Plain

iv. The Central Region (Madhya Pradesh)	1. Eastern Madhya Pradesh 2. Western Madhya Pradesh 3. Bastar Area 4. Central Madhya Pradesh
v. The Western Region (Maharashtra, Gujarat, Daman, Diu, Dadra and Nagar Haveli)	1. Bombay city & its Conurbation Area 2. Intervening area along the railway between Bombay & Nagpur 3. Coastal part of Maharashtra 4. Western Maharashtra mainly Plateau Area 5. Eastern Maharashtra 6. Central Maharashtra 7. Gujarat plain 8. Saurashtra 9. Kutch
vi. The North Western Region (Rajasthan, Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir)	1. Punjab Plain 2. The Union Territory of Delhi 3. Western Rajasthan 4. Eastern Rajasthan 5. Himalayan Hills including 'Dun' Area 6. Kashmir Valley & its surrounding Hills
vii. The Southern Region (Andhra Pradesh, Mysore, Kerala, Goa, Pondicherry, Karaikal, Mahe, Yanam, Andaman and Nicobar Islands, Laccadive, Minicoy and Amindivi Islands)	1. Coastal Plain of Andhra Pradesh 2. Telengana Area 3. Rayalseema Area 4. South Central Industrial Area 5. South-Eastern Coast 6. Anaimalai Cardamom & Nilgiri Hills 7. Western Coast 8. Malnad & Western Ghat Area 9. Maidan Area 10. Coral Islands

Town & Country Planning Organization scheme after C.S. Chandrasekhara

It has been observed that though the objectives of achieving balanced regional development has been a constant effort especially through the Plan periods, yet there exist regional disparities. Large scale public sectors were found to be set up in backward areas (erstwhile Bihar including present Jharkhand, Madhya Pradesh including Chhattisgarh and Orissa) but perhaps there was no attempt to evolve an economic organization of activities around such projects to sustain and support them. Keeping this in mind, **C.S. Chandrasekhara** advocates the delineation of Planning Regions according to *minimum resource potentials of different regions*. Such a concept leads to the formation of: a. Resource Rich and b. Resource Poor regions; and it is also believed that the former would be linked up areas with similar kind of resource potential or may be linked with that of backward areas so that it would experience a trickledown effect of development. Thus Planning Regions delineated in this manner have three primary requirements for generating

economic growth: 1. Land, 2. Raw materials for industrial development and 3. Power. These three principle requisites would enable each planning region to achieve a degree of self sufficiency in food as well as economic viability (i.e. self sufficiency in generation of employment potentials in the agriculture and non-agricultural sectors to meet the needs of the population and power base sufficing the developmental needs of both agriculture and industry).

C.S. Chandrasekhara delimited India into 13 Macro Regions which are further sub-divided into 35 Meso Regions included in the scheme that was submitted by the Town & Country Planning Organization. These are stated in the following table:

Table 1.4: Planning Regions of India after C.S. Chandrasekhara

MACRO REGIONS	MESO REGIONS
i. South Peninsula	Kerala, Madras, Coimbatore, Coastal Tamil Nadu
ii. Central Peninsula	Central Karnataka, Bellary-Hospet, Rayalseema, Telengana
iii. Western Peninsula	Konkan and Trap, Bombay-Deccan
iv. Central Deccan	Narmada Valley, Khandesh-Berar
v. East Peninsula	North-eastern Deccan, Dandakaranya, Mahanadi Basin, Son Industrial Region, Chhotanagpur-Brahmani Industrial Region
vi. Gujarat	Gujarat Hills and Plains, Kathiawar-Kutch Region
vii. Western Rajasthan	Desert and Semi-desert Region
viii. Aravalli Region	Kota, Chambal Valley, Jaipur-Udaipur
ix. Jammu & Kashmir and Ladakh	Jammu & Kashmir, Ladakh
x. Trans Indo-gangetic Plains & Hills	Bhakhra Nangal, Delhi-Western Uttar Pradesh
xi. Ganga-Yamuna Plains	Kanpur, Eastern Uttar Pradesh
xii. Lower Ganga Plain	North Bihar, Calcutta-Hugli Industrial Region, North Bengal Plains
xiii. North-eastern Region	Lower Brahmaputra Shillong Plateau, Upper Brahmaputra Hills Region, Eastern Hills and Plains.

1.5.3 The Schemes of Economic Regions:

Though apparently it seems that the knowledge of natural region is poles apart while focusing on to economic regionalization, but in reality the natural regions form the basis of economic regionalization. Especially while dealing with planning, it becomes necessary to have a knowledge regarding the physical characteristics of any spatial unit so as to find out areas of potential development and to trace interlinkages among them so that maximum development could be ensured. Depending upon the physio-geographical and economic features and the socio-cultural factors that are chosen to emphasize and depending upon the method of combining them, different types of homogeneous regions could be formed.

V. Nath prepared a scheme of Resource Development Regions and divisions of India for the Planning Commission in 1964. His scheme was guided by two principles:

a. providing of framework for understanding the variety of physical conditions and resource development potentials in different parts of the country to those concerned with planning at the Centre and in the States, so that these differences are given due consideration in the planning of programmes, and adjustments in programme content and pattern are made to meet these, wherever necessary.

b. furnishing to those concerned with planning at the state level, a scheme of division of their states into internally homogeneous units, each of which can be used as a unit for planning of most of the programmes included in state plans.

Nath's Scheme had some considerations for homogeneity: i. In terms of physical factors including topography, soils, geologic formations and climate. ii. In terms of agricultural land use and the cropping pattern. While conceptualizing his scheme, Nath examined the scheme of division of India into natural regions and sub-regions and divisions used in census of 1951. He also considered O.K.H. Spate's scheme of regionalization. He also observed the tentative scheme of regions for resource planning evolved by the Indian Statistical Institute. Nath divided the country into 15 resource development regions. These regions are further subdivided into 61 Resource Development Divisions.

Table 1.5: Economc Regions of India after V. Nath

RESOURCE DEVELOPMENT REGIONS	RESOURCE DEVELOPMENT DIVISIONS
1. Western Himalayan Region	a. Himalayan Uttar Pradesh Division (having 5 districts) b. Himalayan Punjab Division (having 2 districts) c. Himachal Pradesh Division (having 6 districts) d. Jammu & Kashmir Division (having 9 districts)
2. Eastern Himalayan Region	a. Himalayan sub-region (consisting of NEFA with 5 districts and 1 district of Himalayan West Bengal) b. Assam & associated Hills sub-region (consisting of Assam hills, Nagaland, Manipur and Tripura) c. The Plains sub-region (consisting of Brahmaputra & Surma valleys and West Bengal Doars)
3. Lower Gangetic Plain	Covered by 12 districts of West Bengal Plain
4. Middle Gangetic Plain	a. North Bihar Plain (6 districts) b. South Bihar Plain (5 districts) c. Eastern U.P. Plain (12 districts)
5. Upper Gangetic Plain	a. Central U.P. Plain (12 districts) b. North Western U.P. Plain (9 districts)

	c. South Western U.P. Plain (9 districts)
6. Trans Gangetic Plain	a. Delhi b. Punjab Plain (16 districts) c. Western Rajasthan Plain (1district)
7. Eastern Plateaus and Hills	a. Chotanagpur Plateau (6 districts) b. West Bengal Plateau (1district) c. Orissa Inland (9 districts) d. Madhya Pradesh (8 districts) e. Maharashtra (2 districts)
8. Central Plateaus and Hills	a. Bundelkhand (4 districts of Uttar Pradesh) b. Madhya Pradesh (7 districts of Northern Plains and Plateaus, 10 districts of Central Plateaus & Hills and 7 districts of Vindhyan Hills and Plateaus) c. East Rajasthan Plain & Hills (11districts) d. South Rajasthan Plateaus & Hills (4 districts)
9. Western Plateaus and Hills	a. Maharashtra (20 districts) b. Madhya Pradesh (11 districts) c. Rajasthan Malwa Plateau (1district)
10. Southern Plateaus and Hills	a. Andhra Pradesh (Telengana, Rayalseema & Chittoor) b. Madras inland (4 districts) c. Mysore Plateau (6 districts) d. Mysore Karnataka Plateau (8 districts)
11. East Coast Plain and Hills	a. Orissa coastal (4 districts) b. Coastal Andhra (7 districts) c. Madras East Coast (6 districts) d. Pondicherry
12. West Coast Plain and Ghats Region	a. Madras West Coast (1 district) b. Madras Nilgiris (1 district) c. Kerala (9 districts) d. Mysore Coastal (2 districts) e. Mysore Hills (3 districts) f. Maharashtra Konkan (4 districts) g. Goa (1 district)
13. Gujarat Plain and Hills Region	a. Gujarat Plain and Hills (9 districts) b. Saurashtra Plain (5 districts) c. Gujarat Hills (1 district) d. Gujarat Dry (2 districts)
14. Western Dry Region	a. 9 districts of Rajasthan Division
15. The Islands	a. Islands in Bay of Bengal b. Islands of Arabian Sea

Bhat and Rao identified 11 major regions and 51 sub-regions on the basis of a study of the distributional pattern of resources with the help of qualitative maps of distribution of important natural resources followed by a study of agricultural land use structure on the basis of district-wise data. The guiding principle is that major regions should have minimum disparities within and distinctiveness from their neighbours in respect of regional character and resources for development. Sub-regions are identified on the basis of the concentration of resources, problems for development and administrative convenience. The major regions are:

1. West Coast Region
2. Western Ghats
3. Central Plateau
4. Eastern Ghats
5. East Coast
6. North-Eastern Plateau
7. The Ganges Plain
8. Assam
9. Gujarat
10. Rajasthan
11. Kashmir and the northern hilly areas

States can be grouped in different ways to form Macro Economic Regions depending on the purposes for which the process of regionalization is being carried out. Thus, if it is considered that each macro economic region should have power- metallurgical base as strong catalysts for attaining balanced regional development implying certain level of self sufficiency, the macro economic regions can be defined as under, by grouping arts of different states.

Table 1.6: Economic Regions of India after Bhat and Rao

MACRO ECONOMIC REGIONS	PARTS OF STATES
1. South India	Mysore, Kerala, Tamil Nadu, and Andhra and Parts of Maharashtra
2. Western India	Most parts of Maharashtra & Gujarat
3. East Central India	Parts of Madhya Pradesh, Orissa, Maharashtra & Andhra Pradesh
4. North- Eastern India	Bihar, West Bengal, major part of Orissa & Assam
5. Middle Ganges Plain	Uttar Pradesh except the hill districts
6. North-Western India	Rajasthan, parts of Punjab and Haryana
7. Northern India	Parts of Punjab, Haryana, Himachal Pradesh and Jammu & Kashmir

Considering that there is a lack of inter-regional data, Bhat suggests that it is better to define macro economic regions comprising groups of states rather than their parts, these are as follows:

Table 1.7: Economic Regions of India after Bhat (revised)

MACRO ECONOMIC REGIONS	GROUPS OF STATES
1. Southern	Mysore, Tamil Nadu, and Andhra Pradesh
2. Western	Maharashtra & Gujarat
3. Eastern	Bihar, West Bengal, Orissa & Assam
4. North-Western	Punjab, Haryana, Rajasthan and Jammu & Kashmir
5. North-Central	Uttar Pradesh & Madhya Pradesh

1.5.4 Other Schemes of Regionalization:

P. Sengupta and Galina Sdasyuk have put forward a number of schemes of regionalization for India based on certain factors. Thus agricultural regions, industrial regions, population-resource regions etc. have come up. Since *man* remains as the chief transformer of the natural resources and brings about socio-eco-cultural development, population resource regions have been given due attention. Keeping the demographic structure of population (density & growth rate), resource potentiality and levels of socioeconomic development of the country in mind, **Sengupta** divided the country into 19 regions. These regions were further classified into three characteristic population resource regions: Dynamic, Prospective and Problematic regions.

The **dynamic region** backs up the areas with advanced industrial areas and predominantly characterized with urban population; these regions are the areas having high resource potentials but face socio-economic obstacle to technological transformation. Five Dynamic regions have been identified so far:

 i. The deltaic plain of the Ganga coinciding with West Bengal,
ii. The Deccan Trap area including Gujarat state (except Kutch Peninsula) and Maharashtra (excluding Marathawada and Koknan coast),
iii. The Tamilnad region identified with the Madras state,
iv. The Punjab Plain and the Ganga-Yamuna *doab* area and
v. The South-Eastern Karnataka Plateau

The **Prospective Regions** are characterized by the presence of resource potentials and deficit technological knowhow. 5 regions are also identified as Prospective regions:
i. North-Eastern Peninsular Plateau,
ii. Godavari Basin
iii. Aravalli Hills and Malwa Plateau
iv. Western and Southern Karnataka Plateau including Goa and

v. Brahmaputra Valley

The **Problematic Regions** have very little provision for futuristic development because of immense population pressure, over utilization of resources and poor infrastructure. There are 9 such regions as identified by Sengupta in her study, these are:
i. The Middle Ganga Plain(eastern Uttar Pradesh & North Bihar Plain),
ii. The Orissa Coast,
iii. The Kerala Coast,
iv. The Laccadive, Minicoy and Amindivi Islands,
v. The Konkan Coast and the Central part of Southern Peninsula stretching from Marathawada through North-Eastern part of Karnataka Plateau to Rayalseema area of Andhra,
vi. The Rajasthan Desert including the Kutch Peninsula of Gujarat,
vii. The North-Western Himalayas,
viii. The Eastern Himalayas and
ix. Andaman and Nicobar Islands.

This scheme of classification is very useful especially for planning purpose as it clearly points out the deficient areas so that investment decisions could be taken up.

Referred Books:

Chand & Puri

J. Raychowdhuri

R.P. Misra

Dickinson

Misra, Sundaram and Prakasa Rao

John Glasson