# GEOGRAPHY

# By

# Neetu Singh

## 2014

Regional Planning ( I+II)

# Part 12

## UPSC Optional

Date
10/05/2014

~~Geography~~ Lecture = 10

## Whittelsey Committee (1956)

It incorporated the consolidation of all the diversive viewpoint about regional approach in geography by categorising geographic regions as :=

(Region = phenomenon + area)

(a) Formal Region
(b) Functional Region
(c) Planned Region

The formal region in geography represents homogenous characteristics either in terms of natural conditions or human characteristics. These are largely incorporating spontaneous characteristics and correlate to well-defined individualistic geographical space. For all the purposes of geographical enquiry, methods of regionalisation applied for these region includes both qualitative and quantitative.

The functional regions are defined to be the regions that incorporate strong economic or functional interdependence. Such regions with node-periphery interrelation involves spontaneous characteristics that mark its development at par with the development of functional capacity as urban agglomeration, industrial cluster, hinterland of a port-city. Such regions are best demarcated of their boundaries by implementation of quantitative methods. Such regions are denoted to be excellent examples of cascading systems.

The planned regions, representing the requirement of inducing growth momentum to the areas that largely lacks in natural capacity/ potentialities of growth, are considered to be special type of formal regions. These reveal their distinction both in being induced

region and not spontaneous, along with incorporating the possibility of scattered geographical characteristics. The planned regions forms excellent examples of controlled systems. which do not require any additional methods of de-limitation as it marks the example of induced region.

## REGIONAL GEOGRAPHY

Regional approach in geography largely correlates to recognising the causes of evolved disparity and simultaneously developing the ways to minimise those disparity. The regional synthesis as regional planning has absolute overlap with geography as it takes into account 3 components called place, folk and work, which form the 3 distinctive elements of geographical field of enquiry.

The dimensions of regional field of

geography is largely correlated to persisting inequalities. These are projected to be the outcomes of not just natural factors but also complex economic, political & social factors within a given location.

These inequalities being the integral part of all geographical units have been ~~the~~ because of strong orientation provided by human geographers to analyse such disparities at variable geographical scale. These analyses are boldly classified into non-spatial and spatial models.

| Non-Spatial Model | Spatial Model | |
|---|---|---|
| | Growth Pole | Growth Centre |
| * Rostow | * Francis Perroux | * Boudville |
| | * Mrydal | - Hermansen |
| | - Asard Perloff | - R P Mishra |

# ROSTOW'S GROWTH MODEL

American scholar Rostow propounded one of the most referred growth pole model in the non-spatial category. He attempted the analysis of economic growth based on the experience of developed countries & advocated that all the developing countries will absolutely repeat the course of development generated by developed world. In his non-spatial analysis, he outlined very well-defined 5 temporal stages in the growth of an economy as well as its political characteristics. The demarcated stages includes :=

(i) Traditional Society Stage

(ii) Pre-Conditions for Take-off

(iii) Take-off Stage

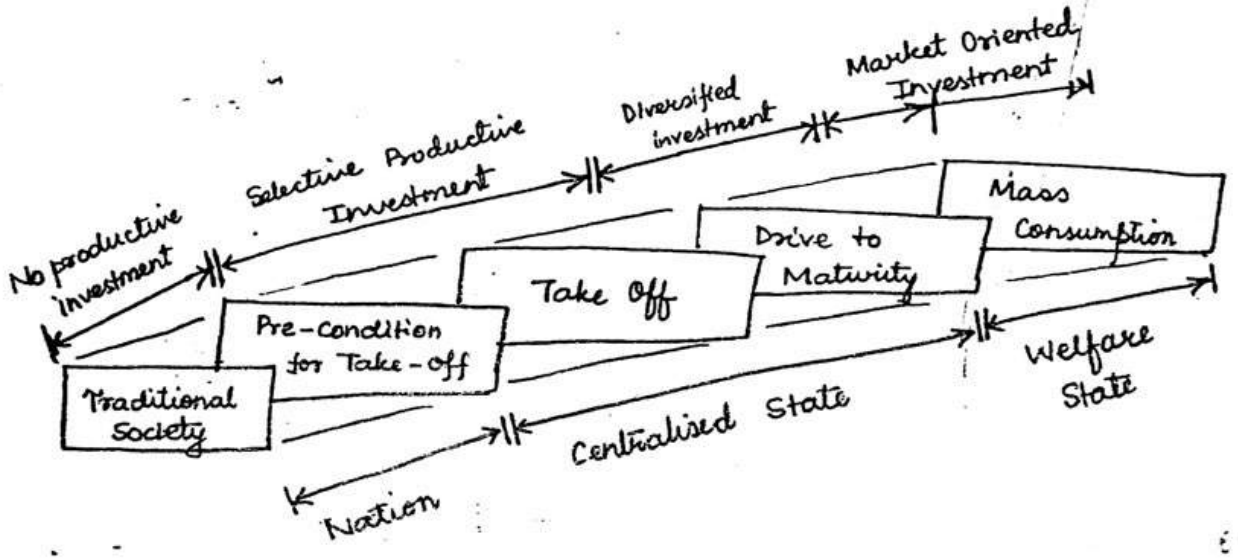
(iv) Drive-to-Maturity Stage

(v) Stage of Mass Consumption.

In the traditional society, he identified the economic setup to be highly primitive with population engaged in sedentary type of agricultural practices, with absolute subsistence living, with minimal income. This minimal income being largely deviative to the non-productive activities like religious rituals with the consistent practice of following set practices rather than rational enquiry pulling upper ceiling to the growth prospect. Politically this stage covelates to "nations".

> The pre-conditions for take off mark its beginning with the general diffusion of education & awareness, among the newly evolved middle class. This stage also marks partial beginning of selective productive investments in the political domain of centralised state. This stage

therefore, paves way to take-off stage that marks the true momentum in the economic growth with enlarged and diversified productive investment by centralised state. The scholar specifically emphasizes that take off stage normally extensive for 20-30 years involves the objective of generating grassroot economic capacity with development of road, railways and selective agro-based industries. He also emphasized that all these 3 bottom stages are experienced by developing countries.



Drive to maturity is the stage representing diversified productive investment for diversified productive capacity & holistic development of economy. This stage marks the attainment of economic status as consolidated facilitating subjumption of entire workforce with specialised global interlinks. This is followed on by stage of mass consumption that denotes market-oriented investments with priority of economic planning towards consumers. The stage represent transformation of centralised state to welfare state as well. Both these last stages are projected. to be experienced by developed countries

Rostow's growth model avails a generalised but applicable description of economic & political transformation, particular geographical location experiences which marks

validity in entire global perspective. It is, however, that this non-spatial model is being projected with dimensions of <u>limitation</u> as :=

① Variable economic environment available for developing countries compared to developed counterparts. It is clearly projected that, globally, resource distribution is highly variable. Moreover, the kind of dominating markets developed world had in the beginning of their economic growth have become highly competitive in present perspective restricting practical possibilities of developing world repeating the growth of developed world.

② Unlike advocated by the scholar, it is that one economic unit is actually experiencing more than one stages of the growth model.

i) Most prominent point of criticism, however, is his interpretation of selective economic growth in the take-off stage as practically after attainment of independance both the dominating market economies - China & India - attempted diversified growth with balancing investment in all the major economic quarters.

## SPATIAL MODEL : GROWTH POLE

In the spatial category, theoritical distinction is applied b/w growth pole & growth centre concept wherein growth pole is defined to be the generalised lab-oriented whereas growth centre as absolute geographical space. Practically, however, the two terms are recognised to be synonym. The growth pole concept was originally propounded by Francis Perroux way back in 1955. He

identified that development corresponds to regional disparity as development always evolves at certain nodes with variable intensities, from where it spills over via variable channels to variable cardinals generating variable terminal effects on the economy. To justify his approach, he projected the example of propulsive industry where 'the establishment of one or enlargement of existing' results in establishment of secondary industry, thus, industrial complexes, industrial areas and enlarged industrial regions. This approach of Perroux was enlarged by Mrydal (1956) in his growth pole concept called "cumulative causes & spatial interaction". Absolutely following Perroux's growth pole concept with propulsive industry Mrydal added causes of development of growth poles. He identified these causes to be

initial kicks, that can include locational, demographic or economic benefit with earliest mobilisation with the mobilisation of initial kicks, triggered growth poles generates trickle-down effect on the neighbouring areas.

In 1962, Isard Perlaff propounded export-based model, further enriching growth pole concept. He discarded the compulsion of propulsive industry in the genesis & development of growth poles. While emphasizing that availability & mobilisation of resource base with national or international value, he favourably diversified the growth pole concept & enlarged its application. He referred that same of such raw material can readily generate revenue for the economy which leads to increased investments, savings

generating growth prospects for entire economy. It is this orientation in growth pole concept that marked the involvement of raw material exporting countries as also the potential growth nodes.

## GROWTH CENTRE

In the late 1960s, Boudville propounded the first growth centre concept by emphasizing the specific geographical location that can project as growth node. His urban multiplier model emphasized that it is urban areas which correlate to higher capacity of becoming growth centres as they involve higher functional capacity with more developed economic infrastructure compared to the rural counterparts. This specification of geographic location not just enlarge the concept of growth node but also laid the foundation of analysis

of multiplier effect highlighted to be different than spill-over or trickle-down effects. This approach was further enlarged by Hermerson in his regional multiplier model. He emphasized that urban areas may be correlating to higher functional capacity than rural areas, but the rural areas also involves significant role in sustaining growth momentum for urban areas providing backward linkages (raw material) and forward-linkages (market). The entire scattered growth node concept was given consolidated profile by R.P. Mishra who not just highlighted the requirement of eliminating distinction b/w poles & centres but also was the first to outline the hierarchy of growth nodes with specification of linkages. His growth nodes include :=

(i) Growth Pole

(ii) Growth Centre

(iii) Growth Point

(iv) Service Centres

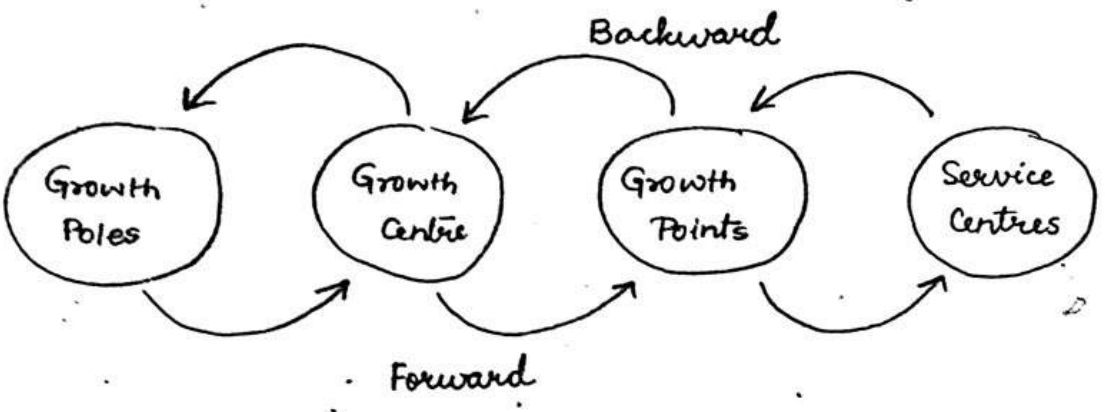



Fig. Hierarchy of Growth Nodes (R.P. Mishra)

With growth poles, Mishra identified facilitative activities relating to specialised centres with highest functional capacity & thus highest hierarchical status (Megacity). The growth centre in comparision represents diversified manufacturing hub with substantive economic capacity though slightly weaker than growth poles reflecting lesser population density (Cities).

(i) Growth Pole
(ii) Growth Centre
(iii) Growth Point
(iv) Service Centres

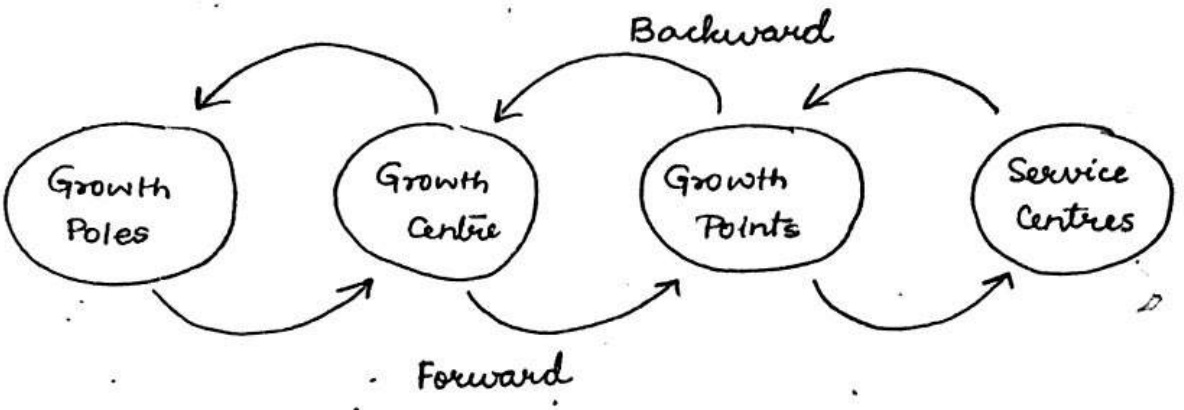



Fig. Hierarchy of Growth Nodes (R.P. Mishra)

With growth poles, Mishra identified facilitative activities relating to specialised centres with highest functional capacity & thus highest hierarchical status (Megacity). The growth centre in comparision represents diversified manufacturing hub with substantive economic capacity though slightly weaker than growth poles reflecting lesser population density (Cities).

Growth points denotes those growth nodes which do involve manufacturing capacity, however, very basic agro-based categories. Being less functionally capable, they involve lesser population densities (towns).

Service Centres represent lowest hierarchical growth node depicting primary activity related areas with least functional attractiveness and thus lowest density (villages).

This classification of R.P. Mishra strongly integrates Francis Perraux's conclusion that growth poles evolve as variable location with varying intensities. The growth pole concept forms the integral part of all regional analysis in geography justifying its validity. The approach, however, is projected with limitation largely as

it is based on the belief that trickle-down effects can terminate regional disparity & that termination of disparity is the goal-post for development.

CRITICS

N. Smith in his regional analysis strongly emphasized that technological or monetary support forwarded from more 'capable' regions to less capable regions represent trickle-down or spill-over effect. However, such support are neither capable of nor are ~~and~~ intended to eliminate economic diversity. In the similar lines, Lutgens emphasized on progressive, complex world-order where disparity is not just the nature but practical reality of world. Projection of development in deriving 'homogeneity' is impractical. The strongest critic to the growth pole approach

Friedman, completely discards the practicality of triggering down & emphasizes bottom-up regional planning as the practical approach of generating economic momentum in different regions.

## MAP MARKING

Kandla
Mumbai Nava Sheva
Murmagaon
Mangalore
Kochi

Tuticorin
Ennore
Chennai
Vishakhapatnam

Delhi
Bangalore } Dry Ports

Also mark the hinterlands of these ports.

Date 11/05/2014

Lecture: 79 Geography

# REGIONAL PLANNING IN INDIA

Deriving its genesis from the socialist orientation of government policies, regional planning in the country, since 1st 5-year plan have been with bottom-up strategy. Formally launched as constituent of Wardha Plan, integrated agricultural development program was modified and enlarged as integrated area development program. The area development strategy in due development of planning experience was distinguished as :=

(A) Backward Area Dev. Program

(B) Water Resource Mgmt. Program.

The Backward Areas are demarcated not just on the basis of economic backwardness but also on cultural parameters, lack of mainstreaming as well as unfavourable natural conditions. In this category,

well demarcated regional planning approaches includes: Rural Development, Tribal Area Dev. Program, Island Territory Dev. Program and Hill Area Dev. Program.

* Bharat Development
IRDP
PURA
MGNREGA
RGGVY
Indira Awas
SJGSY (Swarna Jayanti Gramin Swarojgar Yojana)
MSMEs

RURAL DEVELOPMENT

With 69% of country's population still residing in rural areas, sustenance of priority provided to the development of rural areas and rural dwellers gets justified. In the wake of economic liberalisation & the resulting multiplying effects on differential economic capacities providing security net to the rural population specifically rural poor further attains prominence. In addition, with the objective of eradicating poverty & hunger from the country, rural areas with lion's

share of country's popln always depicts priority.

Formal beginning of rural dev. program in the country is traced back to 5th Five Year Plan that marked the launch of integrated rural development program (IRDP). The program targetted holistic development of rural areas so as to facilitate retention of rural popln. The ready outcome, outlined in reference to 1981 Census which projects substantive control in tempo of urbanisation, reveals the practical orientations of IRDP. Slow & steady growth of rural infrastructure, employment opportunities facilitated enlargement of dignified living to rural dwellers. It also projected enlargement of its dimension with the beginning of provisions of PURA,

to bridge the 'gap' between rural & urban areas. In year 2005, beginning of Bharat Nirman is considered to be the contemporary orientation of rural dev. strategy in the country, distinguished from IRDP on the absolute orientation from planning to implementation and monitoring as bottom-up strategy. The rural development also includes employment generation as its priority objectives. Under Bharat Nirman, cascading growth of rural infrastructure is targetted with well defined categories of : (i) Rural Housing ; (ii) Rural electrification , (iii) Drinking water supplies , (iv) rural roads , (v) CIT (communication - information - technology) and (vi) irrigation.

# Rural Housing : Indira Awas Yojana — 1996 (IAY)

Rural housing incorporate Indira Awas Yojana as the flagship program which avail financial assistance for construction & upgradation of the rural houses with the priority categories being SC, ST population, free bonded labourers, physically challenged and BPL population.

One of the most successful and progressive programs in infrastructure development 'IAY' since April, 2013 have not just marked the increase in the ceiling limit of financial assistance but also incorporated 82 left-wing extremism affected areas with priority diffusion of financial support along with mobilisation of AWAASOFT under e-governance for generation of data and efficient monitoring. The financial resource

sharing, however, continues as 75:25 b/w union & state govts. barring the exception of NE$^{n}$ states where it is 90:10. Entire financial resources are allocated thro' panchayati raj institutions making the program absolute example of bottom-up strategies.

## Rural Electrification

This infrastructure component marked up its beginning under the domain of Rural Electrification Corporation (REC), the PSE functioning under Ministry of Power. The involved components of rural electrification involves the supply of energy for production related activities & for household electrification. REC's initiatives since 2005 is subsumed under RGGVY (Rajiv Gandhi Gramin Vidyutikaran Yojana), the

flagship program in rural electrification. This program targets electricity supply to all the villages with simultaneous development of village electricity infrastructure. Apart from subsuming Kutir Jyoti Yojana (the scheme of providing 100% subsidy in development of electricity infrastructure in BPL rural household); the flagship program also includes involvement of Ministry Of New & Renewable Energy towards mobilising off-grid electricity/power generation on self-sustaining basis where under NAPCC National Solar Mission has successfully initiated solar lamps program. Moreover, in accordance to 2006 rural electrificatio policy, minimum supplies of 1 unit

per household per day for lifeline supplies have been achieved during 11th Plan Period

## Drinking Water

National Drinking Water Mission marked up its beginning in mid-80s which was revamped & renamed as Rajiv Gandhi National Drinking Water Mission since mid-1990s. This Mission orients towards providing safe drinking water to all rural household with management, operation & maintenance of water supply system on absolute decentralised demand-driven and community-managed approach. The physical progress of this mission is upto 80% of the rural household with the present mobilisation being towards quality control measures. More than 85% of water

supplies is from sub-surface resources, making it important for maintaining quality & quantity of percolation to minimise increasing concentration of arsenic & flouride, depleting the water quality.

* Go East → Arsenic increases
  Go West → Floride increases (eg. Gujarat)

# CIT

As the most cascading sector in infrastructure growth, CIT is the priority component in Bharat Nirman. This infrastructure development approach orients towards increasing exposure of rural areas to the entire range of information that is reqd. for holistic economic growth. Under National Telecom Policy (2012), the present rural tele-density of near 40% is targetted to be increased to 70%

by 2017. Most prominent player in telecommunication revolution in rural areas is the largest PSE BSNL. Apart from providing village public telephones (VPTs) under Shared Mobile Infrastructure Scheme, BSNL is providing wireline broadband services to all Bharat Nirman Seva Kendra and Gram Panchayats getting benefit from universal service obligation fund under National Broadband Policy (2004) This component of infrastructure include extra-departmental offices (post-offices) in playing significant role not just in providing postal communication links but financial inclusion also. With >80% of the operational post offices functioning in rural areas, its financial services have largely facilitated practical implementation

of direct benefit transfer scheme. CIT has also facilitated enlargement of e-governance at PRI level in maintaining the data records on economic or ecological requirements.

# Rural Roads

PMGSY (Pradhan Mantri Gram Sadak Yojana) forms the flagship program of the rural road development since 2000. 100% centre-sponsored, the program targets development of all-weather connective roads to all the rural habitations with demarcation of demographic criteria of 500 people in plains & 250 in hilly, desert & tribal areas. Primarily assisted by World Bank & Asian Development Bank, rural road program is integrated with MGNREGA.

## EMPLOYMENT GENERATION → AAJEEVIKA

Rural development strategies apart from integrating rural infrastructure development includes employment generation to ensure dignified living to rural dwellers. With this objective MGNREGA & Aajeevika have been mobilised in rural areas. Flagship program in rural waged employment, MGNREGA was launched in 2006 catering the objective of livelihood security to rural household. This demand-driven progressive program has been incorporated with financial inclusion scheme along with enlargement in the basic wage in accordance to the changes in consumer price index.

Since its beginning 17 to 30% of hike has been registered on the base wage of

₹100 per day. Since April 2013, enlargement of MGNREGA includes rural natural resource management. Integrated with it, total sanitation program is part of MGNREGA with increasing the range of permissible activities under this scheme. Moreover, integrating the scheme with Aadhar and mobilisation of e-fund management system in all the states is new achieved milestone.

AAJEEVIKA (Earlier Gramin Swarojgar Yajana)

The Gramin Swarojgar Yojana launched as the nodal program of self-employment in the rural areas, renamed as Aajeevika since 2011, is the mobilisation of economic prospect by generating economic enterprises with support of bank credits & govt. subsidy. Under Aajiwika, priority is provided to SC, ST population & women population.

entire network of benefits under the provisions of MSMEs is integrated with Aajeevika.

## ② TRIBAL AREA DEVELOPMENT PROGRAMS

The ST population in the country accounts for ~8% of total population. Geographically, ST population is recognised in contiguous areas. In demographic data, most of the NE$^{n}$ states represent dominating share of popl$^{n}$ as ST though it is Central Indian states that accounts for maximum of the share of the country's ST popl$^{n}$. In addition, NCT, Chandigarh, Punjab, Haryana & Puducherry represent the administrative blocks with no ST population. Though census classifies ST population in terms of their popl$^{n}$ size as major & minor in the tribal area development strategy, economy-based

classes are taken into account. On accordance ST popln of the country is categorised as :=

(I) Primitive

(II) Progressive

(III) Developed

(ii) The primitive category includes hunting-gathering popln, shifting cultivators & nomadic herders. Among important examples : Raji (UP), Kuki (WB), Maria (CH), Yenadi (AP), Kadar & Puliyan (TN), Juang (OD), Shompen (Nicobar) & Jarawas (Andaman) represent hunting gathering population. Among nomadic herders ;= Todas (Nilgiri TN & KR), Raikas & Kathodias (RJ), Gaddhis (HP), Bakerwals (J&K). Among shifting cultivators includes : Lohitas (Arunachal Pradesh) denotes the primitive category.

(iii) The progressive group represent the ST popln that depict both cultural & economic

advancement. They largely are engaged in agriculture & depict significant amount of political awareness. Bhils, Gonds, (MP, CH); Santhal, Munda, Ho (JH); Bhunji (WB); Bhotias (UP) and Garasiyas (MH, GJ) represent this category.

3. The developed ST population which represent absolute attainment of main-course living includes Meenas (RJ), Negis (HP), Nagas and Mizos (NG, MJ).

In inclusive development, ST development strategies were given priority immediately after attainment of independence which led to the demarcation of Panchsheel that are 5 clauses for the development of ST popln and ST areas. These includes :=

(i) Tribal Population should develop along

their own line of expertise and nothing should be imposed on them.

(ii) Tribal rights to the forest & land should be respected.

(iii) For economic growth, encouragement should be provided towards grouping their own people

(iv) Enhancement of collaboration & not rivalry

(v) Judgement of results should not be based on statistics but on the parameters of human character involved.

Based on these 5 clauses, tribal area dev. programs were initiated in the country during 5th Plan Period. The plan is categorised into :

<A> Tribal Main Plan

<B> Tribal Sub-Plan

The Tribal Main Plan relates to those states/UTs where majority of population is ST with entire plan of the administrative unit focussing on their development. All the NE states, Lakshadweep, Dadar & Nagar Haveli represent this category

Tribal sub-Plan implemented to rest of the country where either ST popln depicts majority at block or tehsil levels or are absolutely scattered. It was during 6th Plan Period that on priority basis, tribal sub-plan was divided as ITDP (Integrated Tribal Development Project) and MADA (Modified Area Development Approach)

ITDP largely focusses on blocks & tehsil with substantive ST population whereas modified area development approach (MADA) is

applied to scattered primitive tribal popln.

Under all these categories programs of tribal development involves 2 dimensions:

(a) Protective

(b) Developmental

The protective provisions are directly derived from provisions of constitution that involves the declaration of schedule Areas (5th Sch.) and Tribal Areas (6th sch.), under which land aquisition by non-tribal population in both the areas is prohibited. Moreover, at par with the clause of Panchsheel, Tribal Autonomous Districts are also notified. Bodo & Cachar in Assam; Garo, Khansi, Jaintia in Nagaland; & Mara, Chakma in Mizoram are important examples.

In The developmental programs, categorisation of education development and economic . .

development is theoritically followed. In the education dev., apart from entire range of benefits mobilised as per right to education & mid-day meal is applicable to all ST areas, Additional clauses of distance education program, post-matric scholarship funded by department of elementary education & literacy denotes. formal education sector. In the informal category, range of vocational training, skill development mark its absolute integration with economic development, with nodal participation of the National ST Finance & Development Corporation along with tribal federation (TRIFED). Both these establishments, apart from mobilising entire range of agricultural and industrial

mobilisation programs in the ST areas involves specialised applicable provisions as 'declaration of bamboo as a liberated item'.

Map Marking - Railways

Roha – Ratnagiri – Mangalore (Konkan Railway)

Mumbai – CST : Headquarter of Central

Mumbai – Church Gate : " " Western

Kolkata – ER

Hajipur –

Bhubhaneswar –

Delhi –

Allahabad –

Jaipur –

Gorakhpur –

* Maligaon (Guwahati)

Chennai

* Secunderabad

* Hubli

* Kolkata – SE

Bilaspur

Date 12.05.2014

Lecture 33

Backward Area Planning Contd : Regional Plan of Island Terr

Island territory of the country primarily includes 2 UTs : A&N Islands & Lakshadweep. For both these regions unique ethnicity, thus, cultural identity & related economic backwardness represent the highlighting causes of specific island territory devp. program. In the individual reference, bigger group of island called A&N denotes more fragile cultural characteristics as it correlates to primitive thus demographically minor tribal population including Andamanese, Jarawas Nicobaris & Shompens. Representing both negroid & mangoloid races, the population of this island territory readily depicts its uniqueness on ethnic lines.

In addition to this consistently realised challenge for this island group, there is projected threat in regards to the rise in the MSL due to the global warming effect posing the threat of submergence of the coastal arable land. This threat is equally valid to atolls of Lakshadweep which are largely likely to get near completely enundated if the projected rise in MSL to 0.9 m by 2100 is actually experienced.

The beginning of island territory development as specified type of regional devp. program in the country is traced back to 6th Plan Period, based on the realisations of specific orientations reqd. for these regions. Apart from the benefits of rural devp. programs, specifically in A&N Islands, Tribal Area

Dev. Program & Flood Prone Area Dev. Program, the island territories are exclusively oriented towards integrative growth with mainland which on priority basis includes the mobilisation of ECO-TOURISM including both beach & coastal tourism as well as wildlife tourism. Towards the fulfillment of these objectives, apart from well developed SEA-LINKS b/w mainland & island territory, there has been the mobilisation of sea plane operation of Pawan Hans. Under the area development strategies, both Port Blair & Kavaratti apart from being mobilised as priority; non-metro airport development is being interconnected as important terminus in the international cruise route. Beyond tourism, both UTs involves the progressive

provisions under MSMEs support with bakery, sea-shell based work, aqua-culture processing, coconut oil and coconut ~~coir~~ coir based industries as priority examples. In terms of agriculture, it is aquaculture for A&N and coconut palm for Lakshadweep that represent the priority oriented programs. However, as put forth by Planning Commission, these island territories are largely not related to the commercial growth of agriculture.

HILL AREA DEVELOPMENT :=

Physiographic units of the country includes hill areas which are projected to be isolated, fragile and lacking in economic prospect. The challenge that correlates to hilly areas of the country is therefore projected to be more physical rather than economic or cultural.

Formal beginning of hill area development

in the country is traced back to 5th Plan with specified target of ecological sustenance. It was since 8th Plan Period that the second dimension of economic development & workforce retention have been mobilised. In the category of ecological sustenance: land use planning; crops & animals ecological zonations; soil & water resource mgmt. are the three fold interrelated objectives., Under land use planning, in the participation of Survey of India, National Remote Sensing Agency, National Atlas & Thematic Mapping Organisation, commonly steep-sloping areas are been devoted to perennial green cover as forest or forestary, moderately-sloping areas devoted to horti-cultural activities & gently-sloping areas to seasonable cultivable plants. This approach not just ensured minimisation

of physical loss of soil but also facilitated sustenance of soil quality with crop ecological zonations. Under the program, nomadic herding population as Gaddis & Bakerwals are also being mobilised towards enhancing quality of livestock rather than emphasizing on quantity of animals. Additionally as all peninsular & extra-peninsular hilly areas of the country involves substantive quantities of streamlet movements, the water resource mgmt: strategy involve the community participation in development of mini check-dam or community dams to reduce the flow of uncontrolled discharge largely during rainy season. Since 8th Plan Period, economic mobilisation was added as the objective in order to retain "Working age population" to

induce dev. of the area. Eco-tourism, adventure-tourism, along with spiritual-tourism are the mobilised components in the hilly areas where the clauses of political sensitivities and unorganised tourist service providers continues to restrict magnitude of economic prospects relating to tourism for these areas.

The second dimension of agro-based industries in multiplying the employment opportunities have been more successful in retaining the workforce with horticulture processing (HP, Sahyadris), timber processing (UKhand), tea-estates (Sub-Himalayan WB & Assam) are recognised to be important examples. This area dev. strategies do mark the overlapping benefits of rural

devp., tribal area devp. and flood-prone area devp. program as well.

## WATER RESOURCE MGMT.

India is water surplus country ranking 5th in world in terms of surface water resource base. It is however that this surface water resource is highly unequal in its distribution both in terms of space and time. It is therefore that the country is subjected to reoccuring natural calamities of floods and droughts. Both these natural calamity incorporate common solution in water resource mgmt. and it is therefore that the regional planning approaches as :=

(i) Flood Prone Area Dev. Program

(ii) Drought " " " "

(iii) Command " "

(iv) Water Resource Mgmt. Program

(v) Watershed Mgmt. Program, are correlated to

water resource mgmt.

## A. FLOOD PRONE AREA DEV. PROGRAM

Informally one of the oldest area dev. strategies in the country, flood prone area dev. program was formally introduced from 5th Plan Period.

Floods in the country is defined to be brief rise in water level in a stream affecting the surrounding areas. It is distinguished from flooding. Following the definition of International Commission on Irrigation & Drainage flooding is defined to be over-flow of water due to lack of drainage over those areas that are naturally not submerged. Incorporating both the definitions NDMA outlines the causes of this reoccuring natural calamity as monsoonal rains, cyclonic surges and tsunamis in natural category along with deforestation, breaching of embankments in human-induced category.

> Flood ⇒ Even minor rise in water level
> Flooding ⇒ Overflow,

In the effect of natural causes, flood prone areas of the country are demarcatid as peninsular & extra-peninsular channels and coastal plains of the country. In terms of reoccuring natural calamity demarcated by NDMA flood prone areas of the country are classified into 3 categories :=

(i) Brahmaputra Valley and Gangetic Plains represent the flood prone areas with most frequent & intense flooding experienced with the average duration of floods being 4-6 weeks per year. Both these areas therefore are priority areas in flood-proofing.

(ii) BoB shoreline along with Narmada, Tapi basins represents moderate category with less frequent and intense flooding conditions. Both these areas denotes the avg. duration of floods in the range of 2-4 weeks and thus ranks secondary in the flood-proofing strategies.

(iii) Satluj-Yamuna Plains, Malabar Plains representing least frequent and intense flood conditions

with avg. duration of floods being <u>< 2 weeks per year</u> forms the least priority category in flood-proofing.

(iv) The urban areas have been incorporated as special category of flood prone areas since 11th Plan largely depicting infrastructure collapse or insufficiency in discharging precipitation water with immediate effect. These urban floods are primarily integrated in urban infrastructure planning than the flood-proofing strategies.

---

<u>FLOOD PROOFING STRATEGIES</u> :

The flood proofing strategies in the area development approach is correlated with :=

(i) Precautionary measures

(ii) Predictive elements

(iii) Rescue & Rehabilitation

\# The <u>Precautionary measures</u> primarily includes nodal participation of National Flood Commission (NFC) which is responsible for the development & mgmt.

of natural embankments of flood prone rivers along with demarcating the danger mark. In addition to NFC precautionary measures involves multi-departmental participation in the development of biotic and concrete embankments along the shoreline and mountainous regions. extensive cultivation of mangrooves under MFF caters the development of biotic embankments to reduce the negative effectivities of cyclonic surges. Under social forestary program, regeneration of green along the slopes of the mountains also depicts the constituent of biotic embankment construction. It is in South-Eastern India that the projected threat of tsunamis justifies the prominence of development of concrete embankments.

# The predictive elements primarily involves IMD which correlates to timely prediction of both precipitation pattern leading to flooding in river as well as cyclone predictions leading to

floods in coastal areas. For the prediction of river floods, apart from the normal weather forecast, IMD has developed full-proof network of 7 major prediction centres including BBSR (Mahanadi), Patna (Ganga), Lucknow (Gomti), Delhi (Yamuna), New Jalpaiguri (Tista), Guwahati (Brahmaputra) & Surat (Tapi). These centres work with >200 ancilliary centres in providing the timely prediction of excessive water increase with possibilities of flooding. For cyclone prediction, apart from the regular weather forecasting, IMD has developed well-developed network for monitoring development & movement of cyclones. Deployment of cyclone detection radars with range of >400 kms at Kolkata, Paradwip, Vishakhapatnam, Chennai, Bhuj, Kochi and Mumbai have facilitated timely prediction of land-fall of cyclone, minimising the

## DROUGHT PRONE AREA DEVELOPMENT PROGRAM

Drought prone areas in the country are identified on 3 distinctive definitions of drought :- hydrological drought, climatological drought & agricultural drought. Among the 3, it is agricultural drought that is most frequent & has devastating economic and ecological effects on the area. Agricultural drought makes complete country (except areas with >200 cms of annual rain) as drought prone areas. Intensity-based categories is directly derived from variability of precipitation. It is in accordance that semi-arid areas represent most frequent and intense agricultural drought. The drought-proofing strategies marked its formal beginning from 5th Five year Plan & as it incorporate agricultural parameter of demarcation, it includes Dept. of Agriculture as additional department compared to flood

involved risk.

# RESCUE/REHABILITATION :

The flood or flooding dominantly applies requirement of evacuating population to minimise the risk of life involved. This component of flood-proofing have priority role of NDMA. This nodal authority with the support of its force, along with army, engages in evacuation, rescue operation & rehabilitation. Among the 3 components NDMA is engaged in, rehabilitation is projected to be most challenging as it includes support provided to the population to rebuild their lives, discharging the logged water & controlling the threat of genesis of water-borne diseases. Apart from these DIRECT STRATEGIES of floodproofing, the flood prone area devp. program involves indirect component of water resource mgmt. (command area development).

Rehabilitation – Most Challenging

proofing. The mobilised strategies in the program includes :=

(i) Prediction : IMD

(ii) Mitigating : Dryland farming practices

(iii) Rehabilitation : NDMA

Along with these DIRECT measures of drought-proofing, drought-prone area dev. program also include the component of water resource mgmt. (command area development).

# COMMAND AREA DEVELOPMENT → Next Class

# Map Marking :

NHDP : *Golden Quadrilateral :

NH8 → Delhi – Mumbai (Includes Intermediate points)

* N-S Corridor :

Srinagar – Jhansi – Seoni – Kochi

* E-W Corridor :

Silchar – Siliguri – Gorakhpur – Jhansi – Udaipur – Porbander

* Expressway Connectivity to Port

48 5A
4A
8A
7A

Map of J&K :

1A Srinagar to Uri

1B Srinagar - via - Kargil - to - Leh

1C Uri to West LOC

Date 13.05.2014

lecture: 01

# COMMAND AREA DEVELOPMENT + WATER RESOURCE MGMT. PRGM

*Semi-arid areas: Highest variability of rainfall

⇒ Water resource management strategy in the country though marks its beginning from 1948, with first multipurpose river valley project - DVC (Damodar Valley Corporation) coming into existence As area development strategies, the beginning of water resource mgmt. however is traced from 5th plan period as 'command area development program'. Orientation of this area devp. program was to minimise the reoccuring risk of flood & drought; & maximising utilisation of water resources for holistic area development. It was launched with primary objectives including :-

(i) Land & Water Resource Mgmt.

(ii) Enhancing Food Security for country.

(iii) Minimising prevailing regional disparity.

with these 3 fold objectives, command areas authorities were demarcated to regularise three distinctive categories of command areas on the basis of size:=

1 Major CA ( > 20000 ha of culturable CA (CCA))

) Medium CA ( 2000 - 20000 ha of CCA)

) Minor CA ( < 2000 ha of CCA)

It was command area authorities that outlined the requirement of integrating surface/ sub-surface water reserves to facilitate agriculture development, removing drinking water scarcity & facilitating industrial urban developments as well. Largely CAs are delimited in the country as INTRABASIN INDIVIDUAL " TRIBUTARY & ITS INFLUENCE ZONE.

The only exception to this combination is IGCA (Indira Gandhi Canal Command) that involves the water of Indus basin diverted

to Luni basin facilitating revamping of economic prospects of Indian Desert. * Success of Indira Gandhi Canal in area development can be interpreted with the fact that prior to the development of this non-navigable irrigation canal, entire belt of cultivable arid location was either correlated to sedentary cultivation of bajra or to nomadic herding population → ( Raikas ). With Indira Gandhi Canal deriving its water from Harike Barrage, entire belt apart from cultivating bajra involves wheat cultivation, oil-seeds (groundnut), pulses (moong, green gram) along with specialised mediterranean horticulture (olives) and NDDB oriented fodder crop cultivation. With the supplies of drinking water, substantive growth in facilitative sector :- tourism - has been of primary importance.

in transforming Kathodias from nomadic herding to camel safari serving population. ~~Peoples~~. In the region, mobilisation of extractive industries with rich potentialities projected with sedimentary stratas & manufacturing industries along the major nodes of Bikaner, Nagaur, Jodhpur, Barmer & Jaisalmer are correlated, also to dependable water supplies under CA strategies.* In the southern part of the country, a typical flood-prone area, lower basin of Kaveri denotes deviative dimension of success of command area. As part of Lower Kaveri Project, Kaveri CA is implemented as intra-basin project. prior to the development of the CA, prolonged dry conditions restricted the cultivation to production of coarse grains with maxm

one crop of rice inspite of fertile deltaic soil. With Kaveri CAD, the region has not just evolved as consistent-most example in the cultivation of two crops of rice per year, but also with other water-intensive crop cultivation as cane and cotton. This CA, however, is more known for manufacturing capacity with prominence of water-intensive industries - textile, tanneries, along with metallurgical. Mettur, Tiruppur, Salem & Trichy represent important beneficiaries.

* In the eastern part of the country, DVC integrated in CA strategies as intra-basin approach has mobilised economic potentialities of a prominent drought-prone region of the country. Belonging to CN Plateau, Damodar Command with prominence of less fertile red soil largely do not make the example

of rich potential agricultural zone. However, with water resource mgmt., mobilisation of Selvi-Pasture Culture under social forestary has not just enhanced economic prospects in agricultural quarter but also have restricted the threat of soil erosion. The region is primarily core-sector industrial region marking one of the earliest beginning. Damodar Command is projected to be supportive to sustenance of urban & industrial growth with revamping resource utilisation in agglomeration economies.

** Command area strategies in all the parameters of judgement though proves to be highly successful, it is correlated with certain specified problems & limitations. These are prominently categorised by planning commission with important participation

of Central Water Commission as :=

(i)- Water Use Efficiency

(ii)- Water logging

(A) The Water Use Efficiency in most of the irrigation systems is significantly low in the country, largely in the range of 20-30%. The lower water use efficiency leads to lower productivity along with lack of required supplies to the tail enders - Salinity & Water logging. The low water use efficiency is not just attributed to higher evaporational loss & percolation but also due to siltation, weed-growth, breakage of regulating structure - leading to over-use of water in some of the specific areas of command regions.

(B) The Water Logging challenge is correlated primarily to the fact that introduction of irrigation in any area generates disturbance

the groundwater balance which existed prior to development of irrigation. This leads to enhanced percolation in the irrigated areas, increasing the rate of recharge of groundwater resulting in progressive rise of the water table leading to water logging. Simultaneous to it, the diversion of water restricts the seepage, thus decrease in the rate of recharge in the regions of natural drainage depleting the groundwater table. Since mid-term appraisal of 10th Plan CA strategies are primarily targetting minimisation of outlined problems. Entire funding in the water resource development & mgmt. program specifically in major & medium projects is sourced by union govt. Institutional finances are available only for minor irrigation projects. From 11th Plan, however, under Rural Infrastructure Devp. Fund

NABARD is providing funds for major & medium projects as well. Inspite of massive investments already made in the sector with impressive development, reoccuring annual maintenance cost almost equivalent to construction cost of canals, is the persistent challenge with near complete absence of possibilities of attracting private players in irrigation infrastructure development. Ambitious participatory irrigation management (PIM) has been integrated in CA strategies. It involves every dimension of developed infrastructure maintenance by the beneficiaries. With Natural resource mgmt. integrated with MGNREGA, practicality of PIM is justified.

FAO: Food and Agriculture Organisation
HQ at Rome, Italy

# WATERSHED MGMT. PROGRAM

FAO identifies watershed areas to be that geographical unit which marks the flow of surface runoff in common direction with near complete absence of runoff within its domain. Also identified as watershadow zone, these were formally mobilised as regional planning units towards participatory and sustainable development. Watershed Mgmt. in the country marked up its beginning way back in 1960s when on the recommendations of Central Soil and Water Conservation Institute, Catchment Area Devp. Programme was initiated in the country. This program was launched in the fertile deltaic lowlands with the participation of grassroot village communities. By mid-1970s, enlargement of the program as water-divide mgmt. program incorporated comparatively unfavourable drought-prone areas & desert areas of the country. Following FAO's demarcation, in the legacy of

Earth Summit 1992, India integrated both the programs to formally launch watershed mgmt. program. The program involves 3-fold objectives as that of CA strategies. At the largest scale of implementation, it however distinguishes itself in managing primary orders of streams in a given location. Its planning, implementation & monitoring is thus related to absolute Gram Panchayat levels. It is therefore that since beginning, participatory irrigation mgmt. (PIM) has been integral part of watershed mgmt. program