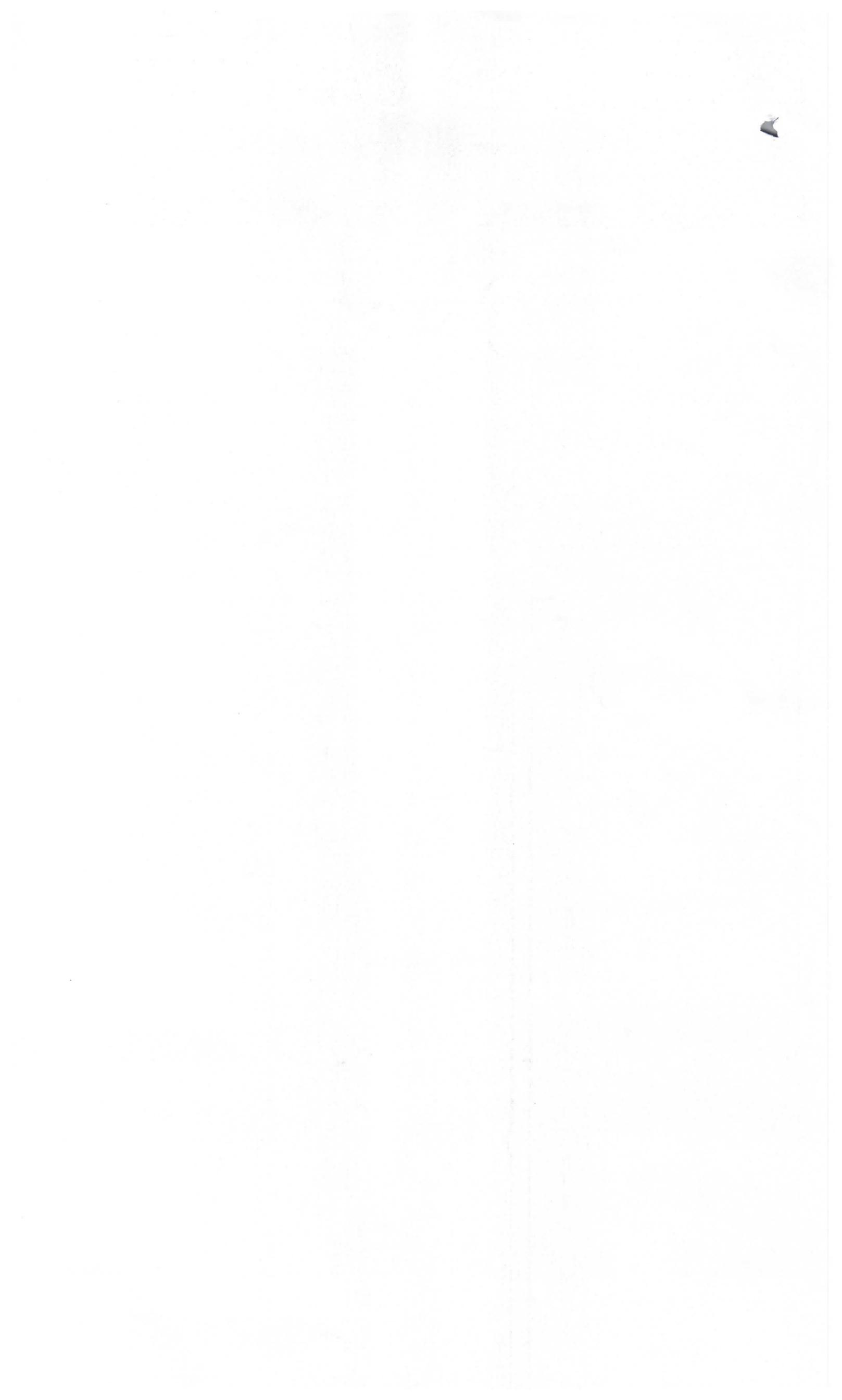


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DRIVING BALANCED AND INCLUSIVE GROWTH IN ANDHRA PRADESH



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3rd January 2020

Dir / phg
03/01/2020

To:
Shri Vijay Kumar G. Srkr
Secretary, Planning, Andhra Pradesh Secretariat
Velagapudi – 522238, Guntur District
Andhra Pradesh, India

Sub: Submission of the second contractual deliverable under contract for provision of services [Engagement of a Management Consultancy to Develop Growth Strategy, Roadmap and to provide Strategic program Management Support for the State of Andhra Pradesh]

Dear Sir,

Please find enclosed the second deliverable as per contract under contract for provision of services [Engagement of a Management Consultancy to Develop Growth Strategy, Roadmap and to provide Strategic program Management Support for the State of Andhra Pradesh].

This deliverable covers the following aspects of the scope:

1. Developmental baseline of Andhra Pradesh
2. Initial view on development initiatives across 6 regions covering 13 districts of Andhra Pradesh to ensure 'balanced and inclusive growth' for the state
3. Perspectives on proposed investments in Amaravati megacity
4. Perspectives on suitability of distributed capital model for Andhra Pradesh

This report consists of 104 pages of main report and 38 pages of appendices. Please also find enclosed the power point presentation which was presented to the Honorable Chief Minister.

Your's sincerely,



SAIBAL CHAKRABORTY
MANAGING DIRECTOR AND PARTNER
BOSTON CONSULTING GROUP

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2. Executive Summary

I. Scope of the program

- a. The scope of the program includes identification of economic growth and development initiatives across the 13 districts with the aim of developing a well-balanced and inclusive economic plan for the state
- b. The study also looks at Amravati region development keeping in mind how to create overall economic prosperity and jobs while balancing the financial situation of the state and the overall priorities

II. Methodology followed

- a. For the purpose of this study, 13 districts of Andhra Pradesh have been grouped into 6 regions. Uttarandhra consisting of Srikakulam, Vizianagaram and Visakhapatnam, Godavari delta consisting of West and East Godavari, Krishna delta consisting of Krishna and Guntur, Dakkshinandhra consisting of Prakasam and Nellore, East Rayalaseema consisting of Kadapa and Chittoor, West Rayalaseema consisting of Ananthapuramu and Kurnool districts
- b. An initial baselining of the socio-economic conditions was undertaken for each district of the state – covering agriculture, fisheries, industrialization, irrigation, transport connectivity, tourism, education, health, employment, skilling, etc. This has been done to identify what areas AP needs to improve upon
- c. Learnings were derived from 50+ international examples of green field cities and capital region models across the world. The success drivers and risk factors to be considered were identified. Investment requirement, population growth, economic returns, job creation, time-period for development, etc. were looked into deeply

- d. Overall financial situation of the state was looked into and the most efficient way to strengthen Andhra Pradesh through balanced regional growth was evaluated
- e. Design principles of enabling ease of coordination between government bodies and improving ease of citizen access to government services have also been considered

III. Growth Strategy for the state

- a. An initial baselining exercise of the socio-economic conditions in each district of the state was carried out in order to understand the starting point of each region.
- b. The exercise looked at current starting point of different regions of AP across industry, agriculture, infrastructure and social indicators
- c. Following are the key observations from the baselining exercise
 - i. Per capita industrial GVA for 7 out of 13 districts can be improved further
 - ii. Agricultural realization per unit of cultivated land should be focused on 9 districts outside K-G belt
 - iii. 60% of AP's fish production is from two districts; need to look at how other districts can catch up
 - iv. Social indices like literacy rate and in particular female literacy rate needs to be improved
 - v. Capture tourism potential by focusing on foreign tourist footfall which is around 0.3Mn per annum currently
 - vi. While the state has several National Highways including Golden Quadrilateral, connectivity in the interior regions can be further strengthened. Agriculture markets/mandals connectivity to National Highway needs to be improved
 - vii. Land under irrigation [Rayalaseema is less than 20% land irrigated while K-G delta irrigation coverage is ~60-80%] Godavari-Penna

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- linking and expansion of carrying capacity of canals in Rayalaseema would be critical to increase land under irrigation in Rayalaseema
- d. Based on this analysis, an initial set of development themes for each region has been presented in the report. These themes will be evaluated and presented in the final report
- e. The following are the themes identified for each region
- i. Uttarandhra: Promotion of analytics & data hub, medical devices manufacturing, cash crop cultivation like cashew, coffee and turmeric, development of Bhogapuram airport and developing Araku Valley an eco-adventure tourism spot and Health & MICE tourism
 - ii. Godavari delta: Promotion of petrochemicals, plastics manufacturing, food processing, promotion of diversification into horticulture and cash crops, developing Polavaram project, improving road connectivity and promote Konaseema as a backwaters destination
 - iii. Krishna delta: Promotion of food processing, hi-tech agriculture, fisheries, multi modal logistics hub and development of Machilipatnam port
 - iv. Dakshinandhra: Promotion of automobile manufacturing, paper pulp, leather and furniture MSME cluster, fisheries export, diversification into high value catch, Godavari-Penna linkage and promoting Mypadu as beach destination
 - v. West Rayalaseema: Promotion of textiles, logistics and auto-parts, support organic horticulture cultivation, supporting water saving measures like drip irrigation, Godavari-Penna linkage and improving highway connectivity
 - vi. The themes identified for East Rayalaseema are promotion of electronics manufacturing, steel plants, Hi-tech agriculture like processing of tomato and eco-adventure circuit around Gandikota, Belum caves

- f. These are preliminary set of recommendations which will be evaluated further over the course of the study

IV. Development of Amaravati Region

- a. Amaravati region plan have been looked at on the basis of potential economic returns, investment required, risk involved and time horizon. The estimates for cost and timelines provided by APCRDA have been relied upon for this study
- b. Mega cities can act as economic drivers for regions. But, successful "green field" megacities usually have a compelling economic starting point like Shenzhen (HK) and Navi Mumbai (Mumbai city)
- c. In the absence of a starting point, green field cities require significant investment, have long gestation period and are risky
 - i. Total investments of 0.5-1 Bn USD /10K inhabitants needed to build a world class city
 - ii. New cities take 30-60 years to reach scale
 - iii. Many green field cities conceived over the last 50 years have had difficulties achieving the vision
 - iv. Location of capital alone is not enough to drive economic momentum for a region
- d. As per Amaravati master plan (source: APCRDA White Paper dt. June 2019) INR ~1 lakh crore needed to build the core infrastructure of the city
 - i. Substantial portion of this will need to funded by debt; small portion may be executed via PPP models like HAM or BLT
 - ii. GoAP already has INR 2.25 Lakh Cr. debt on its book
 - iii. Cost of overall funding could exceed 10%
 - iv. Opportunity cost vis a vis investments in other projects (e.g., irrigation projects) has been also discussed
 - v. Further initial technical studies (Source: IIT Madras, AP Disaster management authority) suggest that the area upto 5 kms from the riverfront is highly prone to flooding/inundation and is not

recommended for construction. Further studies are recommended to assess the issues in detail

- e. To manage the investment requirement while still ensuring development of Amravati region, it is suggested to prioritize education hub, food and fisheries hub and hi-tech organic agriculture hub. Focused efforts on these clusters could ensure employment creation and faster development

V. Perspectives on suitability of distributed capital in Andhra Pradesh

- a. GoAP has requested the consultants to look into distributed capital model for AP and share learnings from international case studies
- b. It could be noted that countries/ states consider distributed capitals when significant regional sentiments are involved or when there are historical commitments:
 - i. Germany continued to have portion of capital in Bonn post re-unification to honor past commitments
 - ii. Karnataka and Maharashtra have winter assembly sessions in Belagavi and Nagpur to provide representation for N. Karnataka and Vidarbha
- c. The unique history of AP created with the idea of distributed capitals and the existence of a strong sentiment in the public regarding the same may have been appreciated
- d. GoAP may consider four design principles while addressing distributed capital issue: addressing regional aspirations, enabling ease of coordination between government bodies, minimize cost of capital set-up and enabling ease of citizen access to government services
- e. To address the first design principle of balancing regional aspirations, top three cities across three historic regions of Andhra Pradesh were considered. The cities considered in North Coastal AP are Visakhapatnam, Rajahmundry and Kakinada. The cities considered in South Coastal AP are Vijayawada (including Amaravati), Guntur and Nellore. The cities considered in Rayalaseema are Kurnool, Kadapa and Tirupati.

- f. For each of these 9 cities, rigorous data backed evaluation was conducted across four criteria – population, historical context, physical infrastructure including Government land and connectivity and social infrastructure including high end schools, specialty hospitals and entertainment options
- g. Basis these criteria, the cities of Kurnool and Vishakhapatnam in addition to current capital for the distributed capital model are proposed to provide regional representation to the three historical regions of Andhra Pradesh
- h. Two options for distributed capital setup basis the design principles have been presented highlighting relative advantages and disadvantages of each. GoAP to evaluate and keep all stakeholders perspectives and decide on the options and overall Amaravati plan

VI. Considering implications on stakeholders

- a. Given the various commitments like annuities and pensions for a period of 10 years to the affected farmers by the previous Government, it is suggested that GoAP takes this into cognizance and works out a suitable program for the affected farmers

3. Context

The Government of Andhra Pradesh had floated and RFP titled 'Engagement of a Management Consultancy to Develop Growth Strategy, Roadmap and to provide Strategic program Management Support for the State of Andhra Pradesh' dated 25.10.2019. BCG was selected for the assignment and Letter of Award was issued on 27. 11.2019.

The scope of the program involves the following:

1. Identify strategic initiatives for balanced and inclusive growth for AP
 - a. Review other similar development globally and highlight key success factor and how such model can be adopted in present context
 - b. Assess scenarios in the coming 4-5 years
 - c. Develop economic themes for each region with a growth roadmap
2. Assess existing plan of capital city region given the ground realities in the state and identify key areas of intervention; look at distributed capital model as a potential option for Andhra Pradesh
3. Develop detailed blue print and implementation roadmap for each of the regions of AP
4. Identify, detail out and launch high priority initiatives

Scope of this Report

This report covers the following topics:

1. Developmental baseline of Andhra Pradesh
2. Initial view on development initiatives across 6 regions covering 13 districts of Andhra Pradesh to ensure 'balanced and inclusive growth' for the state
3. Perspectives on proposed investments in Amaravati megacity
4. Perspectives on suitability of distributed capital model for Andhra Pradesh

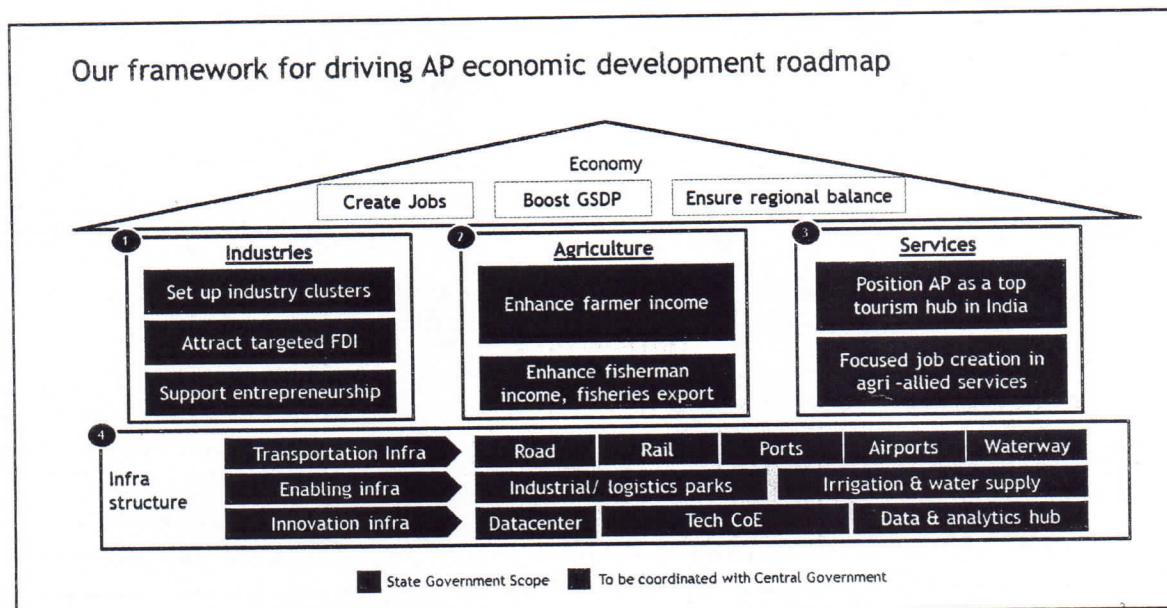


Fig 1. BCG framework for economic growth roadmap development

4.2 Grouping of districts into regions for strategy development

As discussed above, given the size of state and regional differences in socio economic parameters it is important to de-average the state into smaller regions. Based on geographic proximity and similarity of socio economic context, the state has been divided into six regions – Uttarandhra, Godavari Delta, Krishna Delta, Dakshinandhra, East Rayalaseema and West Rayalaseema each consisting of 2 districts but for Uttarandhra (which consists of 3 districts). The above grouping of districts will ensure that recommended initiatives are not one-size-fits-all approach, much more customized and sensitive to the needs of the specific region. The six regions consist of the following districts

- Uttarandhra – Srikakulam, Vizianagaram, Vishakapatnam
- Godavari Delta - West Godavari, East Godavari
- Krishna Delta – Krishna, Guntur
- Dakshinandhra – Prakasam, Nellore
- East Rayalaseema – Kadapa, Chittoor
- West Rayalaseema – Kurnool, Anantapur

13 districts grouped into 6 regions to develop economic growth roadmap



Disclaimer: This slide serves only as a focus for discussion. It is incomplete without accompanying oral commentary and may not be relied upon as stand alone document.

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Fig 2. 13 Districts grouped into 6 regions

5. Andhra Pradesh Development Baseline

Introduction

As the first step to developing strategy for Balanced and Inclusive Growth of AP, a detailed baselining exercise was carried out to assess the as-is development scenario in the state and the six regions individually.

This section covers an initial baseline of the regional performance for the state. Baselining has been carried out across the following dimensions:

1. Overall economy
2. Industries
3. Agriculture
4. Services
5. Infrastructure

The output from this study has been used for (i) identifying relative performance and (ii) developing initial hypothesis - in each of the five growth dimensions across the six regions.

Data used

Multiple sources of data were leveraged for the baselining exercise. The major data sources are given below. The corresponding raw data is in the appendices.

- Mandal-wise GSDP
- Mandal-wise population
- District wise industrial GVA
- District wise land availability
- List of key industrial units
- Sector-wise FDI
- SME clusters
- District wise agri productivity and GVA per capita
- Details of irrigated land in the state
- Details of crop production in the state

- District wise agriculture land holding distribution
- Fertilizer sales in the state
- District wise fish production
- District wise cold storage capacity
- Domestic & International tourist arrivals
- District wise literacy rate
- Mandal level connectivity to national highways and ports

A summary of key observations from the baselining study is in the table below.

S.No	Key areas	Broad Summary of development baseline
1.	Economy	<ul style="list-style-type: none"> • 8th largest state economy with GSDP of INR 8L Cr. (USD 115 Bn) • Lowest GSDP per capita in South India of INR 1.64 L • Government revenue of INR 1.6 L Cr. with debt of INR 2.25L Cr. (~30% of GSDP, 5th highest among other states)
2.	Industry	<ul style="list-style-type: none"> • State per capita industrial GVA at INR 32K vs. India average of INR 37K • 7/13 districts with low industrial output compared to rest of the state – need to explore the factors contributing to the same
3.	Agriculture	<ul style="list-style-type: none"> • One of the leading agricultural producers with average yield per sq.KM ~3x of national average • Productivity of 9 districts outside K-G delta is 50% lower than that of K-G delta • 40-50% drop in area under irrigation and fertilizer usage outside K-G delta • High dependence on paddy in K-G delta indicating need for crop diversification • Inland fish production concentrated in two districts
4.	Services	<ul style="list-style-type: none"> • Need to explore full tourism potential • Significant tourism potential – Araku valley, Bheemili beach, Nallamala forest etc. • Tourism contributes ~5% of state GSDP currently • High earning foreign tourist foot falls at 0.3Mn per year
5.	Infrastructure	<ul style="list-style-type: none"> • Rail: Trunk rail line from Vizag to Chennai is >100% utilized • Road trunk connectivity – missing straight link between Visakhapatnam and Bangalore, Anantapur - Krishnapatnam

S.No	Key areas	Broad Summary of development baseline
		<ul style="list-style-type: none"> Road secondary connectivity: Multiple mandals > 2 hrs from major NH Airports: Only one true international airport at Vizag; poor connectivity to Western Hemisphere Ports: Absence of deep draft port between Krishnapatnam and Visakhapatnam (Machilipatnam port proposed currently)
6.	Social	<ul style="list-style-type: none"> Literacy: Increase overall literacy rates (female literacy rates in districts such as Vizianagaram and Kurnool below 50%)

Details of baselining across each growth dimension are described in the subsequent sections.

5.1 Economy

Andhra Pradesh had a GSDP of approximately INR 8 Lakh Crore in FY 2017-18 as per the Ministry of Statistics and Planning Implementation (MOSPI). Andhra Pradesh is the 8th largest state economy in India trailing Maharashtra, Tamil Nadu, Uttar Pradesh, Karnataka, Gujarat, West Bengal and Rajasthan. It may also be noted that, Andhra Pradesh is the third largest state economy in South India behind Tamil Nadu and Karnataka.

Rank	State	GSDP (Lakh Cr INR at Current prices) 17-18
1	Maharashtra	24
2	Tamil Nadu	15
3	Uttar Pradesh	14
4	Karnataka	14
5	Gujarat	13
6	West Bengal	10
7	Rajasthan	8
8	Andhra Pradesh	8

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9	Telangana	7.5
10	Madhya Pradesh	7.3
	India	170

Source: MOSPI

In terms of GSDP per capita, which is a more relevant metric for assessing progress of a state, Andhra Pradesh ranks last among the five states of South India – Karnataka, Telengana, Tamil Nadu and Kerala.

(All figures in INR Lakh per capita)

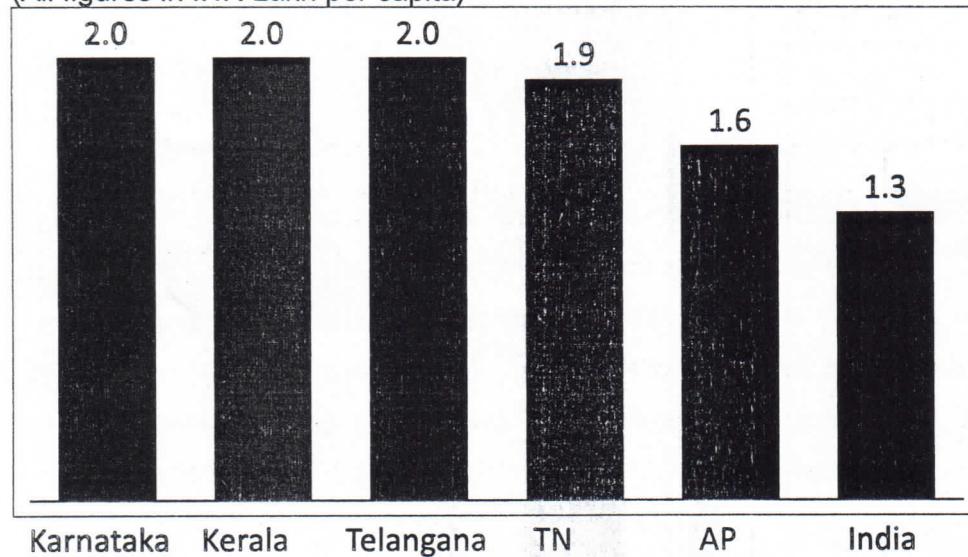


Fig 3. GSDP per capita of Southern States

Source: MOSPI

Further, district wise per capita income (NDDP) was baselined to understand the regional economy. Base data for this was obtained from Directorate of economics & statistics government of AP, 2017

With a per capita income of INR 125,000 Krishna is the best performing district followed by Vishakhapatnam (INR 114,000) and West Godavari (INR 112,000). The districts with the lowest per capita income is Vizianagaram (72,000), Srikakulam (74,000), Kurnool (INR 75,000) and Ananthapuramu (INR 76,000).

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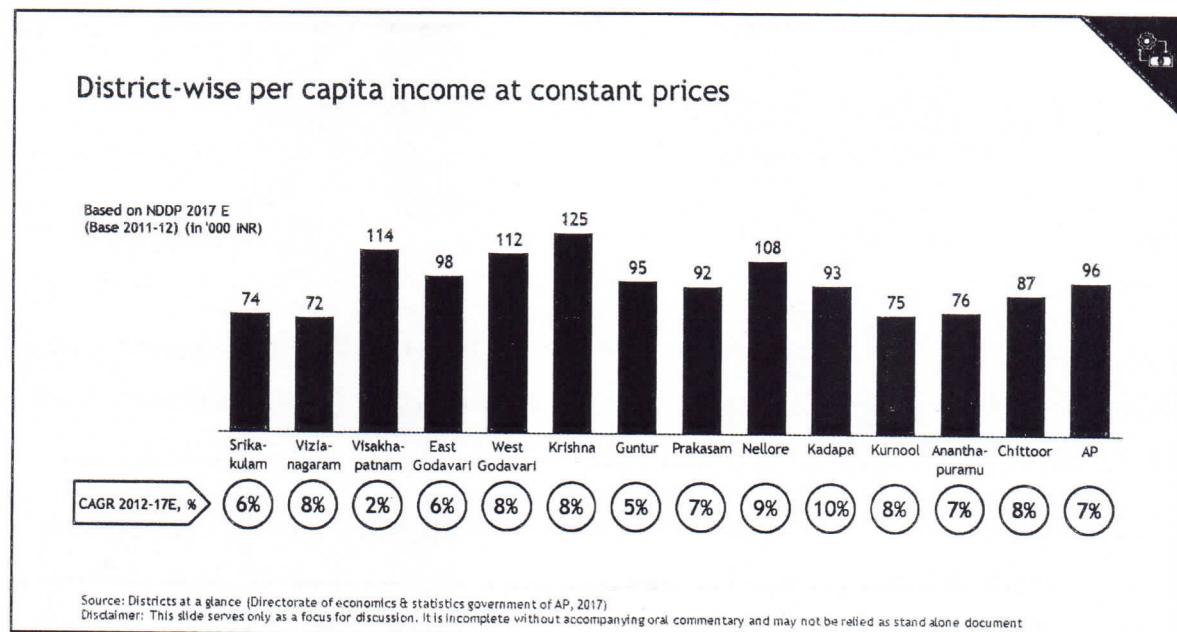


Fig 4. Per Capital Income, by District

Source: Districts at a glance (Directorate of economics & statistics government of AP, 2017)

The study also looked into the district wise CAGR of the per capita income for the 2012-17 period. Kadapa has shown the highest growth rate of 10% followed by Nellore at 9% and Vizianagaram, West Godavari, Krishna, Kurnool and Chittoor – all at a promising 8%. Growth rate of Visakhapatnam district has been the lowest at 2%.

District	NDDP CAGR (2012-17)
Srikakulam	6%
Vizianagaram	8%
Visakhapatnam	2%
East Godavari	6%
West Godavari	8%
Krishna	8%
Guntur	5%
Prakasam	7%
Nellore	9%

Kadapa	10%
Kurnool	8%
Ananthapur	7%
Chittoor	8%

Source: Districts at a glance (Directorate of economics & statistics government of AP, 2017)

Public Finance: To understand the current fiscal scenario of the state, the study analysed Andhra Pradesh's Total outstanding liabilities and Budget estimates for the current year.

Public debt of Andhra Pradesh stood at INR 2.25 Lakh Crore as of 2018. Considering a GSDP base of 8 Lakh Crore, the total outstanding liabilities to GSDP ratio of AP is at ~33%. Average for India is at 25%. Only four states – Punjab, Uttar Pradesh, West Bengal and Rajasthan are ahead of Andhra Pradesh in total outstanding liabilities to GSDP ratio.

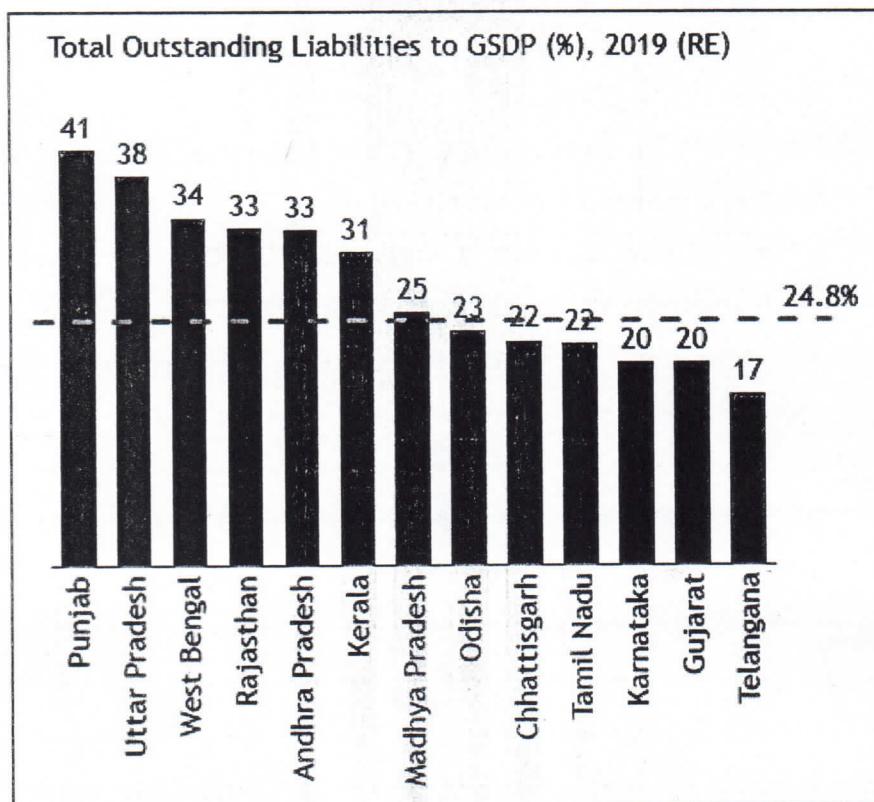


Fig 5. Total Outstanding Liabilities to GSDP ratio (%) of Indian States, 2019 (RE)

Source: RBI website, PSR India, AP government

The state budget for 2019 was for INR 2.26 L Cr. Of this, States own resources including tax devolution from Center amounted to INR 1.65 Lakh Crore. This includes INR 1.18 L Cr. in tax revenue and INR 48,000 Cr. in capital receipts. The State budget of 2019-20 factors in INR 61,000 Cr. under central grant-in-aid. This has been in the range of INR 20,000-25,000 Cr in the past several years. This indicates the limited fiscal headroom available to the state. Developmental activities will need to be prioritized with this in view.

Although, the strained public finances of the state can be attributed to the bifurcation of the state, it is still important to employ fiscal prudence in planning the state's overall expenditure and interest payments

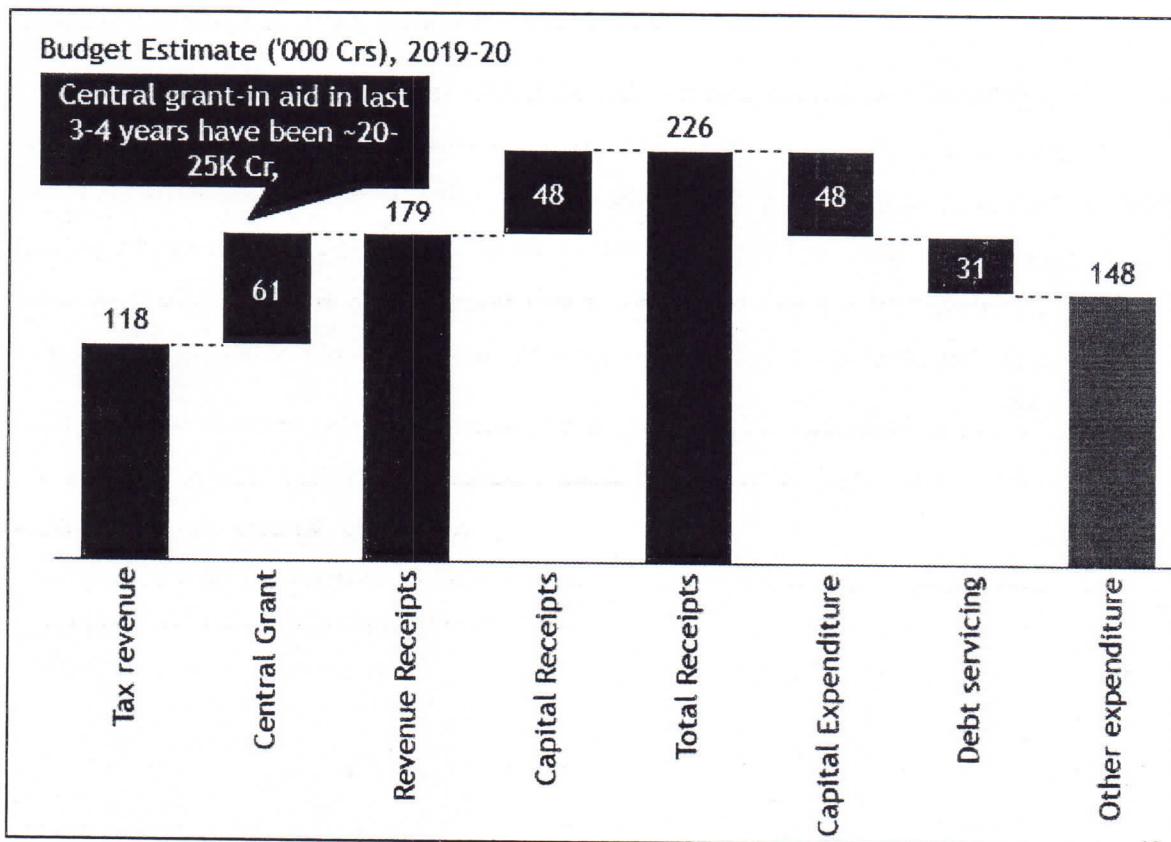


Fig 6. Budget estimates ('000 Cr.) 2019-20
Source: RBI website, PSR India, AP government

5.2 Industry

Andhra Pradesh currently has industrial footprint in food processing, automotive, textiles, mineral based industries and petrochemicals. However, in terms of overall Industrial GVA per capita, it lags behind overall India average.

Region	Industrial GVA per capita (INR '000)
India	37
Gujarat	101
Tamil Nadu	50
Maharashtra	50
Andhra Pradesh	33

Source: AP Economic Survey, www.statisticstimes.com, www.tradingeconomics.com

District-wise industrial GVA per capita was further evaluated to identify regional imbalances. This is shown in figure below:

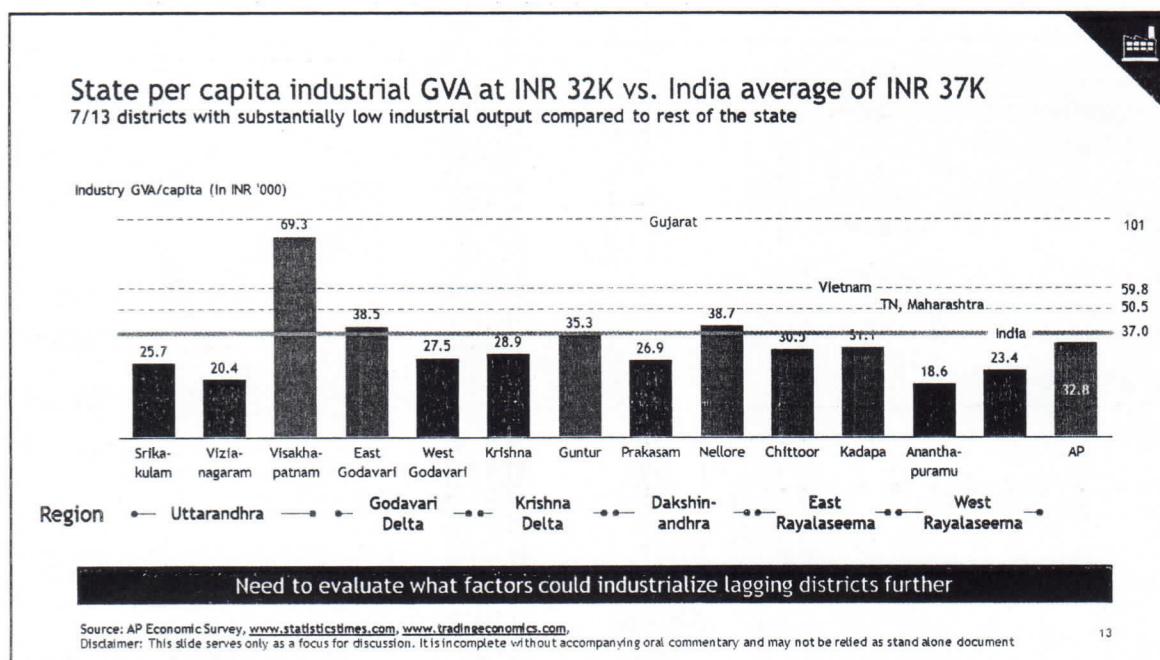


Fig 7. District-wise industrial GVA per capita

Source: AP Economic Survey, www.statisticstimes.com, www.tradingeconomics.com

As can be seen, Visakhapatnam, East Godavari, Guntur and Nellore have higher industry GVA per capita compared to India average. However, seven districts have significantly lower industry GVA per capita compared to national average. These districts are Srikakulam, Vizianagaram, West Godavari, Krishna, Prakasam, Ananthapuramu and Kurnool.

There is a need to evaluate factors which can support in industrializing these lagging districts

Agriculture and Allied activities:

Andhra Pradesh's Agriculture sector is not only diverse but also contributes majorly to the state's economy. For the year 2018-19(AE) Agriculture, Livestock, Forestry & Fishing contributed to 33.6% of the total State's GVA.

To understand the agricultural scenario of the state in detail following parameters were looked into

5.2.1 Agri GVA per unit area

Andhra Pradesh has ~81,000 Sq.KM of land under cultivation. The total agricultural gross value added (GVA) in 2018 was ~163,447 Crores. This translates into a per sq. KM GVA of 3.1 Cr. This is nearly three times the All India average of INR 1.7 Cr. However, it may be noted that with much lesser water resources and fertile soil, Israel has achieved a per sq. KM agricultural GVA of INR 6.6 Cr. which is twice the AP average.

Region	Agricultural GVA per Sq. KM (in INR Cr.)
India	1.7
Andhra Pradesh	3.1
Israel	6.6
Netherlands	5.0

Source: AP economic survey, RBI, www.statisticstimes.com

There are disparities between districts in terms of per unit area agricultural realization. The four districts of Krishna, Godavari delta have significantly higher agricultural realization - 7.7 Cr. per sq. KM in W. Godavari, 7.1 Cr. per sq. KM in Krishna, 4.5 Cr. per sq. KM in E. Godavari and 3.1 per sq. KM in Guntur. Agricultural realization per unit area

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in remaining districts are in the range of INR 1.6 Cr. per sq. KM to INR 3.4 Cr. per sq. KM in Nellore.

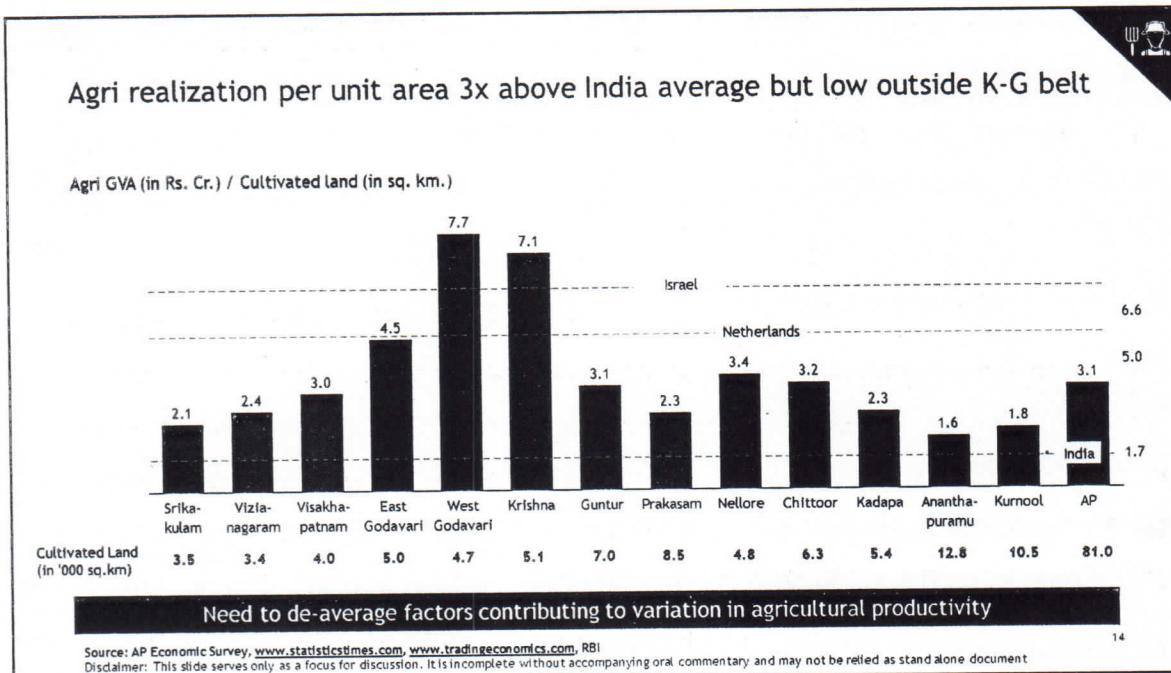


Fig 7. Agri GVA

Source: AP Economic Survey, www.statisticstimes.com, www.tradingeconomics.com, RBI

5.2.2 Land under irrigation

One of the potential causes for disparity in agriculture GVA could be the low percentage of land under irrigation. Overall, 35% of agricultural land has some form of irrigation in AP. While more than 60% of land is irrigated in three districts of W. Godavari, Krishna and Guntur, the 6 districts in the Dakshin-andhra and Rayalseema region have low percentage of land under irrigation. Ananthapuramu and Prakasam have the lowest percentage of land under irrigation – 11% and 18% respectively

128 127

Potential causes for disparity in agri GVA per capita (1/2): Dakshinandhra and Rayalaseema lags significantly in area under irrigation

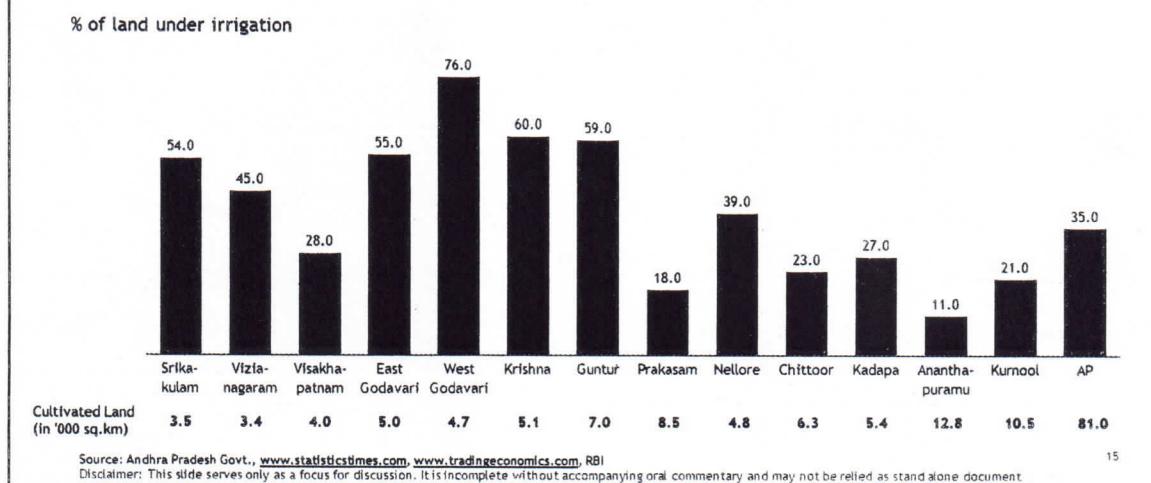


Fig 8. % of land under irrigation

5.2.3 Fertilizer Usage

Another reason for this disparity could be the low fertilizer usage outside the Krishna-Godavari belt. Overall state average fertilizer usage is 4 T per sq. KM of cultivated land. Fertilizer usage in four districts of Krishna-Godavari delta vary from 6.3 MT per sq. KM in East Godavari to 10.6 MT per sq. KM. The district with the lowest fertilizer usage is Ananthapuramu at 1.2 MT per sq. KM followed by Vishakhapatnam (1.4 MT per sq. KM), Chittoor (2.1 MT per sq. KM), Prakasam (2.6 MT per sq. KM) and Kadapa (2.9 MT per sq. KM). The reasons for this disparity needs to be analysed further.

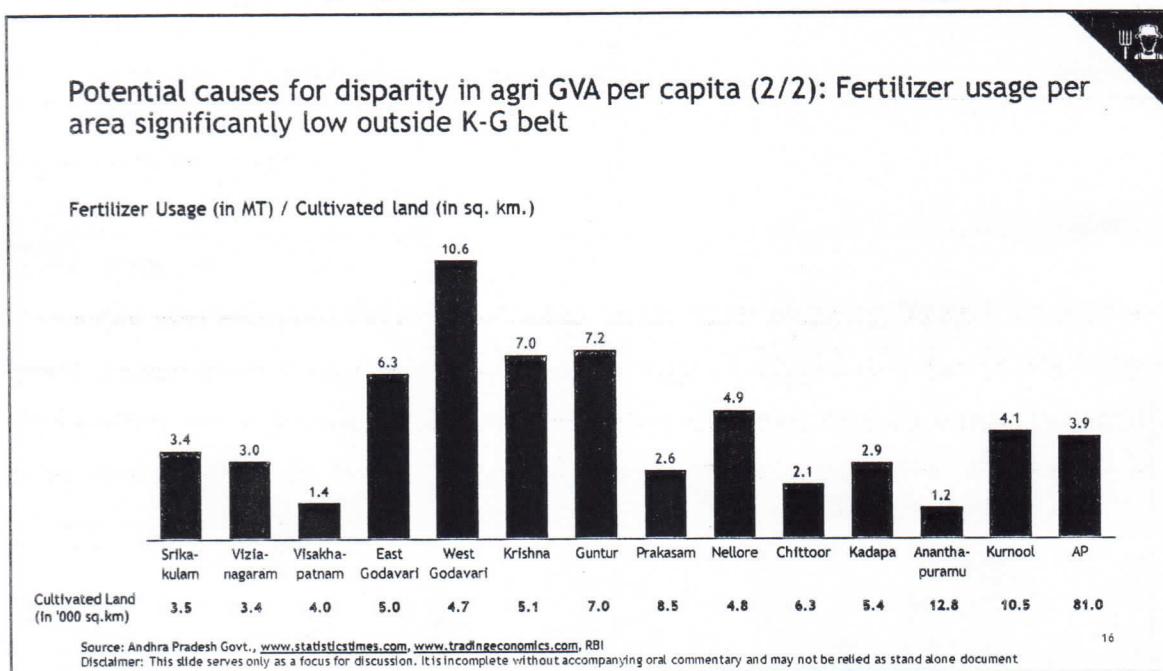


Fig 9. Fertilizer usage

5.2.4 Crop mix

The study also analysed the land cultivated under major crops viz. Paddy, Maize, Black gram, Bengal gram, Cotton and Groundnut. As per the graph below it can be inferred that Uttarakhand and K-G deltas are heavily dependent on paddy. There is a need to evaluate crop diversification in these regions to prevent risks and enable a more holistic development of the state

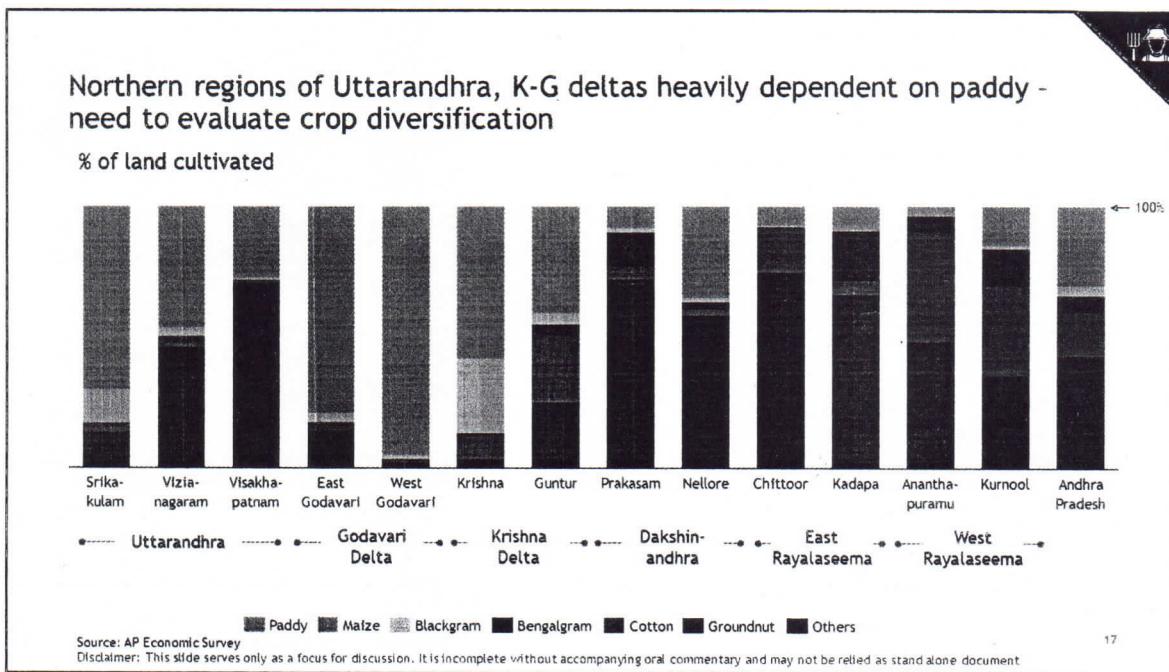


Fig 10. % of land cultivation for different crops

5.2.5 Land holding distribution

Data was collected to understand the land holding distribution across the state. To study the land holding pattern farm sizes ranging from less than 1 hectare (Marginal farms.) to greater than 10 hectare were considered (large farms). This analysis is given in the figure below. Higher fragmentation was seen in Uttarandhra and K-G delta of the state. There is a need to investigate the impact of farmer's income on account of this fragmentation.

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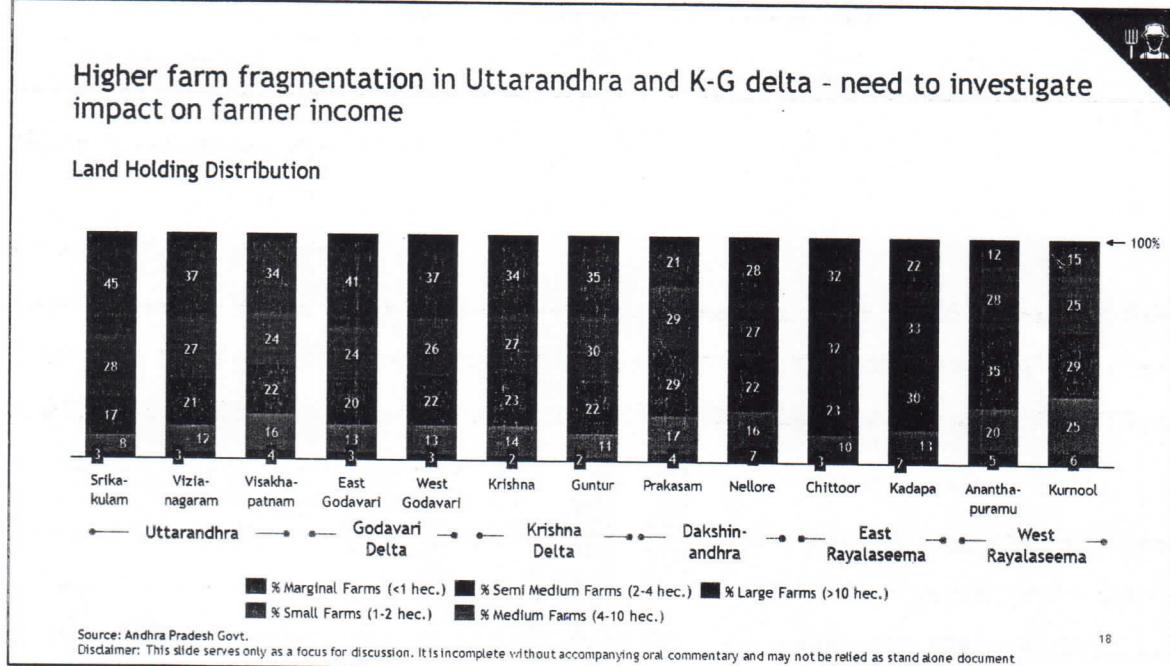


Fig 11. Land holding distribution

5.2.6 Fisheries production

Andhra Pradesh is one of the leading state in fisheries production in India. The total fish production of the state stood at 3,865,000 MT, however only two districts – West Godavari and Krishna contributed to most of its production. Targeted steps can be taken to increase production in other coastal districts.

As part of the study, the state's fish production was also compared to other coastal states in India. For e.g. although Kerala has a shorter coastline its marine fish production stood at 600,000 MT in comparison to AP's 437,000 MT. It is necessary to see what could be done to enhance AP's marine fish production both in quantity and value.

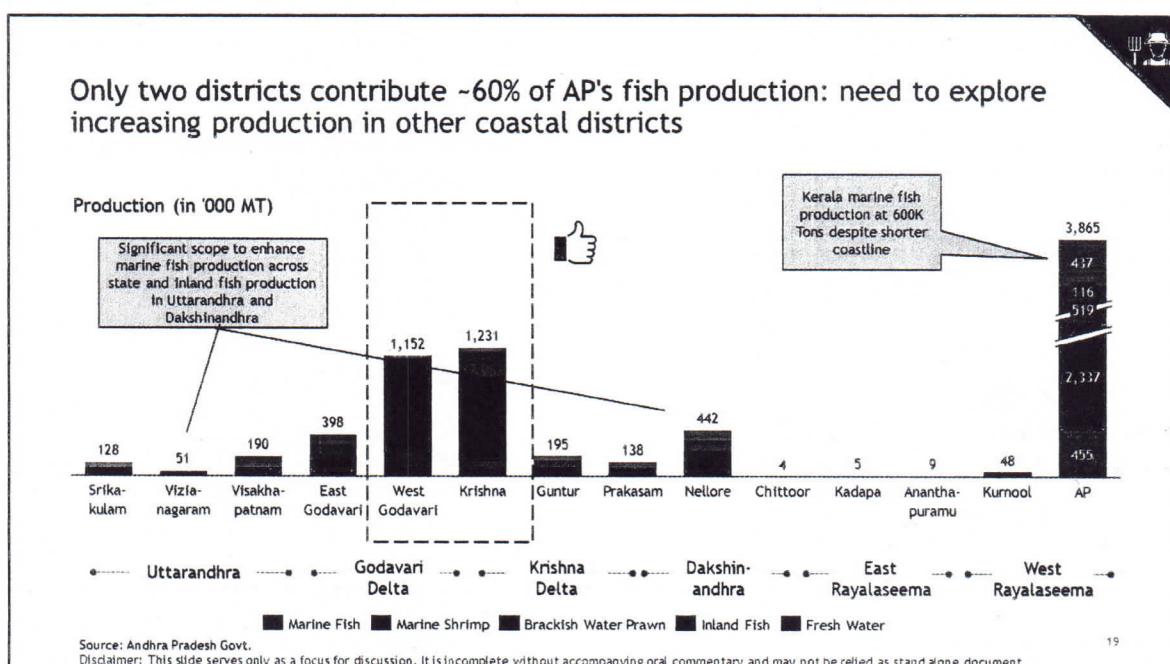


Fig 12. District-wise fish production

5.2.7 Cold Storage Capacity

The study also looked into the existing cold storage infrastructure of the state. As can be inferred from the graph below, 70% of the cold storage capacity is concentrated in two districts viz. Guntur and Prakasam. It may be noted that there is significant horticultural production across the state – like tomato cultivation in Chittoor etc. The state can look at augmenting the storage capacity in other districts as well.

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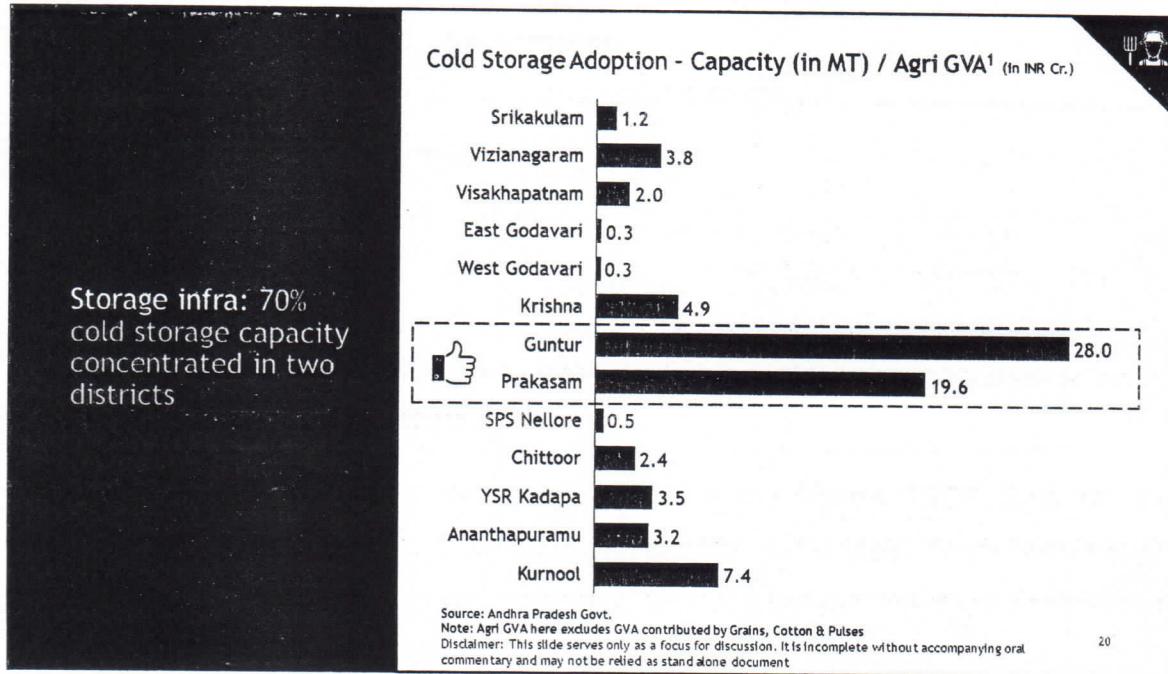


Fig 13. District-wise cold storage capacity

5.3 Services

Among the service sectors, tourism was prioritized as the state has a significant potential to enhance revenue from the same.

Tourism: At present, Tourism contributes to ~5% of the State's GSDP. This can be improved further as there is significant tourism potential in the state. Tourist spots such as Araku Valley, Bheemili beach and Nallamala forest are some of the major destinations which can be further developed.

To understand the tourism potential of the state, the study collected the data for the total number of domestic and foreign tourists visiting the state. It may be noted that the per capita spend of the domestic tourists is between INR 5000-8000 while that of foreign tourists' is ~ INR 100,000. Hence from the point of view of enhancing income from tourism, it is necessary to focus on foreign tourist foot falls.

In 2018, total domestic tourists stood at 194.8 million in comparison to 0.3 million foreign tourists. This may be compared with 1 Million foreign foot falls in Kerala and over 10 Million in Taiwan which is nearly the same size as Kerala. This represents a huge area of growth for AP.

It may also be noted that the foreign tourist arrivals into the state have been stagnant in the past few years.

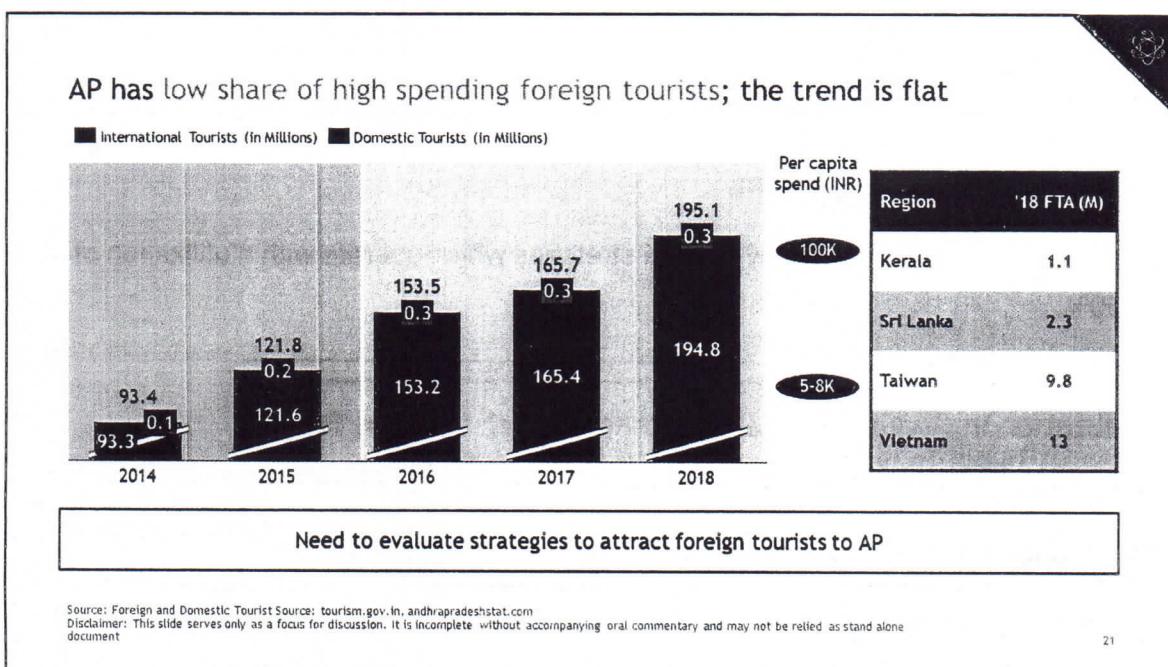


Fig 14. Domestic and international tourist arrivals

5.4 Infrastructure

To understand the infrastructure and connectivity challenges, the study baselined the transport infrastructure in the state. As infrastructure is one of the most critical factors for the growth of an economy identifying the key bottlenecks and subsequently implementing targeted solutions can support in overall development of the state.

5.4.1 Rail

Andhra Pradesh has ~3703 Kms of rail line and 172 railway stations. In terms of rail density, the rail density of AP is ~16.59 per 1000 km.

Two analyses were conducted in order to identify potential gaps in rail infrastructure. First, the overall utilization of rail links were assessed and links to identify capacity constrained routes. Secondly, regions were assessed to find rail dark zones. The results of both of these analyses are given in subsequent paragraphs.

Several key railway lines in the state are operating over capacity. The utilization of trunk Chennai – Visakhapatnam line is above 100% in the stretch from Gudur to Vishakhapatnam. This could be a bottleneck for Vishakhapatnam Chennai Industrial Corridor (VCIC).

Similarly, rail line from Ananthapuramu to Krishnapatnam port has multiple stretches which are above 100% utilization.

In addition, there are additionally several stretches which operate with a utilization of 80% to 150%.

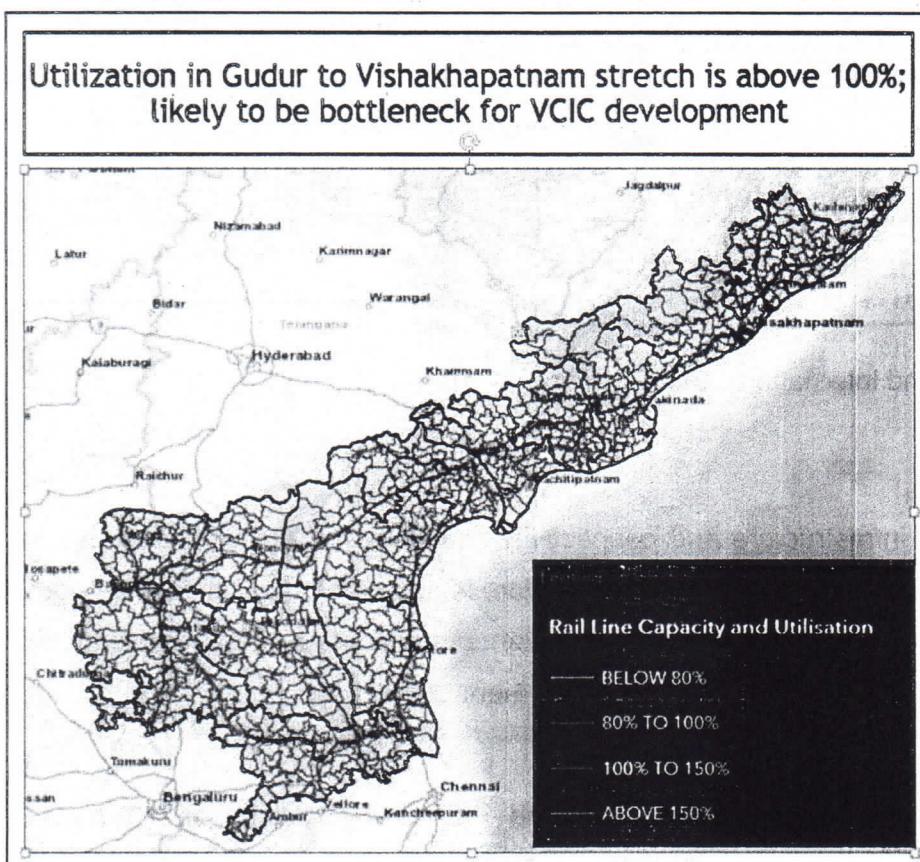
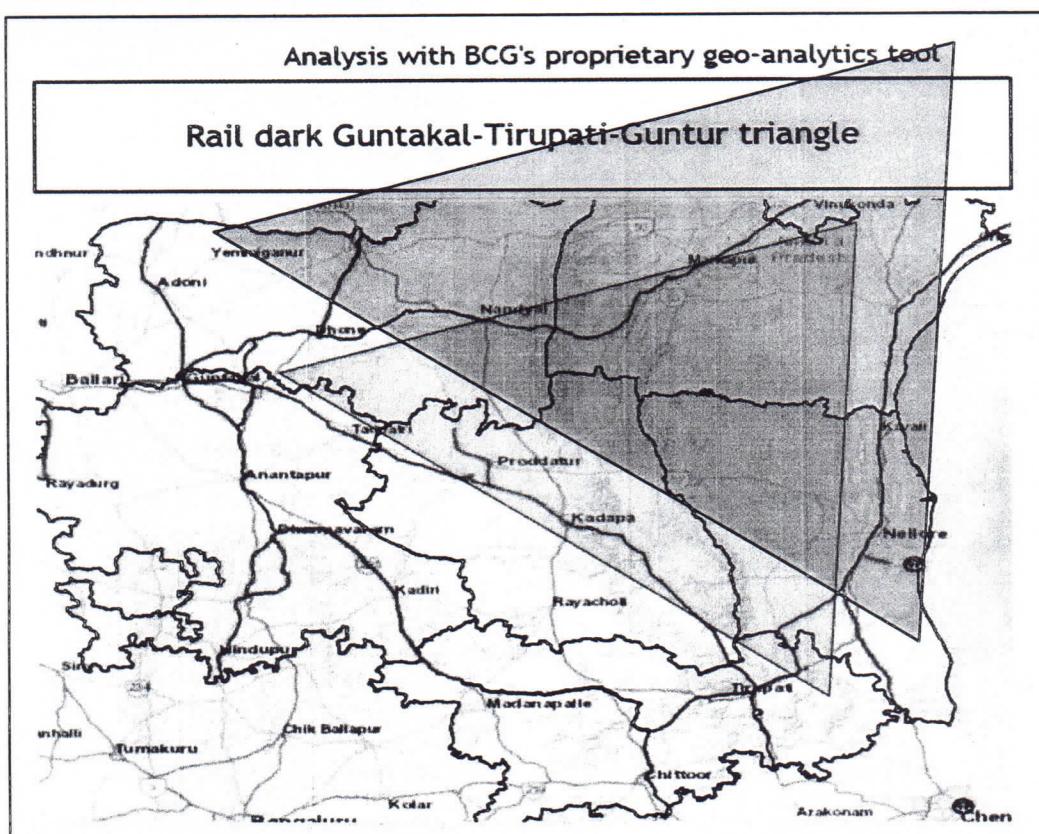


Fig 15. AP rail capacity utilization

Key rail dark region is the area between Guntakal, Tirupati and Guntur.



5.4.2 Road

Issues with road connectivity may be assessed at two levels – trunk road connectivity and secondary connectivity.

Andhra Pradesh has good trunk road connectivity. Both Golden Quadrilateral (Chennai – Kolkata) and North-South Highway (Jammu-Kanyakumari) passes through substantial portion of the state.

However, when it comes to secondary connectivity, there are multiple mandals from which it takes more than 4 hours to reach nearest NH as shown in the map below.

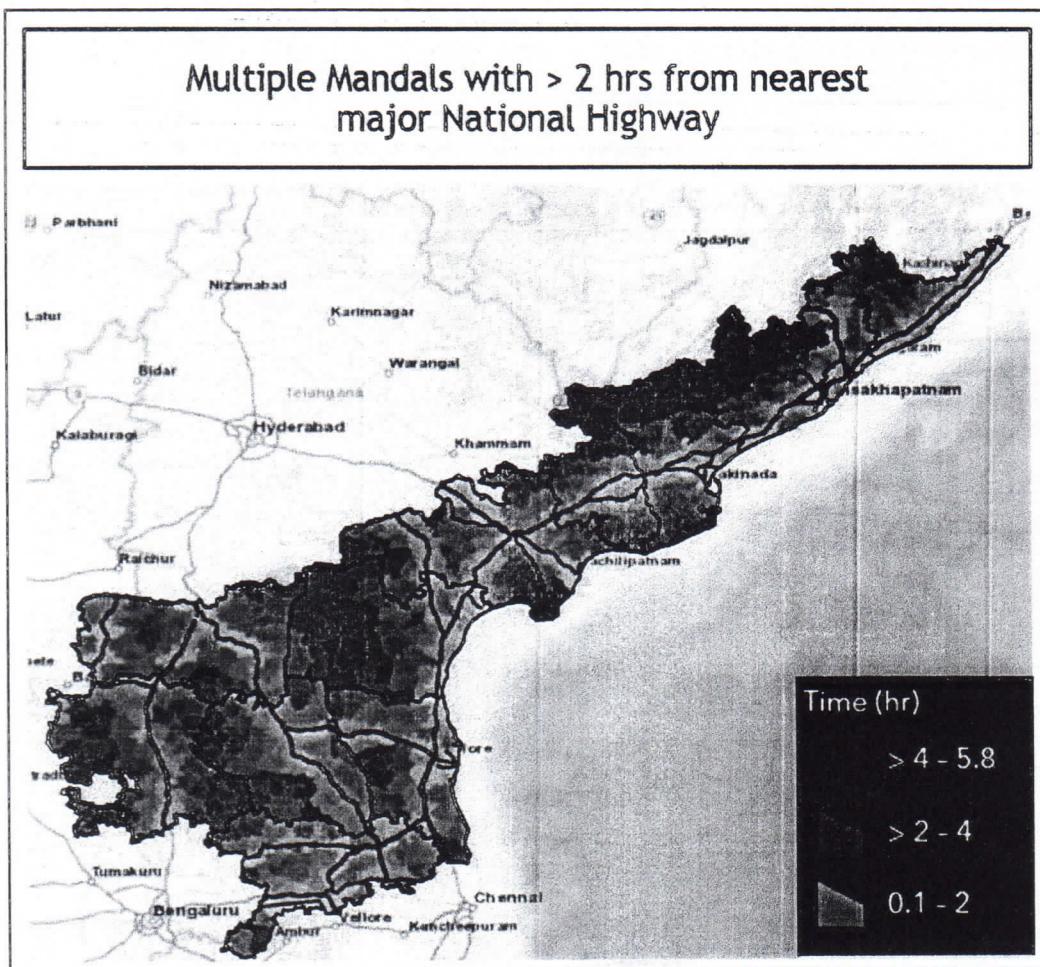


Fig 16. Mandal level highway connectivity

A similar trend could be found in time taken to nearest port. The width of Andhra Pradesh is ~300 KM in Rayalaseema region and is ~150 KM in Seemandhra region. If sufficient road and port infrastructure is in place, maximum time to port should have been ~4 hrs for any place in Rayalaseema and ~2 hours for any place in Seemandhra region. However, as can be seen from the map below, there are multiple mandals in Rayalaseema where time to port is more than 8 hours and many mandals in Seema region where time to port is above 4 hours. These take away the logistics advantage these regions should ideally possess due to the long coast line of the state.

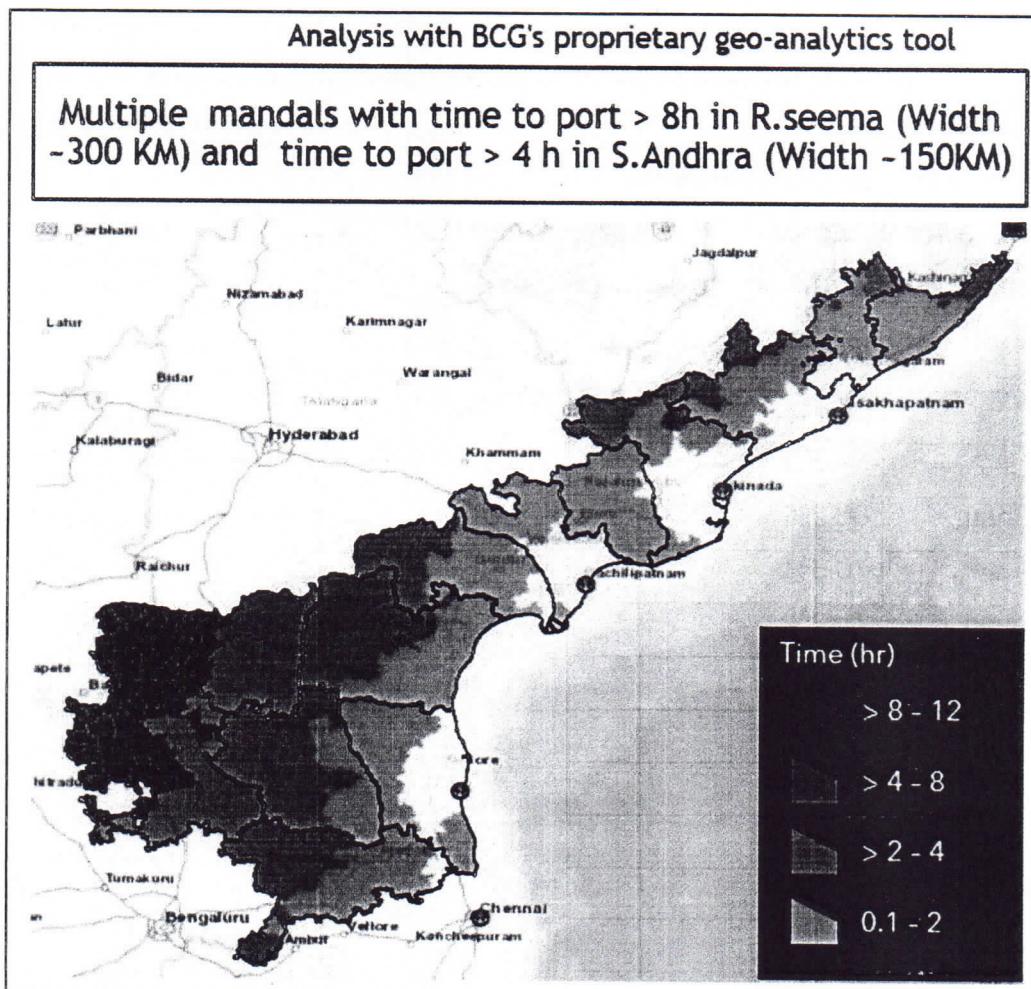


Fig 17. Mandal level port connectivity

5.4.3 Airports

The state has just one true international airport at Visakhapatnam. Also air connectivity to Western Hemisphere is poor.

5.4.4 Ports

While the state has over 1000KM of coast line, it currently has three deep draft ports at Visakhapatnam, Gangavaram (also near Visakhapatnam) and Krishnapatnam. With the proposed Machilipatnam port, the regions of Krishna delta and Prakasam will have better port access.

5.5 Social

Literacy Rate: Andhra Pradesh has a total literacy rate of 67.4%. While districts such as Krishna, West Godavari, East Godavari, Krishna and Chittoor has literacy rate above 70%, districts such as Vizianagaram, Srikakulam and Kurnool lag behind. The state also has a low female literacy rate across many districts

District	Total literacy rate (%)
Srikakulam	61.7%
Vizianagaram	58.9%
Visakhapatnam	66.9%
East Godavari	70.5%
West Godavari	74.3%
Krishna	73.7%
Guntur	67.4%
Prakasam	63.1%
Nellore	68.9%
Kadapa	67.3%
Kurnool	60.0%
Ananthapur	63.6%
Chittoor	71.5%
AP	67.4%

District	Male literacy rate (%)	Female literacy rate (%)
Srikakulam	71.6%	52.1%
Vizianagaram	68.2%	49.9%
Visakhapatnam	74.6%	59.3%
East Godavari	74.1%	67.0%
West Godavari	77.7%	71.0%
Krishna	78.3%	69.2%
Guntur	74.8%	60.1%

Prakasam	72.9%	53.1%
Nellore	75.7%	62.0%
Kadapa	77.8%	56.8%
Kurnool	70.1%	49.8%
Ananthapur	73.0%	54.0%
Chittoor	79.8%	63.3%
AP	74.8%	60.0%

6. Starting list of initiatives for balanced and inclusive growth

Basis the initial baselining and benchmarking exercises, a starting list of growth initiatives have been identified for each of the six regions of AP across industries, agriculture and allied activities, services and infrastructure.

6.1 Region wise starting list of initiatives

This section details the starting list of initiatives for ensuring Balanced and Inclusive Growth of AP. These are initial hypotheses which shall be validated and developed upon in subsequent reports

We have a starting list of specific growth opportunities for 6 regions (13 districts)

	Industries	Agriculture & allied	Services	Infrastructure
Uttarandhra	Analytics & data Medical devices Toys	Support cash crop cultivation - coffee, turmeric, cashew	Health tourism MICE tourism Destination wedding tourism Eco-adventure in Araku	Water grid Road grid Bhogapuram Airport
Godavari Delta	Petrochemicals Plastics Solar Food processing	Promote diversification into horticulture and cash crops	Back water tourism in Konaseema, Hope Island	Polavaram Project Water grid Road grid
Krishna Delta	Food & fisheries processing Ceramics Multi modal logistics hub	Promote hi-tech organic horticulture Fisheries diversification	Education	Machilipatnam Port
Dakshinandhra	Automotive & auto parts Telecom equipment Leather Paper Furniture	Fisheries diversification into higher value catch	Mypadu as beach destination	Godavari - Penna linkage Water grid Canal capacity enhancement Enhanced highway connectivity Road grid
West Rayalaseema	Automotive & auto parts Multi modal logistics hub Textiles	Support organic fruits and vegetable cultivation Support water saving measures like poly houses, drip irrigation etc.	Vijayanagar history circuit focusing on Penukonda, Rayadurg	
East Rayalaseema	Steel Electronics Precision manufacturing	Support hi-tech horticulture (especially tomatoes)	Eco adventure circuit around Gandikota, Bellum caves	

Disclaimer: This slide serves only as a focus for discussion. It is incomplete without accompanying oral commentary and may not be relied as stand alone document

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Fig 18. Region wise starting list of initiatives

The key initiatives suggested for each of the regions of Andhra Pradesh are detailed below:

6.1.1 Uttarandhra

This region includes the districts Srikakulum, Vizianagaram & Visakhapatnam. The sector wise suggested initiatives for the region are:

- **Industry Sector:** This region can be developed into Analytics & Data Hub and a hub for Medical devices & Toys Manufacturing
- **Agriculture & Allied Sector:** Support cultivation of cash crops like Coffee, cashew, turmeric, etc.
- **Service Sector:** The region can be developed as a destination for Health Tourism, Meeting Incentive Conferencing Exhibition (MICE) Tourism, Wedding Tourism, Eco- Adventure Tourism, etc as it already has a number of tourist destinations like Araku, Visakhapatnam, Kambalakonda Wildlife Sanctuary, Katiki Waterfalls, etc.
- **Infrastructure Sector:** Improving Water Grid, Road Grid & Bhogapuram Airport are the major infrastructure development projects in the region

6.1.2 Godavari Delta

This region includes the districts East Godavari & West Godavari. The sector wise suggested initiatives for the region are:

- **Industry Sector:** The focus industries proposed for this region are Petrochemical, Solar, Plastics & Food processing. The region near Kakinada has natural LNG which is cheaper than imported LNG. This can translate into significantly lower cost for industries such as solar, ceramics etc. Further, the presence of HPCL refinery and strategic reserve in Visakhapatnam will provide necessary feedstock for the petrochemical cluster
- **Agriculture & Allied Sector:** The region is one of the richest in terms of agricultural outputs. However, there is an over-dependence on paddy which

constitutes ~44% of crop in the region. Diversification of crops into horticulture & cash crops may be considered for this region

- **Service Sector:** Godavari delta is one of the most scenic locations in Andhra Pradesh. The back waters of Konaseema replicate same natural beauty as that of Kerala. It is proposed to consider develop the region around Hope Island as a back water tourism destination
- **Infrastructure Sector:** Polavaram Project, Improving water grid and road grids would be the major infrastructure projects to be considered in the region

6.1.3 Krishna Delta

This region includes the districts of Krishna & Guntur. The sector wise suggested initiatives for the region are:

- **Industry Sector:** The focus industries for this region are Food & Fisheries processing Industry, Ceramic Industry and Multi Modal Logistics Park. The region has significant production of Fisheries and, being centrally located in Andhra Pradesh, it can be developed into a logistics hub
- **Agriculture & Allied Sector:** The government should promote hi-tech organic horticulture and fisheries diversification as the region has significant production of fisheries and has potential for increased horticulture production
- **Service Sector:** The region can be developed as a major Education Hub in the state as it already has major universities like NTR University, School of Planning and Architecture, Andhra Loyola College, etc.
- **Infrastructure Sector:** Machilipatnam Port is the major infrastructure project for the region

6.1.4 Dakshinandhra

This region includes the districts Prakasam & Nellore. The sector wise suggested initiatives for the region are:

- **Industry Sector:** The industries recommended for this region are Automotive & Auto Parts, Telecom Equipment, Leather, Paper & Furniture
- **Agriculture & Allied Sector:** Focus on fisheries diversification into higher value catch
- **Service Sector:** Mypadu in this region can be developed as beach destination
- **Infrastructure Sector:** Water grid and Canal capacity enhancement would be major infrastructure project for the region

6.1.5 West Rayalaseema

This region includes the districts Anantapur & Kurnool. The sector wise suggested initiatives for the region are:

- **Industry Sector:** The industries to be focused in the region are Automotive & Auto Parts, Multi Modal Logistics hub & Textile Sector
- **Agriculture & Allied Sector:** The government should support organic fruit and vegetable cultivation and also the water saving measures like poly houses and drip irrigation, etc.
- **Service Sector:** Vijayanagar history circuit focusing on Penukonda & Rayadurg can be developed
- **Infrastructure Sector:** Water grid and canal capacity enhancement, enhanced highway connectivity and interlinking of Godavari Penna river are major infrastructure projects for the region

6.1.6 East Rayalaseema

This region includes the districts Chittoor & Kadapa. The sector wise suggested initiative for the region are:

- **Industry Sector:** The focus industries in the region are Steel, Electronics Manufacturing and Precision Manufacturing
- **Agriculture & Allied Sector:** The government should support Hi-tech horticulture with special focus on tomatoes

- **Service Sector:** Eco-Adventure circuit around Gadikota and Belum Caves can be developed
- **Infrastructure Sector:** Water grid and Canal capacity enhancement, enhanced highway connectivity and interlinking of Godavari Penna river are major infrastructure projects for the region

6.2 Starting list of Pan Andhra Pradesh Initiative emerging from Preliminary Studies

Few of the starting initiatives identified have pan Andhra Pradesh scope. Those are described in this section.

6.2.1 Agriculture

Farmers in AP face multiple issues across the agricultural value chain. This includes lower productivity, lack of access to quality inputs, irrigation facilities, limited access to Government stock points etc. Following initiatives may be evaluated to address these issues:

1. Improve farmer's realization by encouraging specialized/ hi-tech export oriented farming and this could be achieved by developing Agri Focused export hubs with state of the art facilities.
2. Use Direct Benefit Transfer (DBT) or bring structural changes to existing DBT Policy to encourage optimal crop mix.
3. Improve farmer's pricing power via stock points in every village cluster.
4. Address sub-scale issues due to farm fragmentation via digitization of agriculture & enable shared economy in farm implements, logistics and storage.

6.2.2 Services (Tourism)

The state of Andhra Pradesh has potential for Tourism and can attract people from across the globe for different activities ranging from Leisure, Spiritual, Medical, etc. So we need to identify Tourism potential of each region and develop themes around that region which can attract more people and increase tourist footfall in the state. To achieve this increase, the following identified initiatives should be taken:

- Setup an "analytics-enabled" capability to drive AP Tourism campaigns

- Analytics will help target the right target audience who could choose to travel AP
- Analytics can also help reach out to them with a customized itinerary
- Analytics can also help us understand what the tourists prefer to do/visit in AP which can help us understand Tourist behavior and provide enhanced services
- Define brand AP around select themes and occasions and design such themes to attract a set of tourists looking for a destination for a particular purpose/events.
- Collaborate and empanel top 100 tour operators globally as AP tourism Ambassadors this would help us reach out to the huge database of tourists that these operators already have and give us access to global tourists.
- Substantial work would be required to improve Air Connectivity & Cruise Circuit and hence it is needed to setup tourism short-term fund to facilitate air connectivity, cruise circuits etc.

6.2.3 Infrastructure

As identified in the baselining section, there are multiple gaps in infrastructure in Andhra Pradesh. The following are list of starting initiatives which may be evaluated further to address these gaps.

- Rail: Chennai-Visakhapatnam Semi-high speed rail corridor
- Road
 - Chennai – Bangalore express way
 - Hyderabad – Bangalore express way
 - Anantapur – Krishnapatnam Highway
 - Vijayawada – Bangalore Highway via Kadapa
 - AP Road grid to connect remote areas
- Enabling infra (Irrigation and water supply)
 - Polavaram project
 - River interlinking projects: Godavari – Penna, Godavari – Krishna
 - Rayalaseema canal widening
 - Sujala Sravanti Scheme

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6.3 Illustrative deep dives into initiatives

This section provides illustrative deep dives to select starting initiatives identified before.

6.3.1 Industries

(a) Developing analytics and data hub in Visakhapatnam

Advanced analytics has become the hotbed of innovation in last 2 years. The global market is expected to be USD 210 Bn by 2022.

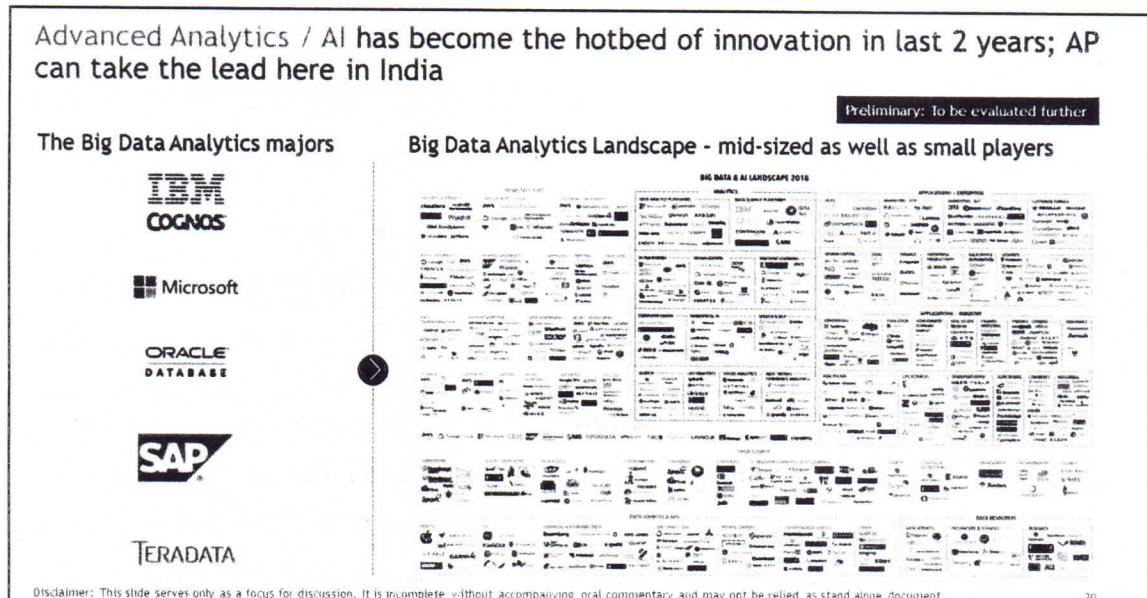
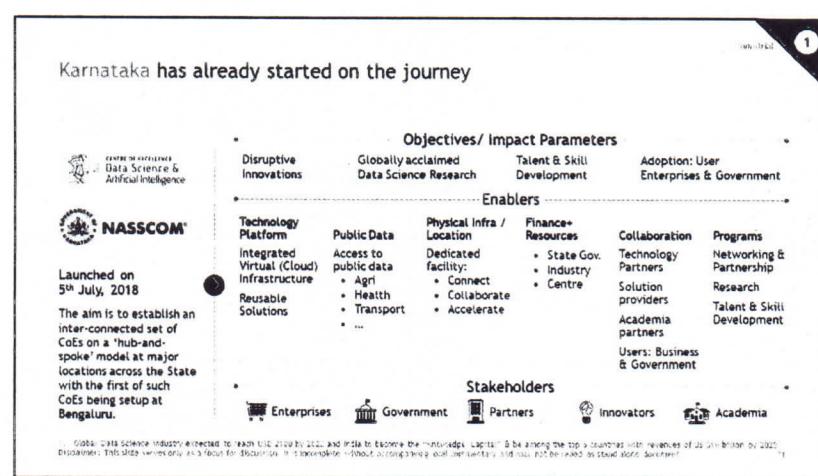


Fig 19. Big data analytics landscape

Several Indian states like Karnataka have already started moving ahead in this sector.



Visakhapatnam has a potential to emerge as an Analytics Hub. However, in order to develop it as the most sought after destination for Analytics and data, the government would need to pursue aggressive strategy.

Following are few of the initiatives that AP government could consider:

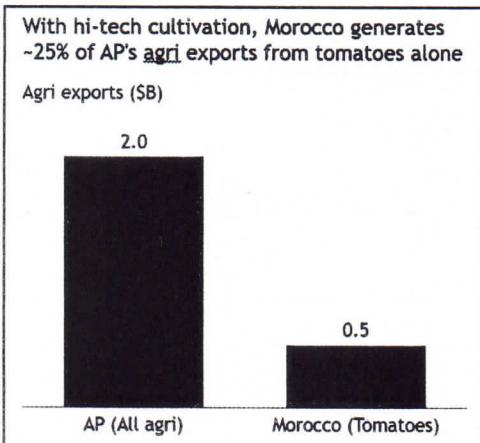
1. Partnership with Global Innovation Hubs in Silicon Valley, Israel, Taiwan and bring in the expertise & investments from the global players
2. Collaborate with Israel to set up a Cyber Security Hub
3. Collaborate with academia and set up institutions like MIT, INSEAD, etc.
4. Set up a Design Thinking Studio with leading design players.
5. Host a high profile innovation summit and invite global players to come and commit investment in the state.
6. Set up innovation Centre Of Excellence (CoE) on AI / Advance Analytics
7. Set up an Advanced Analytics hub for a global marquee industry leader to attract other players in the area
8. Set up Start-Up accelerator backed by Government.
9. AI led smart initiatives to improve governance and improve the life of citizens

6.3.2 Agriculture

(a) Potential to explore hi-tech organic horticulture in Andhra Pradesh

The State government could explore opportunities for Hi-Tech Organic Horticulture. The state has significant potential for organic horticulture. For e.g., Chittoor district is one of the leading producers of tomato in India.

Multiple countries have achieved significant economic progress by adopting hi-tech agriculture. An example of this is Morocco. Morocco initiated new agriculture program in 2008-10. In a short span of 10+ years, Morocco has grown to be one of the largest tomato exporters globally. Morocco generates exports to the tune of 25% of AP's net agricultural exports just from tomato.



Source: Maghreb Arabe

Salient features of strategy adopted by Morocco are given below:

- Set up 6000-Hectare tomato export cluster in the district which would facilitate the tomato farmers to export their tomatoes in a systematic & efficient manner.
- Government should assist the farmer co-operatives to adopt high tech practices like poly housing of farm, micro targeting of fertilizers, herbicides and weedicides, etc.
- Set up cluster level facilities for aggregation, quality check and packing centre to make the process hassle free.
- Setup advanced logistics platform to co-ordinate logistics and avoid loss of perishable agri products due to delay.
- Provide market linkage at the cluster level by getting into an agreement with retailers, run institutional campaigns and participate in trade fairs.

Preliminary: To be evaluated further

Morocco tomato success story: Enabling small farmers to adopt hi-tech agriculture and export their produce in 10Y



Set-up a 6000 ha tomato export cluster in a district



Govt assisted farmer co-operatives to adopt hi-tech practices

- Poly-housing of farms
- Micro-targeting of fertilizers, herbicides, weedicides



Set up cluster level facilities - aggregation, QC and packing centers



Setup logistics platform to co-ordinate logistics



Market linkage at cluster level

- Agreement with retailers
- Institutional campaigns
- Trade fair participation

(b) Impact of 'Focus Crop' campaigns

Dedicated "Focus Crop" campaigns to promote have resulted in significant increase in horticulture production in different countries. Some of the successful campaigns across the globe are:

- Focus Campaign for lemon in Argentina increased the lemon production by 2 times in a period of 10 years.
- Similar campaign in Brazil increased the orange production by 10 times over a period of 8 years.
- A focus campaign for apple in China resulted in 28 times increase in production over a period of 8 years.
- In Indonesia a similar campaign resulted in 3 times increase in production in 8 years and in Thailand a campaign for Pineapples increased its production 7 times over a period of 10 years.

All these successful initiatives across the globe share four common themes:

- Winning fruit and varietal selected.
- Focused geographic footprint.

- Unlocked barriers to investment
- Integrated value chain through partnership

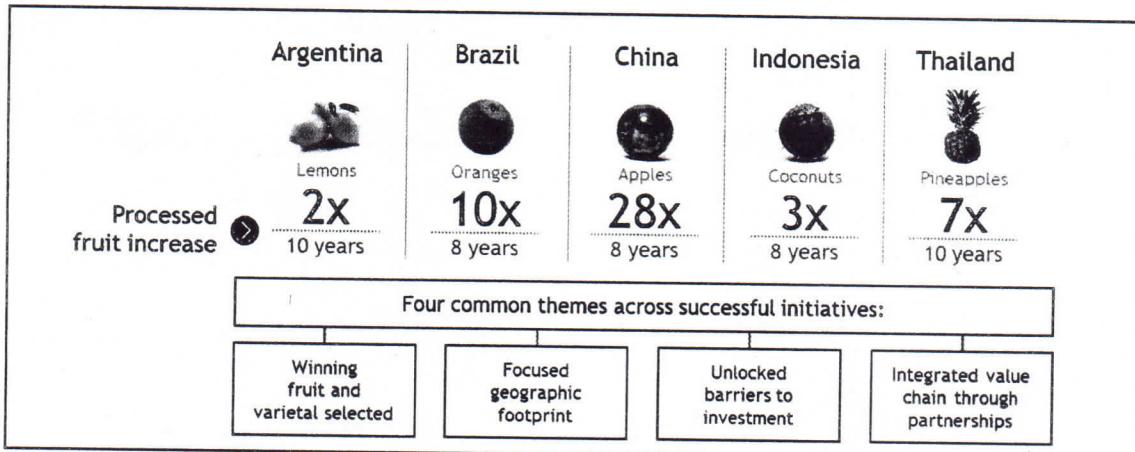


Fig 20. Horticulture programs in other countries

(c) Leverage Analytics for addressing issues in Agriculture

Agriculture in AP faces multiple operational challenges. Many of these challenges could be solved with the help of advanced analytics. This could not only provide demand to analytics services in state, but also facilitate increased farm produce and profitability for the farmers. Some of the key initiatives that to explore are given below:

- Segment of One personalized advisory that is fully personalized based on farmer profile. The advisory should discuss entire life cycle from pre sowing to post harvest, proper information on weather, pricing, etc and proper guidance on crop management, fertilizer usage & water usage.
- Smart Lending and Insurance product powered by Artificial Intelligence that maps farmers risk profile, credit worthiness, etc. Repayments & drop offs etc. should be tracked to update farmers' profile and assess risks.
- There should be a mass movement of precision farming as the input cost per kg of crop has been steadily increasing. Data driven precision farming can help to develop specific methodologies for a given farm land
- Promoting shared economy in farm implements to double farm mechanization. Currently less than 25% of the small hold farmers use machines

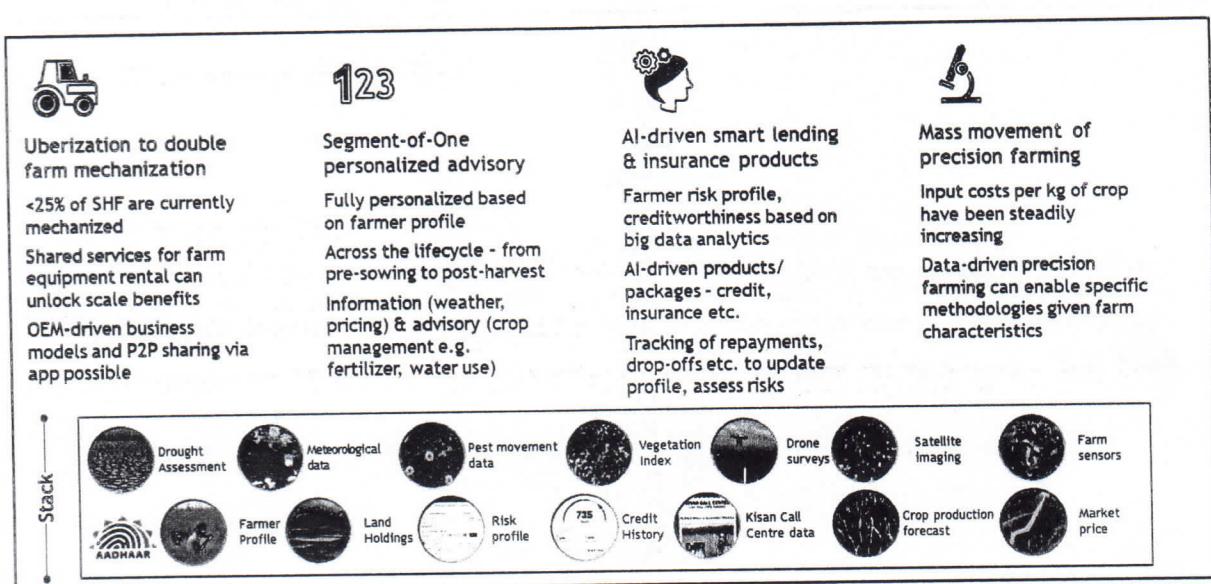


Fig 21. ICT in agriculture initiatives

6.3.3 Tourism

(a) Leverage Big Data in Tourism

Several countries across the globe are increasingly leveraging Big Data to understand potential tourists deeply. This has resulted in significant uptick in tourist footfalls – for e.g., Slovakia witnessed 25% increase in footfalls in just 2 years by leveraging Big Data insights

Several countries are leveraging big data to understand tourists deeply

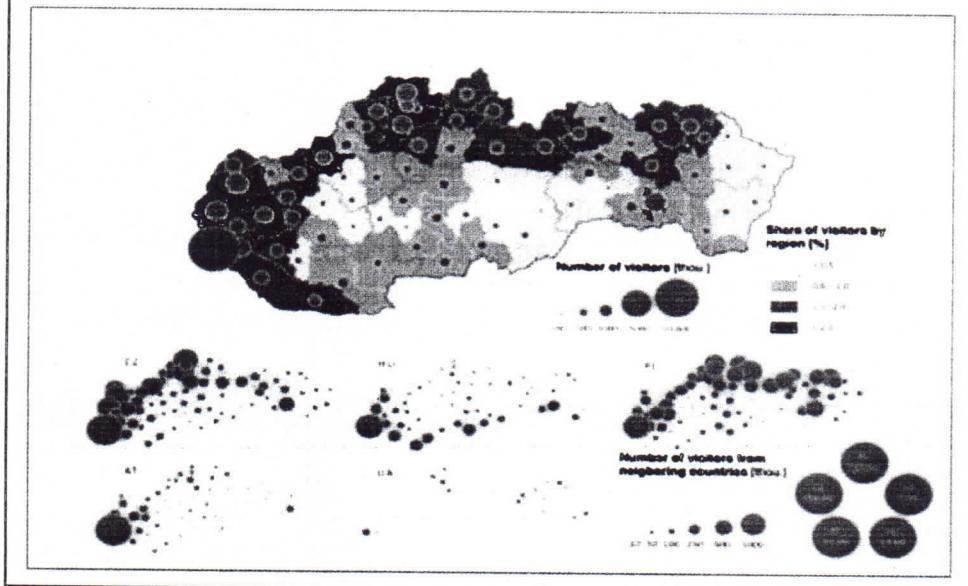


Fig 22. Big data leveraged in Slovakia

Andhra Pradesh too can evaluate setting up a tourism data hub to enable personalized targeting and communication. Following initiatives could be explored as part of setting up data hub:

- Developing 10M+ of potential Visitors by making use of travel aggregator data, Telecom data, social media & click trace and tracking via the AP Tourism APP
- Understanding the interests of each potential tourist
- Personalizing the tour package of the tourist and in offering recommendation to the tourist
- Personalized reach out via social media, search and video/website app
- Having annual tourism start-up challenge for travel application

Preliminary: To be evaluated further

AP Tourism Data and Analytics Hub to enable individual level targeting and communication

- 1  10M+ leads of potential visitors to be developed
 - Travel aggregator data
 - Telecom data
 - Social media and click trace
 - Tracking via AP Tourism app

- 2  Understand interests of each potential visitor

- 3  Personalize tour packages, recommendations

- 4  Personalized reach out via social media, search and video/website app

- 5  Annual tourism startup challenge for travel applications

Fig 23. Possible big data initiatives for AP

(b) Extending Brand AP

Globally countries are developing tourism sector around specific themes and occasions.

For e.g. Taiwan wants to be seen as the preferred location of destination weddings and

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Example - Extending Brand AP: Differentiate by targeting specific themes and occasions

Preliminary: To be evaluated further

Countries building tourism sector around specific themes/occasions

Illustration: Taiwan

Highly focused target segments

- Top 2% HNIs from India, Australia, SEA

Tourism planned around occasions themes

Destination wedding, anniversaries

Properties developed

Eco-adventure sports

Circuits for 5+ activities

Coastal cruise

Funding for cruise lines

Local culture

Cycle tours to villages

Potential to refresh and extend brand AP to address competition

Starting list of thematic extensions that can be explored

- Destination Wedding
- House boats (in Konaseema)
- Ayurveda
- Beaches
- Tropical Cruise Capital
- Thrills and Chills (Eco adventure)
- Culinary Paradise
- Care and rejuvenation

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Fig 24. Illustration: Themes associated with Taiwan's tourism

Anniversary celebrations. To attract tourists who want to go for eco-adventure sports the country has built circuits for 5+ activities. Similarly, for coastal cruise the country has approved funding for cruise lines. To promote local culture they are conducting cycle tours to villages.

AP could consider building its tourism brand over select themes. The following are the starting list of themes which could be considered:

- Destination Wedding (at Vizianagaram)
- House boats (in Konaseema)
- Beach tourism (at Mypadu, Bheemily beaches etc.)
- Tropical Cruise Capital
- Thrills and Chills (Eco adventure)
- Culinary Paradise
- Care and rejuvenation

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(c) AP Tourism Ambassadors

Multiple countries are enlisting tour operators as partners. They have started inking contracts with tour operators with built in incentives for the latter. This could be a potential area for AP to consider.

The state tourism department could identify 100 Tour operator and get into a contract with them. This can be achieved by:

- Identify and target top 1000 tour operators & tourism investors globally.
- Have thematic exhibition of AP's Attractions
- Showcase upcoming tourism projects
- Conduct immersion trips for tourists
- Constantly collect and act on the feedbacks received.

The Tourism department should also constantly track performance of these tour operators reward the operators for reaching the set target as this will help them remain motivated.

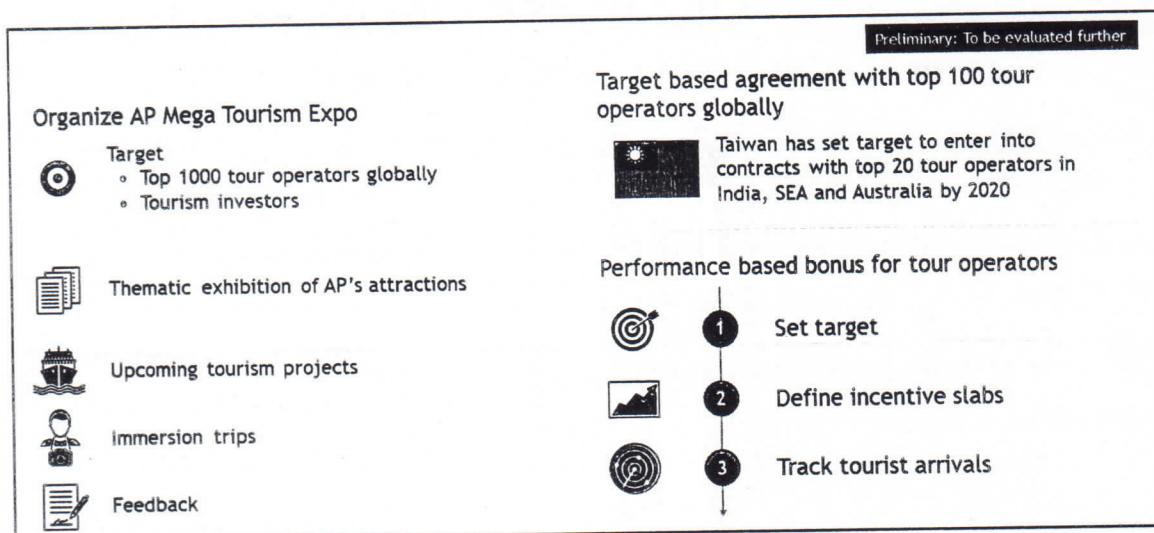


Fig 25. Building AP tourism ambassadors

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6.3.4 Infrastructure

(a) The following five Expressways have been identified that could enhance connectivity and spur development across the state of Andhra Pradesh.

- Chennai – Bangalore express way
- Hyderabad – Bangalore express way
- Anantapur – Krishnapatnam Highway
- Vijayawada – Bangalore Highway via Kadapa
- AP Road grid to connect remote areas

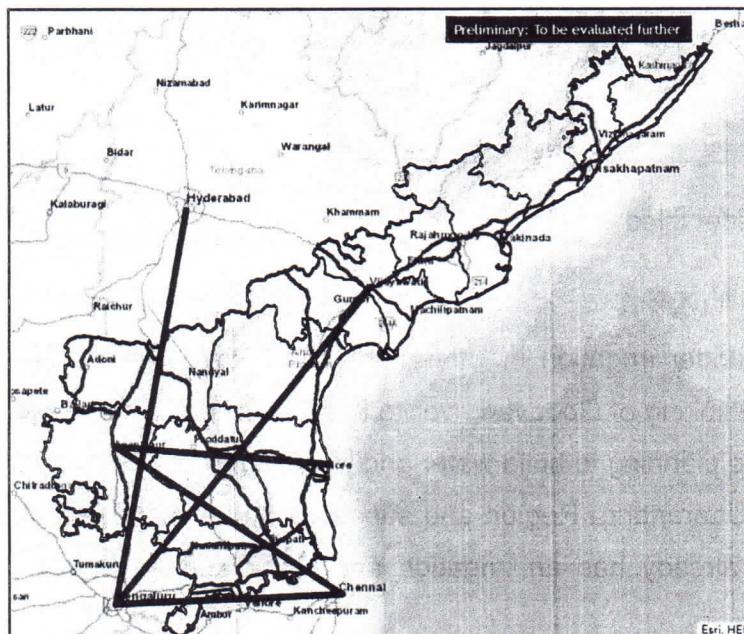


Fig 25. Expressway network to spur development across AP

(b) Twenty Two bottlenecks in trunk route connecting AP to rest of India need to be addressed

Key National Highways connecting AP to the rest of India consists of NH16 & NH30. It is found that there are 22 bottlenecks in the two critical highways. These need to be addressed with the support of Central Government in order to improve the efficiency of

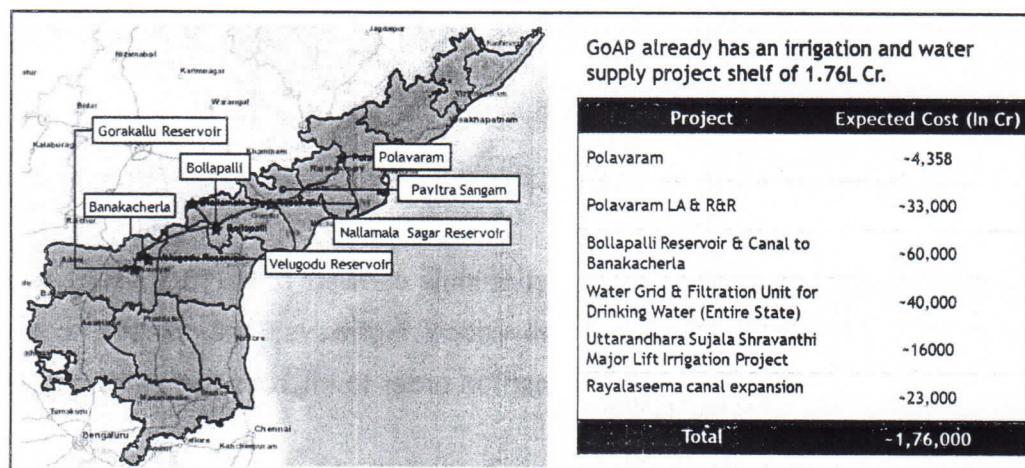
logistics between AP and rest of India. The list of 22 bottlenecks and potential interventions are given in the table below:

Preliminary: To be evaluated further						
SL No.	Stretch	District/Town	Root Cause	Initiative	Distance (kms)	Time Saved (mins)
Chennai - Kolkata	1 Chennai-Ellur	Thiruvallur	Capacity bottleneck	6L access control Chennai-TN border	32	-20
	2 Ellur-Nellore	Ramapuram		Ramapuram Flyover	3	-4
	3 Ellur-Nellore	BuJa Nellore	Future Constraint	BuJa Nellore Bypass	15	
	4 Nellore-Vijayawada	Maddipadu	Sub-optimal Entry	Maddipadu Access Control	12	-6
	5 Nellore-Vijayawada	Peddakani	Future Constraint	Peddakani Bypass	6	
	6 Vijayawada-Vizianagram	Vijayawada	City Traffic	Vijayawada Ring Road	26	-20
	7 Vijayawada-Vizianagram	Multiple	Continuous Intersections	Alternate Alignment EW	370	-210
	8 Vizianagram-Bhubaneshwar	Khordha Town	Traffic Mixing	Khordha Bypass	8	-20
	9 Vizianagram-Bhubaneshwar		Future Constraint	Srikakulam-Ichchapuram Access Control	100	
	10 Bhubaneshwar-Baleshwar	Bhubaneshwar-Cuttack	City Traffic	Bhubaneshwar-Cuttack Bypass	60	-30
	11 Bhubaneshwar-Baleshwar	Baleshwar		Baleshwar bypass	12	-14
	12 Kharagpur-Kolkata		Capacity constraint	Access Control 6L	90	-30
	13 Kharagpur-Kolkata	Kolaghat	Future Constraint	Kolaghat bypass	20	
Mumbai - Vijayawada	1 Pune-Solapur	Pune	Multiple Towns	Pune Bypass from Pimpri-Chinchwad to Uruli	58	-60
	2 Pune Solapur	Solapur	Traffic Mixing	Kanchan	16	-27
	3 Solapur-Omanabad	Naldurg		Solapur New Bypass	4	-4
	4 Osmanabad-Hyderabad	Zaheerabad-Sangareddy	Capacity Constraint	Naldurg Flyover	150	-60
	5 Osmanabad-Hyderabad	Sangareddy-Hyderabad	Capacity Constraint	Upaning 6L Access control	10	-8
	6 Hyderabad-Vijayawada	Ibrahimpatnam		Ibrahimpatnam Bypass	22	-8
	7 Hyderabad-Vijayawada	Vijayawada		Vijayawada Ring Road		-20
	8 Hyderabad-Vijayawada	Suryapet	Future Constraint	Suryapet Bypass		
	9 Hyderabad-Vijayawada	Multiple	Future Constraint	Hyderabad-Vijayawada 6L (AC)		
GoAP needs to work with GoI to ensure bottlenecks are addressed						

Fig 26. Bottleneck routes identified

(c) Irrigation Projects

For increasing the area under irrigation in Uttarandhra and Rayalaseema region the GoAP has announced the linking of Godavari river to Krishna & Penna river. Apart from this the government is also planning to build water grid to provide water for irrigation and drinking purposes in the Uttarandhra Region and subsequently build these water grids across the state. GoAP already has an irrigation and water supply project shelf of approximately 1.76L Cr



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Fig 27. Irrigation projects in AP to unlock potential in Agriculture

(d) Agri Storage Park for Village Cluster

To improve bulk storage and increase sale at farm gate construction of Agri Storage Park for Villages cluster could be considered which can help farmer by:

- Facilitating sale at the village cluster level
- Bulk handling, scientific sorting and grading of the agri products
- Sensors and GPS for grain monitoring and measuring the moisture content, temperature and volume of the product
- Real time data collection about receipt, quality and pricing of the product
- Digital integration with banking and logistics systems

7. Perspective on current investment plan in Amaravati Region

Introduction

Post Andhra Pradesh-Telangana bifurcation in 2014, the then Government of Andhra Pradesh decided to build a new Greenfield capital megacity for the state in Amaravati, Guntur. As per APCRDA white paper, June 2018, Amaravati entails total investment of INR 1 Lakh Crore. Given the financial situation of the state as mentioned in section 1, there is a need to assess this investment in light of other developmental needs of the state. This section details the key considerations that the Government should consider while making additional investments in the region.

The four key elements that the GoAP should consider while making investments in Amaravati megacity are:

- Generating returns from a megacity: Megacities can act as economic engines for a region and can play a defining role in State branding, people motivation, talent development
- Ability to fund the investments in a megacity: Megacities entail significant investments in infrastructure, brand building and talent attraction; need to assess how to fund the journey
- Managing and mitigating the risks involved in a megacity project: Need to carefully look at success rates of green field megacities and the underlying causes of success or failure; need to apply that in the context of AP
- Lead time for value generation: Megacities are typically 30-40 year projects; need to have the patience and appetite for a "long lead time" investment

The subsequent sections will detail extensive benchmarking on each of these four points and present implications for Amaravati megacity based on current baselining and financial state of Andhra Pradesh.

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7.1 International perspectives on megacity development

7.1.1 Greenfield city benchmarking

This section covers international benchmarks on the development of Greenfield cities and the reason for success and failure of these cities.

(i) Returns from Megacities

Megacities have been major regional growth drivers in various countries over the years. Major cities like London, Tokyo etc. contribute to more than 20% of the GDPs of their respective countries. However, it is important to note that these cities have grown organically over a few hundred years, based on some inherent geographical and political advantage in comparison to other cities in the country or the region.

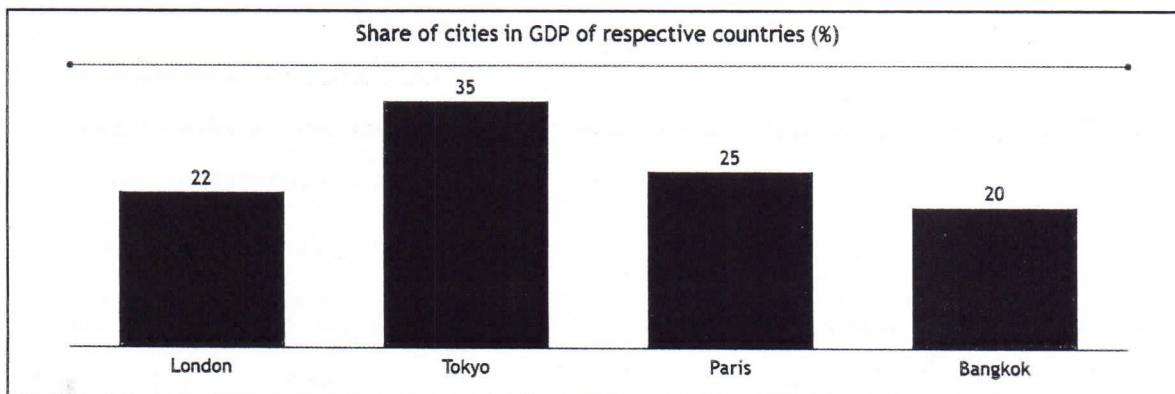


Fig 28. Contribution of megacities to countries GDP Source: National statistics of the respective countries

(ii) Investment needed in megacities

Greenfield megacities entail high investments. International benchmarking suggests that the cost of development could vary between 0.5 Bn and 2.5 Bn. It could even go as high as ~ 4.2 bn dollars per 10k residents in the case of Masdar, UAE.

It may be noted that this is the total investment needed for a megacity and not just for trunk infrastructure.

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However, green field mega cities typically entail high investments...

City	Investment, \$bn per 10k inhabitants
Masdar, UAE	4.2
Neom City, SA	2.5
Xiong'an New Area, China	2.3
Forest City, Malaysia	1.4
Songdo, Korea	1.3
Duqm, Oman	1.0
Dholera, India	0.5
Astana, Kazakhstan	0.5

Source: Expert inputs
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Fig 29. Investments in Green field cities in USD Bn

(iii) Risk involved in Green field megacities

As a part of the study, an international benchmarking of more than 30 Greenfield megacities that have been established in the last 50 years was undertaken. The analysis shows that only 2 out of the 32 green field cities built in the last 50 years could achieve ~50% of targeted development.

Only two cities have been reasonably successful in this metric, Navi Mumbai and Shenzhen, China.

These cities have attracted citizens as a spill-over due to its close proximity to another megacity. If we consider the case of Navi Mumbai, there was limited land availability in the existing areas of Mumbai, which helped to push further urban growth towards the regions of Navi Mumbai. Naya Raipur & Greater Noida are other Greenfield cities in India that have not been able to replicate the success story of Navi Mumbai. The following picture depicts the entire list of 32 cities considered for the benchmarking analysis along with the percentage of target population achieved:

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International perspective: megacity investments are risky
Only 2 out of sample of 32 green field cities built last 50 Y could achieve ~50% of targeted development

City	Country	Start Date	Current Population (mn)	% Achieved
Moniarto	Aus	1972	<0.1	<5%
Chenggong	China	2003	0.35	43%
Masdar City	UAE	2006	<0.1	8%
Kangbashi Ordos	China	2001	0.15	45%
Nanhui New City	China	2003	0.05	6%
Yujiaju Fin Dist.	China	2008	0.03	10%
Lanzhou	China	2011	0.1	17%
Lavasa	China	2004	<0.1	<5%
10th of Ramadan	Egypt	1977	0.51	24%
Shenzhen	China	1980	15	>100%
Konzo	Kenya	2008	<0.1	<5%
Modderfontein	S.Africa	2015	<0.1	3%
Ekoatlantic	Nigeria	2003	<0.1	<5%
Songdo	S.Korea	2004	0.1	33%
Townsend	Canada	1970	<0.1	<5%
Ciudad Valdeluz	Spain	2004	<0.1	10%

City	Country	Start Date	Current Population (mn)	% Achieved
King City	Ghana	2013	<0.1	<5%
Multifunction Polis	Australia	1994	<0.1	<5%
Pardis City	Iran	2001	0.07	37%
New Cairo	Egypt	1989	0.3	5%
Greater NOIDA	India	1991	0.3	25%
Sheikh Zayed City	Egypt	1995	0.15	30%
Kilamba	Luanda	2008	0.08	16%
Sadat	Egypt	1978	0.15	30%
6 th of October	Egypt	1979	0.5	17%
Navi Mumbai	India	1971	1.7	>100%
Naya Raipur	India	2001	0.02	<5%
Innopolis	Russia	2012	<0.1	<5%
Plan IT Valley	Portugal	2011	<0.1	<5%
Blue City Project	Oman	2006	<0.1	<5%
Chrafate	Morocco	2009	<0.1	<5%

Source: Published data sources for each of the cities
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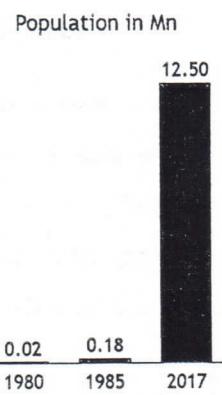
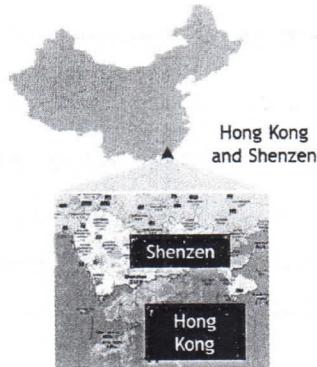
Fig 30. Achievement against targeted development of megacities globally

If we consider the example of Naya Raipur, the nodal agency Naya Raipur Development Authority (NRDA), has plans for investing a total of ~6k crores INR until 2031 for city infrastructure development plans. The city is expected to reach a population of ~0.56 mn by 2031. With a current population of ~0.02 mn, this represents less than ~4% of the target population. The city of Shenzhen is an example of a green-field city that grew because of spillover of proximity to Hong Kong. Its population grew from ~0.18 mn in 1985 to ~12.5 mn in 2017. The key reason for this growth were the rising costs of labor and production in Hong Kong which pushed companies to shift their manufacturing base to Shenzhen. The other major reason for this growth was that Shenzhen served as entry point for trade into China. More than ~200 bn USD worth of goods move from Hong Kong into Shenzhen, of which more than ~90% of the goods are further moved to other parts of China.

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Internationally, such cities have succeeded mostly when there is an underlying starting point - Shenzhen benefitted from spill over from Hong Kong

Shenzhen grew from a hamlet to a megacity in ~30 Y



Key reasons for success

- 1 Proximity to Hong Kong (27 KM)
- 2 Started as a trade hub for movements of goods from Hong Kong into Mainland China
 - ~USD 500 Bn trade flow in and out of Shenzhen
- 3 Rising costs of labor and production in Hong Kong pushed companies to shift base to Shenzhen

Source: Expert interviews
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Fig 31. Underlying starting point decisive in driving success of green field cities

(iv) Time horizon for green field cities

Major cities globally have grown at a rate of less than ~7% CAGR over a period 40+ years. Dubai grew from a population of ~0.2 mn in 1975 to ~3.1 mn in 2019, growing at a CAGR of 7% over 40 years. Most other cities have grown at a much lower rate. Most cities however have grown at a lower rate, for example, Singapore and Hong Kong have grown at a CAGR of ~2% over a period of more than 50 years.

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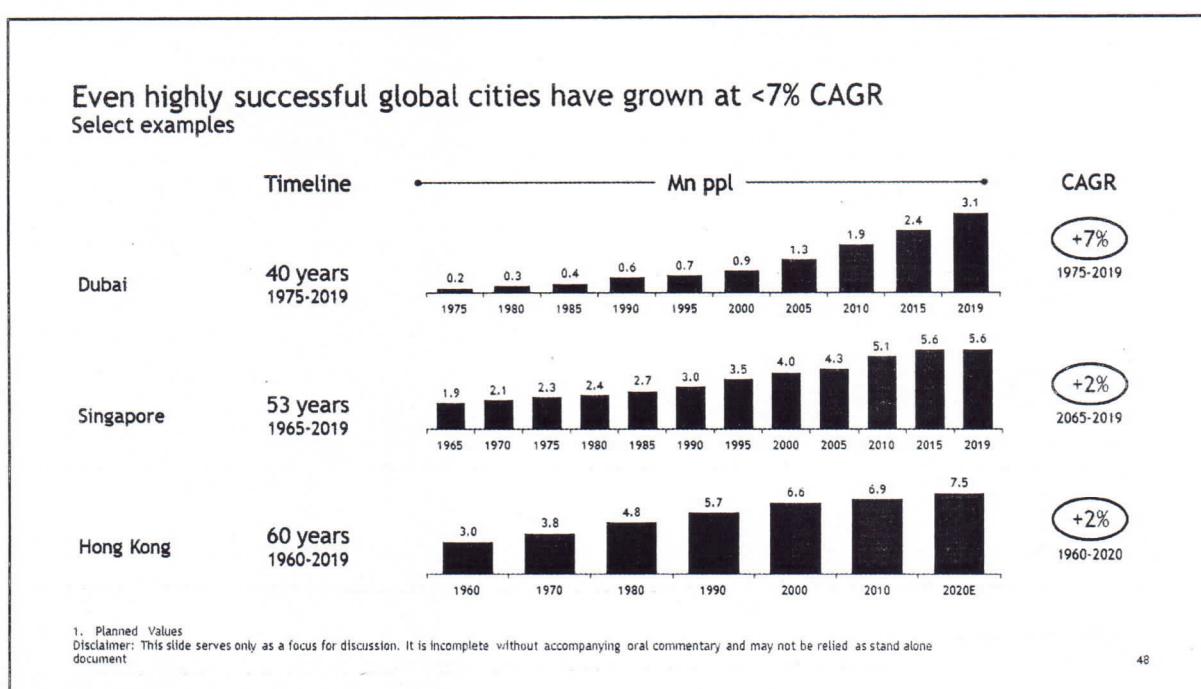


Fig 32. Growth trend of major global cities

7.1.2 Greenfield capital cities

Over the last 50 years, 7 Greenfield capital cities have been conceived. However, of these 7 cities, 6 have fallen short of the target population envisioned for the city. Only Nur Sultan (Astana) in Kazakhstan which was conceived in 1998 was able to achieve its target population of ~1 mn inhabitants. The following table details the list of the seven cities along with the target population and the current population of the city:

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Location of capital does not necessarily provide economic momentum for a new city

6/7 green field capital cities conceived in last 50 years have significantly fallen short of targeted vision

Capital City	Country	Year of Inception/ Relocation	Current Population (Mn)	Target Population (Mn)	% Achieved
Naypyidaw	Myanmar	2006	1	3	33%
Dodoma	Tanzania	1996	0.2	1	20%
S.J. Kotte	Sri Lanka	1982	0.1	1	10%
Abuja	Nigeria	1991	0.6	2	30%
Nur Sultan (Astana)	Kazakhstan	1998	1	1	100%
Sejong City	South Korea	2007	0.3	1	30%
Putrajaya	Malaysia	1999	0.1	0.5	20%

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Fig 33. Green field capitals built in last 50 years

Greenfield capital city case study: Putrajaya

The government of Malaysia felt that Kuala Lumpur was overcrowded and further economic development would not be feasible in the city. It decided to shift the capital to Putrajaya which is at a distance of less than ~40 kms from KL. However even after a period of 20 years Putrajaya has not been able to attain scale and has managed to reach just ~20% of the target population. The major reasons for the same is the failure to relocate commercials tenants due to lack of commercial space distinction from the twin city of Cyberjaya. The second reason was the lower interest of people to move to the city due to lack of good and ample job opportunities. Additionally, lack of affordable housing in the city acted as another major deterrent.

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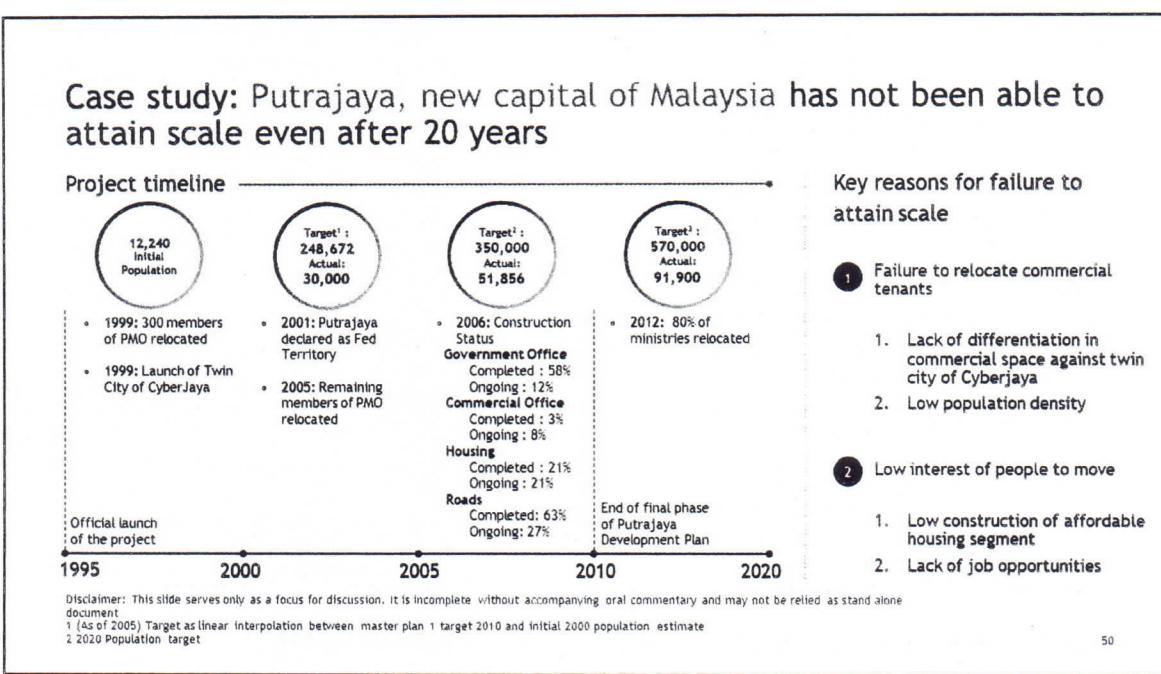


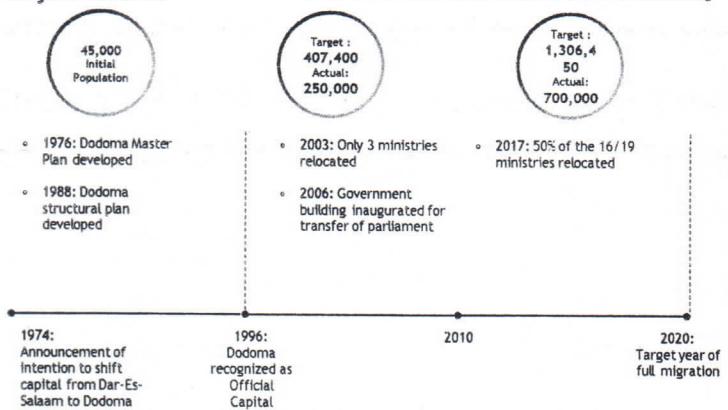
Fig 34. Putrajaya case study

Greenfield capital city case study: Dodoma

The Greenfield capital city of Dodoma failed to attain its target population because of two major reasons. The first being the lack of private investment in critical infrastructure and service amenities. The second major reason being that the Government only disbursed ~40% of the committed investment for the development of the capital.

Case study: Dodoma, proposed capital of Tanzania from 1976 also has not been able to attain 50% of target still

Project timeline



Key reasons for failure to attain scale

1. Lack of Private Investment

- Critically Poor and Inadequate Road Network
- Poor Infrastructure and Service Amenities

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Fig 35. Dodoma case study

Greenfield capital city case study: Sri Jayawardenapura Kotte

Another example is the city of Sri Jayawardenepura Kotte, the new capital of Sri Lanka initiated in 1982, but has failed to reach even ~30% of its target population.

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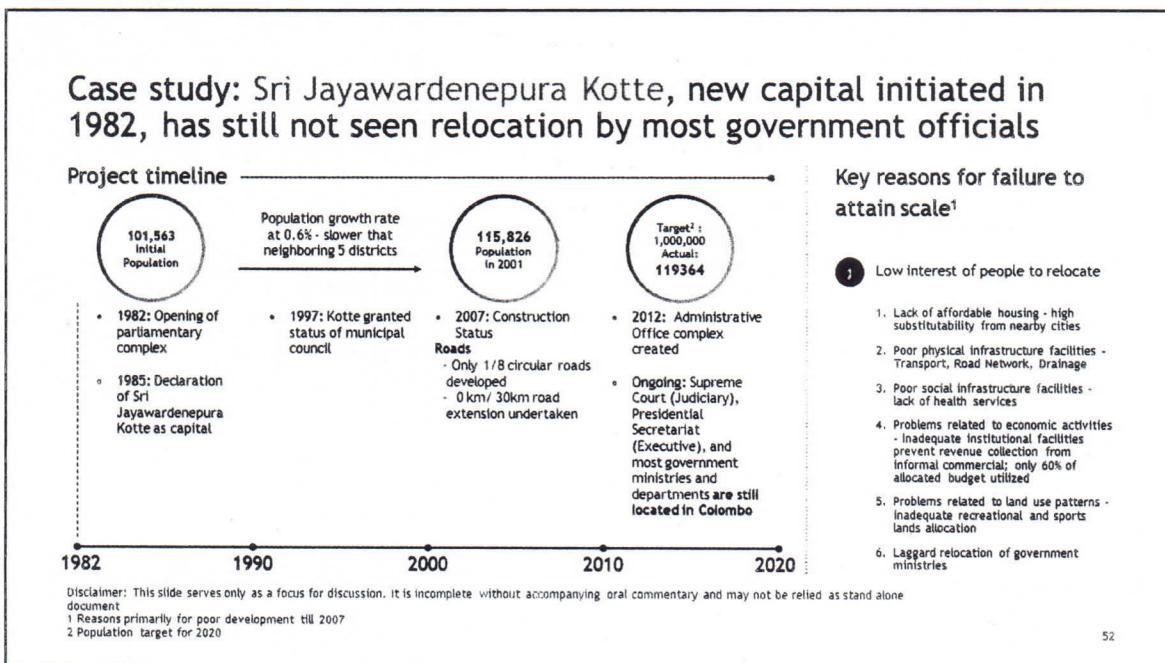


Fig 36. Sri Jayawaedenepura Kotte case study

7.2 Perspectives on soil strength & inundation in the region

As a part of the project, perspectives were sought from faculties at IIT Madras, regarding the soil profile in the region and extent of inundation in the planned capital region of Amaravati in case of flooding in Krishna river. This section details these findings.

7.2.1 Potential of flooding in the proposed region

The stretch along the Krishna on which Amaravati will be built is a highly fertile floodplain – or a catchment area that replenishes itself naturally during rainfall and flooding, maintaining the water level of the soil, as well as the flow and ecology of the river, by continuously absorbing and discharging water. The October 2009 floods in the regions were one of the most devastating floods in the recent past. As seen from the figure below, the region on which Amaravati has been planned, was heavily inundated during the floods:

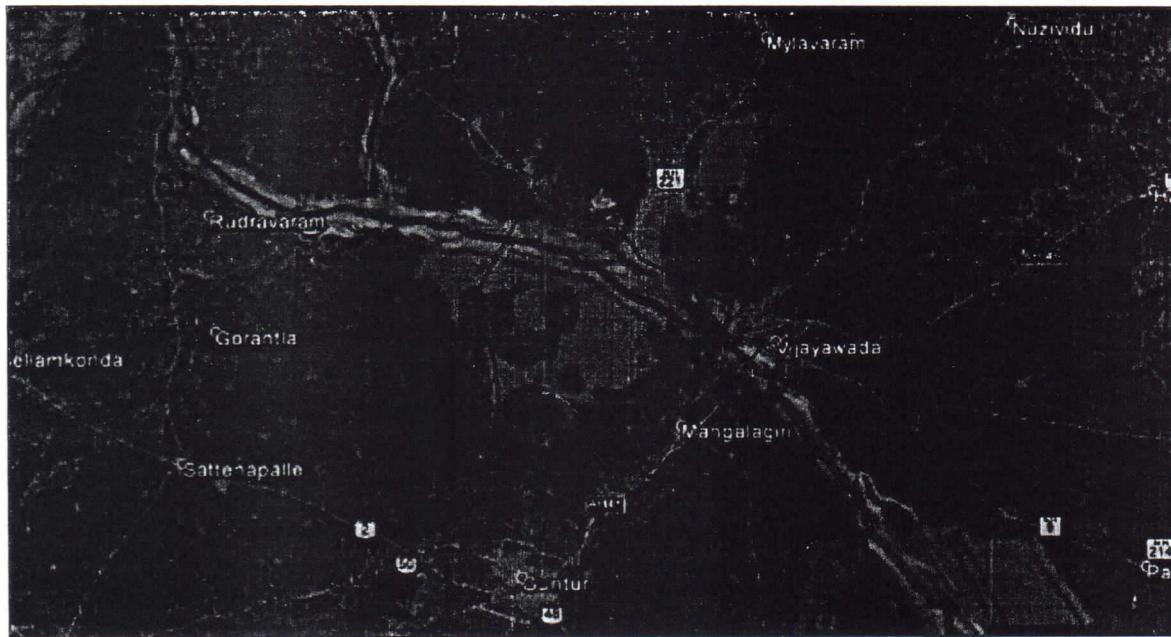


Fig 37. Risk of flooding to Amravati Area

7.2.2 Inundation Simulation

As a part of the project, the team undertook inundation simulation analysis study in order to determine the extent to which the capital region will be inundated in case of a flooding. The first study considered condition of flood created by 0.5 m inundation at proposed secretariat site. In this case as shown in the figure, almost ~70% of the capital area region will be affected:

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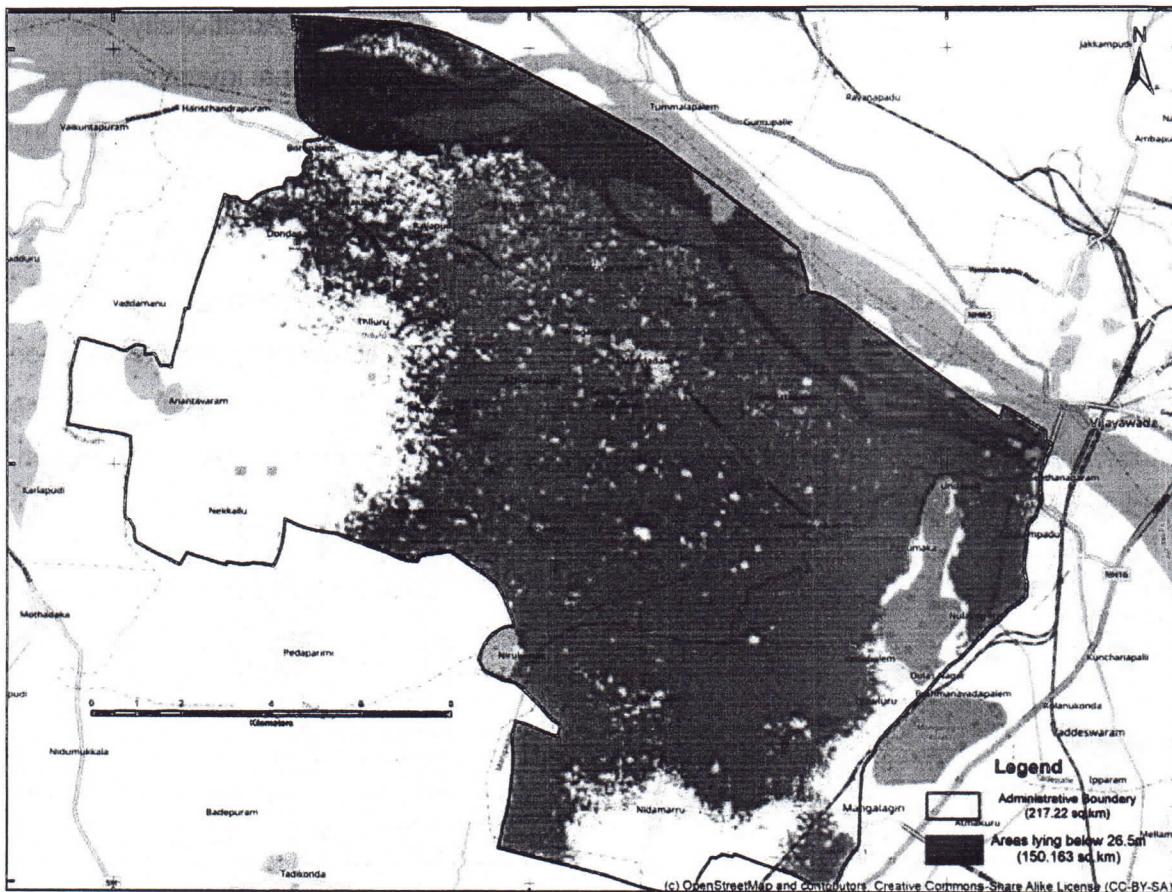


Fig 38. Risk of flooding to Amravati Area

As a second iteration in the study, condition of flood created by 1.0 m inundation at proposed secretariat site was simulated. It showed that ~71% of the capital region area was affected.

Thus both historical flooding data and inundation analysis, indicates that a large part of the capital region is vulnerable to flooding. It may thus not be environmentally appropriate for large scale development and settlement.

Another point to note is that once construction takes place, the probability of water logging further increases because the seepage capacity of the land decreases. At the same time natural drainage is also hindered due to the construction.

As per APCRDA, currently there is an earthen bund that deters the river water from entering the capital region, but in case of flooding this might not be able to deter water

from entering the region and thus the height needs to be elevated. Additionally, the cost of construction for a new pakka bund would entail significant additional investment. Large scale elevation of the region by fill-up is not advised on two aspects. The first being the heavy investment that would be needed for the activity and the second being that if this region is artificially elevated, it might lead to extensive flooding in another region.

7.2.3 Implication of soil strength on cost of construction

The second aspect that has been considered is the impact on cost of construction depending on the land profile and the depth to which rock is found in the region. For the study, a preliminary analysis of the foundation for the IT tower reveals that in the region, rock is present at a depth of almost ~40 m in certain parts:

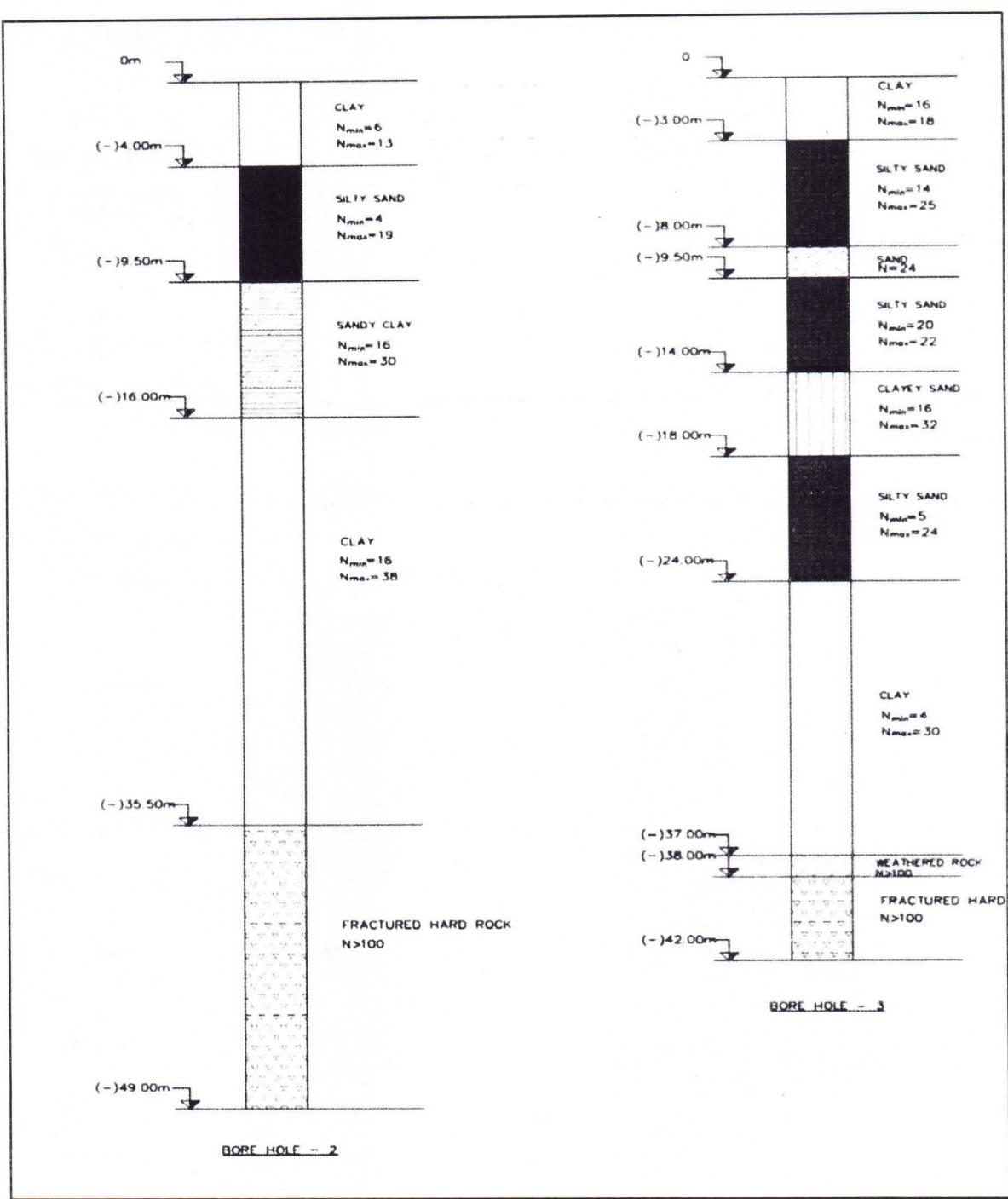


Fig 38. Implication of soil strength

Under such a profile, raft foundation is not advisable and pile foundation will have to be preferred. In the region where the rock is at the depth of ~10 m, the cost of construction

is in the range of ~3000-3500 per square feet. This can increase to upto INR 6000 per square feet in regions where the rock is at a depth of ~40 m.

Thus the soil profile in the region and the rock depth will add significantly to the cost of construction of the planned development in the capital region vis-à-vis regions where rock is found at a lower depth.

7.2.4 Conclusions

The preliminary observations based on the analysis are summed up below. A more detailed study would need to be undertaken to clearly ascertain the extent of increase in cost of construction in the region and feasibility of any flood prevention measures:

- The area lying to the south side of the river, which includes sports, government, finance and tourism city may not be appropriate for commercial or residential construction due to significant risks of flooding as shown in the simulations

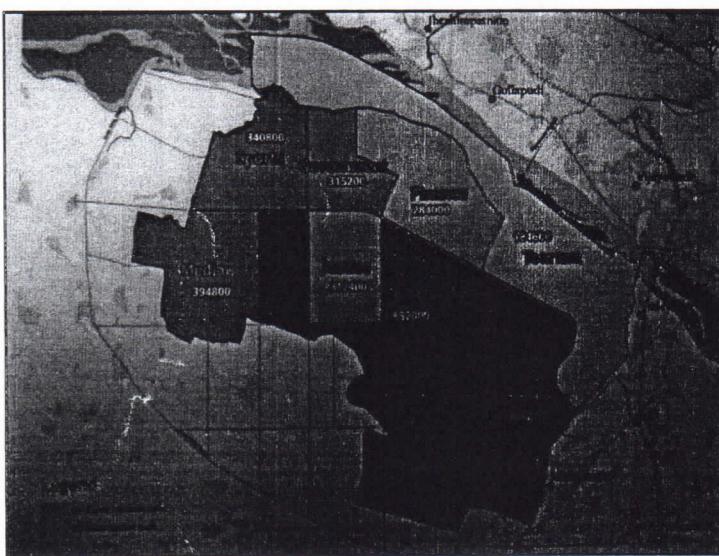


Fig 39. City plan of Amaravati

- In the detailed master plan prepared by APCRDA it is recommended to raise level of bund to prevent flooding of the capital region. However to elevate the height higher than historical flood level of Krishna river and redesigning will entail significant costs

- The cost to fill-up the capital area to prevent flooding would be very high, and in addition will endanger other areas in the state
- The cost of construction in major areas of the region would be very high due to need of pile foundation. Raft foundation with basement is also not advisable due to availability of ground water at 2.5 to 5m below ground level

The above technical assessment has been made by IIT Madras. Base data used for the analysis have been sourced from AP Disaster Management Authority, satellite data on topography, soil studies carried out by APCRDA and Amaravati Master Plan. Further studies are recommended to assess the issues in detail

7.3 Assessment of Amaravati development plans

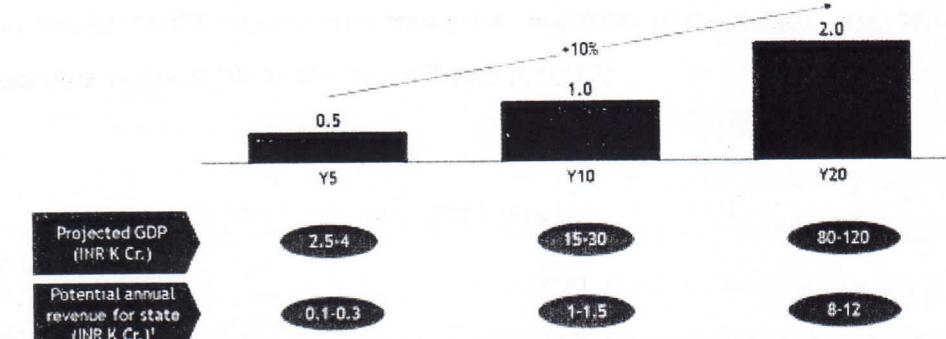
7.3.1 Economic returns

As per the masterplan of Amaravati, the city is projected to reach a population of ~2 mn by 2045. This would entail a population growth rate of over ~10% whereas major cities globally have grown much slower.

The GDP of the city is projected to be in the range of INR ~80-120k crores by 2045. Assuming similar GDP to tax ratio of ~10% - this would translate to a Government tax revenue of INR 8-10K Cr.

Vision of Amaravati: As per master plan, Amaravati is expected to reach population of ~2 mn and GDP of INR 80 -120K cr. by 2045 (~10% growth)

Amaravati's Projected Population (in Million) [Source: Amaravati Masterplan]



Amaravati will need to grow at CAGR of 10% to reach target; major cities have grown at 2-7%
Amaravati could generate ~8-12 K Cr. in revenue for the state in current terms (~10% of current state receipts)

Note: 1 mn jobs have been assumed by year 20, as per Happy City Blueprint. GDP per job assumed to be ~9-12 lakhs. 10% GDP to tax collection assumed
Source: City GDP estimate taken from Happy City Blueprint, dated April 18, by APCRDA. Population projection taken from Subhanya-Jyoti Master Plan (Interpolated to intermediate years)
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Fig 40. Vision of Amaravati

As per the APCRDA 'Happy City Blueprint', the GDP of Amaravati after 25 years will be comparable to the GDP of the city of Pune in 2015:

GDP	
City	INR'000 crore, 2015 prices
Delhi NCR	528
Mumbai City	400
Bangalore	257
Ahmedabad	210
Hyderabad	180
Chennai	152
Pune	143
Amaravati (Y25)	120

GDP of Cities

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Source: APCRDA Planning

7.3.2 Investments

An investment of INR ~1.1 lakh crore is envisioned as per APCRDA white paper dt. June 2019 for developing core infrastructure of the city. This investment is divided over two phases with phase 1 requiring a total investment of INR ~52k crores, with the rest required for phase 2. The cost for construction of government buildings alone would be in the range of INR ~12-15k crores.

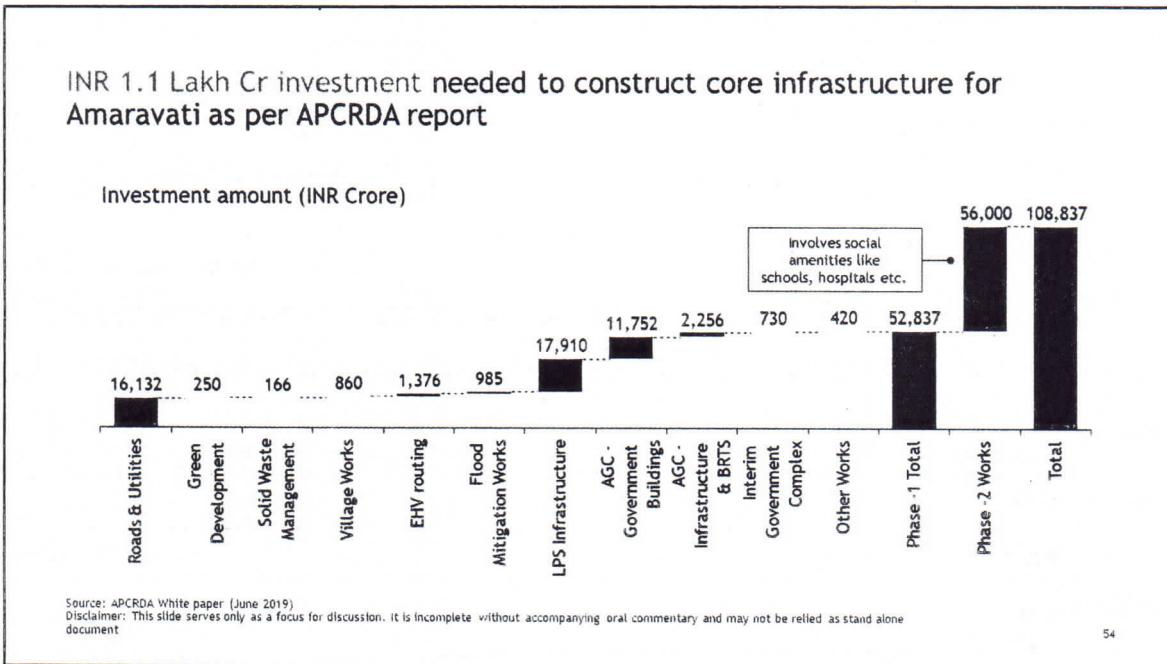


Fig 41. Investment requirement for construction of Amaravati

7.3.3 Observations on funding requirement for the city

This city development investment would largely be funded by debt which would create a heavy burden of interest payment on the state budget in the coming years. As per the master plan, an area of ~5000 acres (sellable area) has been set aside for commercialization in-order to fund/ recover investments. The current value of these ~5000 acres is in the range INR ~10k crores with land price at ~1-2 Cr. per acre. Government will have to target land price of INR 20 Cr. per acre in order to recover principal amount alone. This could take 10-15 years.

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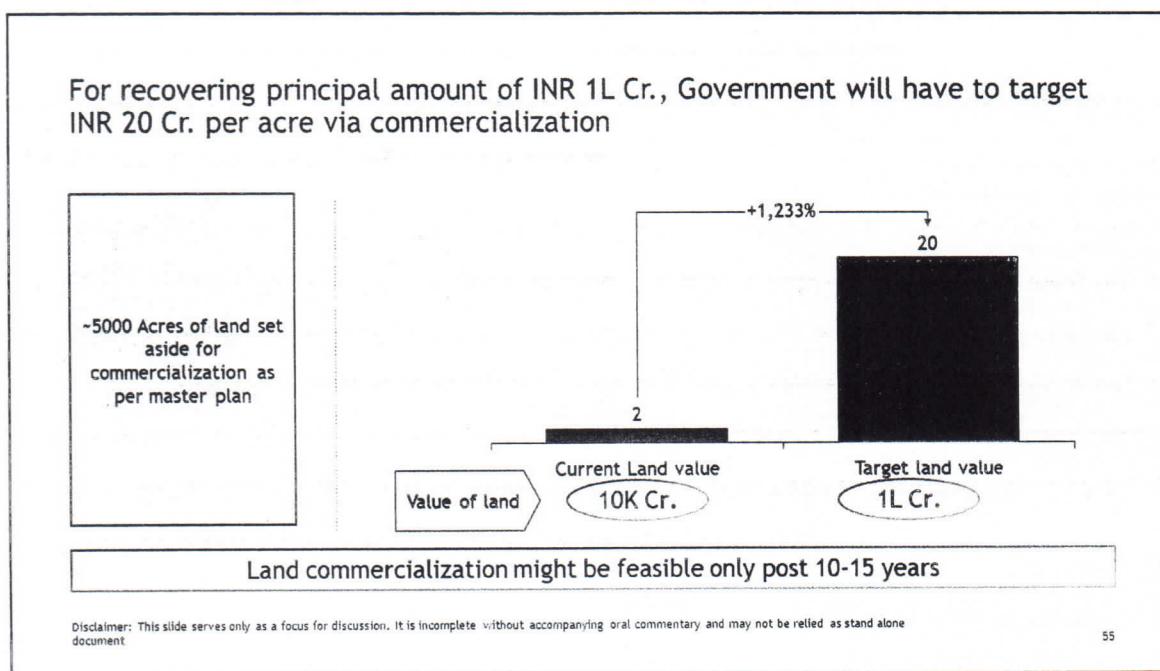


Fig 41. Land commercialization for Amaravati

The Government of AP will have to foot the interest payments incurred on debt raised to fund core infrastructure as envisioned currently. While a part of the development will be financed from Government of India grant in the range of INR ~11k crores, the rest will be largely financed from market borrowings. Over INR ~80 L crores will need to be raised as debt to build core infrastructure of Amaravati. This would result in interest payment burden in the range of INR ~8-10k crores every year. This could impact the government's ability to spend on other welfare schemes for the next ~10-15 years.

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3-10K Cr. of interest out-go expected in first 10-15 years if all trunk infra is built as per APCRDA plan

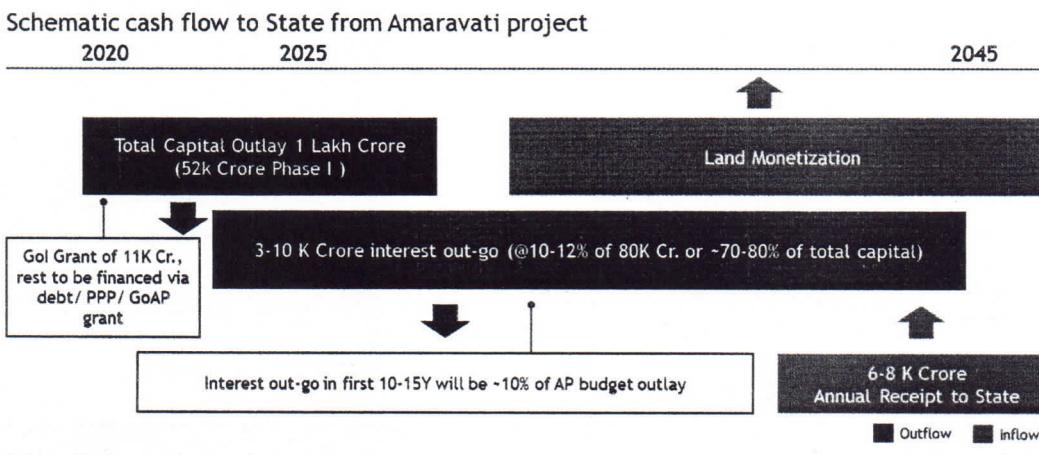


Fig 42. Schematic cashflow to State from Amaravati project

Opportunity cost of investments

Considering the four points raised above as well as the tight financial situation in the state, it is prudent for Government of Andhra Pradesh to weigh investment in Amaravati megacity against opportunity cost of investing similar amount in other planned development projects in the state.

As an illustration, we consider the Polavaram and Godavari-Penna river linkage which includes Polavaram dam, Bollepalli reservoir, Sujala Sravanti scheme and canal widening in Rayalaseema. These projects are expected to cost ~INR 1.3L Cr. in total. In terms of impact, it is expected these cumulatively might improve irrigation over 36,000 sq. KM, an area equivalent to nearly 50% of total agricultural land in AP. It may be noted that average agricultural realization in the state is ~INR 3.1 Cr. per sq. KM. In multiple cases, enhanced irrigation improves crop yield by 2-3 times. This translates to a GSDP boost of ~INR 2 L Cr. from these projects.

Comparing this with Amaravati, it may be seen that these projects require similar investments as Amaravati. However, the time horizon is 5-7 years compared to 30+ years

for Amaravati. Further, the risk involved is also low as the economic returns from irrigation projects are guaranteed as farmers in the state are highly reliant on rain fed agriculture, and thus a reliable supply of water will guarantee better agricultural produce:

GOAP has to consider the full shelf of projects and then decide the overall prioritization.

Opportunity cost: Proposed investment needs to be weighed against other projects conceived in the state -Illustrative

Investment	~1L Cr.	~1.3L Cr.
Impact on GSDP	~80-120 k Cr.	~150-200 k Cr. (From increased irrigation alone)
Time to maturity	~30-40 years	<5 years
Risk	High	Low

Amaravati Mega-city development

Polavaram
Bollepalli Reservoir
Sujala Sravathi
Rayalaseema canal widening

Assumptions: Polavaram main project will provide irrigation and balance irrigation to ~67 lakh acres, Bollepalli to ~11 lakh acres and Sujala Sravathi to ~10. Considering a total of new irrigation/balanced irrigation coverage of ~90 lakh acres which is ~30k sq. km. Average agricultural realization of 3.43 Cr. per Sq. KM assumed. Irrigation assumed to increase productivity by 2-2.5 times
Source: AP Govt, Expert Inputs

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Fig 43. Comparison of Amaravati against other select projects in the state

7.3.4 Summary of perspectives on proposed investments in megacity

The following section summarizes the analysis and learning from the benchmarking of green field cities around the world and Amaravati financial risk-return analysis:

- i. Mega cities can act as economic drivers for a region as observed in London, Tokyo and other cities
- ii. Successful "green field" megacities usually have a compelling economic starting point like Shenzhen (HK) and Navi Mumbai (Mumbai city)
- iii. However, in the absence of a starting point, green field cities require significant investment, have long gestation period and are risky
 - a. Total investments > USD 1Bn /10K inhabitants needed to build a world class city

- b. New cities take 30-60 years to reach scale [grow typically at less than 7% CAGR]
- c. ~95% of green field cities conceived over last 50 years have failed
- d. Location of capital alone does not necessarily provide economic momentum for a green field city
- iv. As per master plan, Amaravati's vision is to reach population of 1.5-2 Mn and GDP of INR 80 -120K Cr. by 2045
 - a. GoAP revenue by 2045 may be ~INR 8000-10000 Cr.
 - b. Amaravati will need to grow at ~15% to reach this target [significantly higher than the fastest growing megacities like Dubai]
- v. INR 1 Lakh Cr. needed to build core infrastructure for Amaravati (source: APCRDA)
 - a. ~95% of this will need to be funded by debt; ~5% may be executed via PPP models like HAM or BLT
 - b. State Government already has INR 2.25 Lakh Cr. debt on its book (25% debt to GSDP ratio)
 - c. Cost of overall funding could exceed 10%
- vi. To recover principal amount, Government will need to target land prices of INR 20 Cr. per acre from commercialization
- vii. Investments as per plan would result in interest/ annuity out-go of INR 8000-9000 Cr.
 - a. Interest/ annuity out go will represent ~6-8% of AP budget outlay and needs to be looked together with planned welfare spending

7.3.5 Proposed way ahead for Amaravati

In the light of discussion above, GoAP may prioritize economic themes in Amaravati which have lesser risk and need lesser initial capital outlay.

The region had 25,000+ farmers who had 33,000+ Acres of land between them. Basis the value assessed for annuity payments, the GVA of this region could have been ~INR 200-300 Cr. annually.

The themes for which the region already has a very strong starting point should be the focus area for immediate development. If investments are directed towards these themes, a better risk weighted economic development and growth is possible.

GoAP may prioritize the following economic themes for Amaravati region:

- Hi-Tec Agriculture: Considering that Guntur district and the Amaravati region especially is endowed with extremely fertile black soils, export focused organic agriculture like jasmine rice can be promoted among the farmers
- Food and Fisheries: Guntur chilies and other horticulture crops are well known around the world, and the region has the potential to attract food processing companies to set up manufacturing in the region. Additionally proximity to the Nizamapatnam port, creates opportunity for export focused sea food processing in the region
- Education hub: Vijayawada has historically been known as the center for education in the state. Additionally four educational institutions have already come up in the Amaravati region

These themes should serve as a starting point for the region. The GoAP should invest in these themes initially, drive economic growth and then scale up to continue the holistic development of Amaravati region.

8. Seat of Government in AP

The Government of Andhra Pradesh wishes to explore distributed capital model. The section analyses the applicability and potential mode of operation of distributed capital model for the state of Andhra Pradesh as per Government's direction. The section highlights Andhra Pradesh's unique case of multiple reorganizations and historical commitments made to regions along with these reorganizations. The section includes global and local precedents of distributed capital model in different forms including situations under which countries and states resort to distributed capital model. Further, 'design principles' are discussed in depth which provide guidelines to evaluate applicability of available options for the optimal capital model.

Andhra Pradesh's unique historical context

Andhra Pradesh has unique historical context – the state has witnessed multiple historical reorganizations. Before 1953, it was part of bigger Madras State. In 1953 Telugu speaking portion of Madras State was carved out to create the new state of Andhra. In 1956, the new Andhra State was merged with Telangana region of erstwhile Hyderabad State to create the state of Andhra Pradesh. More recently in 2014, the state was bifurcated into Telangana and Andhra Pradesh as per Andhra Pradesh Reorganisation Act.

Underlying these reorganizations are significant sub-regional aspirations. This has manifested in demands for representation in form of part of capital being located in respective regions. This also reflects in multiple pacts made by sub-regions of AP for distributing capital and other functions of the state. Sri Bagh Pact of 1937 was an agreement between costal Andhra and Rayalaseema regions for the demand of Andhra State. The agreement was to ensure more equitable distribution of regional representations in government. Central theme of the pact was Decentralization of government and location of key elements of the government - University, Headquarters and High Court in different regions. Similarly, Gentlemen's Agreement of 1956 was signed while merger with Telangana region.

Given this unique context of Andhra Pradesh, the Government of AP wishes to understand how a distributed capital model could for the state.

Andhra Pradesh has unique historical context which lead to the consideration of a distributed capital vs. a single capital in Amaravati

Andhra Pradesh has seen significant sub-regional aspiration since its separation from Madras State in 1953 and subsequent merger with Telangana in 1956

This has resulted in movement for separate statehood for Telangana and eventual bifurcation in 2014

Regions in AP have demanded distributed capital from the inception of the state

- Sri-bagh pact of 1937 decided that three parts of Government (as considered then) - University, HQ and High Court shall be distributed across three regions of AP

GoAP asked BCG to evaluate a distributed capital model and its suitability in the context of the state

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Fig 44. Historical context of AP

8.1 Situations under which countries/states resort to distributed capitals

Distributed capital is not an uncommon concept. Internationally many countries and

locally many states have adopted distributed capital model to meet their unique situations.

Typically distributed capital is adopted in the following three contexts

- **Balancing regional aspirations:** Countries such as South Africa opted to distribute capitals due to competing aspirations from three regions – Orange Free State, Transvaal and Cape of Good Hope. When the Union of South Africa was formed in 1910, compromise was reached to balance regional aspirations. Three different cities of Pretoria, Cape Town, Bloemfontein host the three branches of the government. Currently, the administrative capital is Pretoria which hosts Executive branch including the President. Geographically, Pretoria is located North East of the country. The legislative capital of the country is Capetown, located in

the South West of the country. Bloemfontein located in the centre of country hosts the Supreme Court.

In India, Nagpur and Vidarbha region became part of the Maharashtra State in 1956 and to preserve the historical significance of Nagpur, Nagpur Pact was signed which ensured that Nagpur hosts one legislature session of Maharashtra state every year.

In Karnataka, to satisfy the regional aspirations of North Karnataka, which was earlier part of Bombay Provinces, Belagavi located in North West hosts the winter session of the legislature.

- **Honouring historical commitments:** In some cases historical commitments led to creation of multiple capital cities. For example, in Germany, Berlin was the country's capital before the division of country into West and East Germany. After division of the country post World War II Berlin became the capital of East Germany while Bonn became the capital of West Germany. After the unification of Germany in 1990, Berlin-Bonn Act was created to share the capital of country between Berlin and Bonn. Similarly, Estonia chose to have judicial capital at Tartu while Tallinn is the other capital to honour historical commitments.
- **When existing capitals are overcrowded:** The third situation which prompts distributing capital is when the existing capital become too crowded and saturated. South Korea is such an example - existing capital Seoul, which is also the most populous city with population of ~10 million, became too crowded and the government chose to shift part of Government out of Seoul to Sejong City, located 75 miles south of Seoul.

Below figure depicts some more examples of distributed capital from other countries and India states. Ten countries and three Indian states have chosen to locate at least one of the three wings of government – Legislature, Executive and Judiciary in different cities. There are seven states - Rajasthan, Uttar Pradesh, Madhya Pradesh, Chhattisgarh, Kerala, Uttarakhand and Odisha where the seat of High Court is located in a different city. For example in Rajasthan, while the high court was established in Jaipur in 1949, it was moved to Jodhpur after the state's

reorganization. Similarly, in Madhya Pradesh, the high court was established in Jabalpur after the state reorganization in 1956.

Examples of distributed capital model

Country	Capital Cities
South Africa	Pretoria, Cape Town, Bloemfontein
Malaysia	Putrajaya, Kuala Lumpur
Netherlands	Amsterdam, The Hague
Czech Republic	Prague, Brno
Estonia	Tallinn, Tartu
Chile	Santiago, Valparaiso
Bolivia	Sucre, La Paz
Burundi	Gitega, Bujumbura
Germany	Berlin, Bonn, Kalsruhe
South Korea	Seoul, Sejong City

3 states with legislature outside executive capital

State	Model
Karnataka	Winter session in Belagavi
Maharashtra	Winter session in Nagpur
Himachal Pradesh	Winter session in Dharamsala

7 states with High court outside executive capital

State	Executive Capital	High Court
Uttar Pradesh	Lucknow	Allahabad
Rajasthan	Jaipur	Jodhpur
Madhya Pradesh	Bhopal	Jabalpur
Chhattisgarh	Raipur	Bilaspur
Kerala	Thiruvananthapuram	Kochi
Uttarakhand	Dehradun	Nainital
Odisha	Bhubaneswar	Cuttack

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Fig 45. International examples of distributed capital

The distributed capital models in Germany, South Korea and Karnataka are elaborated further below.

Germany

In Germany, as discussed earlier, Berlin is the seat of Federal Parliament, Chancellor's office and some executive departments vis Interior, Finance, Justice, Labor and Social Affairs, Transport, Building and Urban, Family, Seniors, Women and Youth. Bonn hosts remaining executive departments vis Food, Agriculture and Consumer, Health, Environment and Nature, Education and Research etc. Further, the seat of the Federal Court of Justice is Karlsruhe. About two-thirds of government officials are located in Berlin while remaining one-third officials are located in Bonn. To coordinate between the administrative capital of Berlin and Bonn, government officials frequently travel between these two cities.

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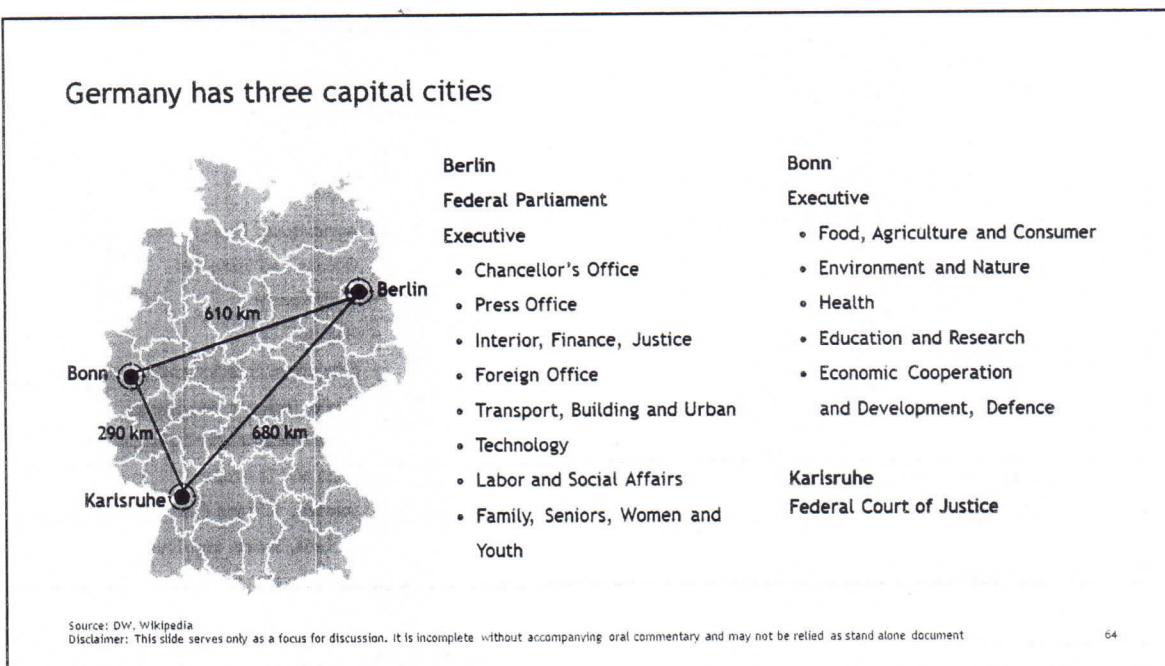


Fig 46. International example (Germany)

South Korea

Sejong was conceived as the new national capital of South Korea to reduce the congestion in country's existing capital city, Seoul.

The initial goal was to shift the entire capital to Sejong. However, currently the national assembly, Supreme Court and some Executive departments are still situated in Seoul. Few executive departments have moved to Sejong City (Education, Environment, Labor, Agriculture, Culture and Trade). Sejong's current population is 0.3 million and targets to reach population of 0.5 million by 2030 – compared to the population of ~10 million in Seoul.

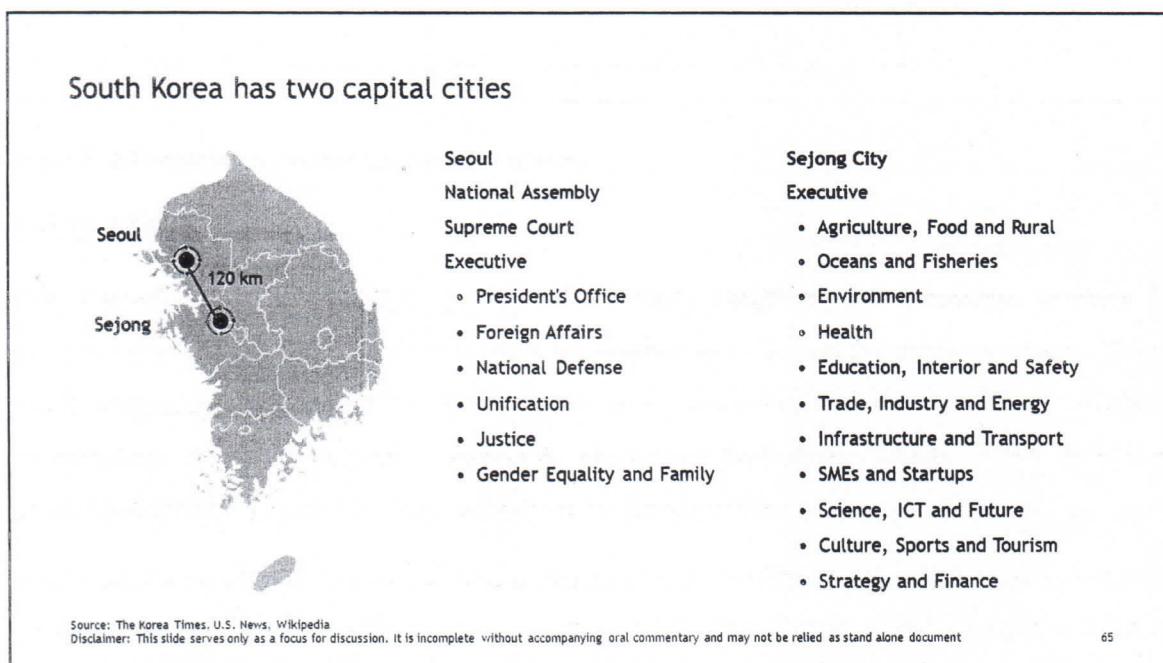


Fig 47. International example (South Korea)

South Africa

The Republic of South Africa is a parliamentary republic with three-tier system of government and an independent judiciary, operating in a parliamentary system. There are 9 provinces in South Africa, each with its own Government. There are three levels of government in South Africa – national, provincial and local. These three levels of government have legislative and executive authority in their own spheres.

South Africa has three capitals – executive capital at Pretoria, legislative capital at Cape Town and judicial capital at Bloemfontein. The distributed capital model was setup in 1910 when the Union of South Africa was formed. At that time, there were four provinces which were merged – Boer provinces of Transvaal and Orange Free State and British provinces of Natal and Cape of Good Hope. There were demands from each of these provinces to host the capital. As a compromise the three cities Pretoria, Bloemfontein and Cape town were chosen which were capitals of Transvaal, Orange Free State and Cape of Good Hope Respectively.

Pretoria hosts the executive capital. It hosts the President, Deputy President and 28 executive departments. The President is the head of executive in South Africa. He is elected by the Parliament to serve a fixed term. Cabinet Ministers are appointed by the President. While the President has to resign membership of National Assembly upon appointment, cabinet ministers continue to hold membership.

Cape Town hosts the parliament of South Africa. The Parliament of South Africa consists of the National Assembly, which is the lower house and the National Council of Provinces which is the upper house. In ordinary legislation, the two chambers have similar powers, but all proposals for appropriating revenue or imposing taxes must be introduced in the National Assembly. During the sessions of the parliament, key Government functionaries travel to Cape Town. The key personnel are provided both office and accommodation facilities at both Pretoria and Cape Town.

Bloemfontein hosts three supreme courts of South Africa – the Constitutional Court, Supreme Court of Appeal and the High Court.

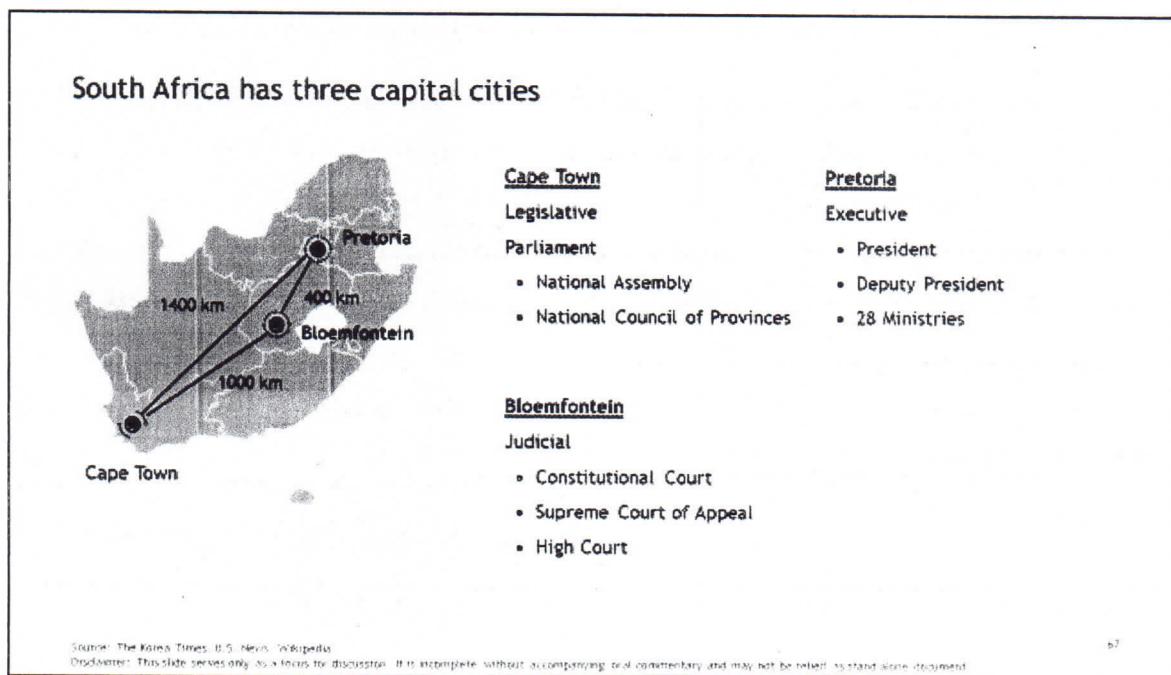


Fig 48. International example (South Africa)

Karnataka

In Karnataka, some northern part of the state including Belgaum district was earlier part of Bombay Presidency and was reorganised with Karnataka state in 1956. To ensure the regional aspiration of North Karnataka Belagavi was selected to host the winter session of state's legislature. The new legislature building, Suvarna Vidhana Soudha, was created in Belagavi in 2012. During winter sessions members of the house and senior officials from government and support staff visit and temporarily stay in Belagavi. While there are no major government accommodations in the city, visiting members and officials stay in nearby hotels.

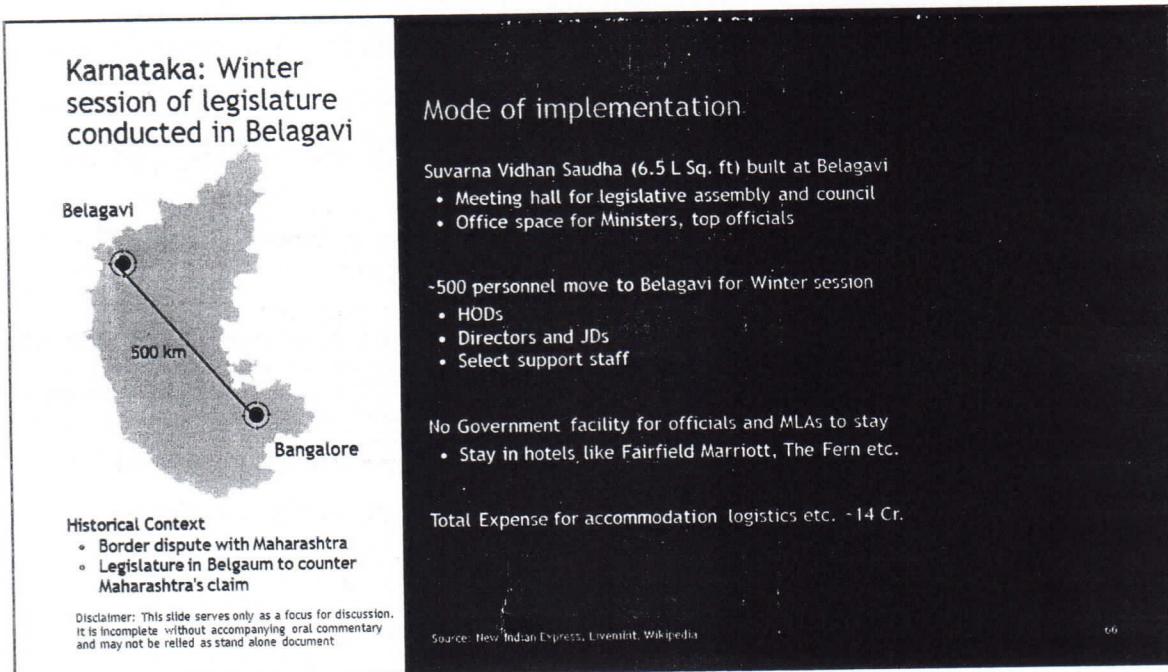


Fig 49. Example (Karnataka)

8.2 Design principles to decide the optimal distributed capital model

To evaluate the optimal distributed capital model following four design principles are considered

1. **Address regional aspirations:** As discussed earlier, the state of Andhra Pradesh is unique and has significant sub-regional aspirations. Any capital model should

take into account the aspirations of different regions in the state - North Coastal Andhra Pradesh, South Coastal Andhra Pradesh and Rayalaseema. Adequate representation of all three regions in the government becomes critical.

2. **Enable easy co-ordination between wings of Government:** Another important design principle is ease of coordination between the wings of government, to ensure smooth functioning of government and delivery of services to citizens in future. Hence, co-location of certain wings of the government is evaluated.
3. **Should minimize cost of setup:** Given the current state of finances it becomes prudent to ensure minimal cost of setup for the capital. Hence this will take into account the available physical and social infrastructure to reduce expenses on creation of new facilities.
4. **Should enable easy citizen access to services:** The capital model should enable easy access of government services to its citizens and hence governance should be brought closer to the public.

These four design principles are considered as building principles for the distributed capital model.

8.2.1 Design Principle 1: Address regional aspirations

To ensure regional representation, top three cities in each of the three regions are considered and evaluated on five point criteria. The evaluation criteria has two major themes - *Significance of the city* and *Feasibility of hosting capital in the city*.

Significance: This has three major sub criteria

1. **Size of City:** Population is considered as a parameter for measuring the size
2. **Regional representation:** Top three cities from each of the 3 regions - North Coastal Andhra Pradesh, South Coastal Andhra Pradesh and Rayalaseema considered

3. **Historical context:** Historical commitments such as Sribagh Pact made to different cities considered

Feasibility: This has two major sub criteria

4. **Existing physical infrastructure:** To ensure feasibility of cities hosting the capital, availability of existing physical infrastructure such as building space, land parcel, commercial and residential stock and connectively (rail, road and air) were considered. Basis these each of the nine cities are rated as High (H), Medium (M) and Low (L).
5. **Existing social infrastructure:** Availability of social infrastructure which includes quality education facility, commercial and entertainment facilities is important. Hosting of government will require movement of a large number of officials and staff to these cities and hence social infrastructure is critical to ensure standard quality of living. Basis these each of the nine cities are rated as High (H), Medium (M) and Low (L).

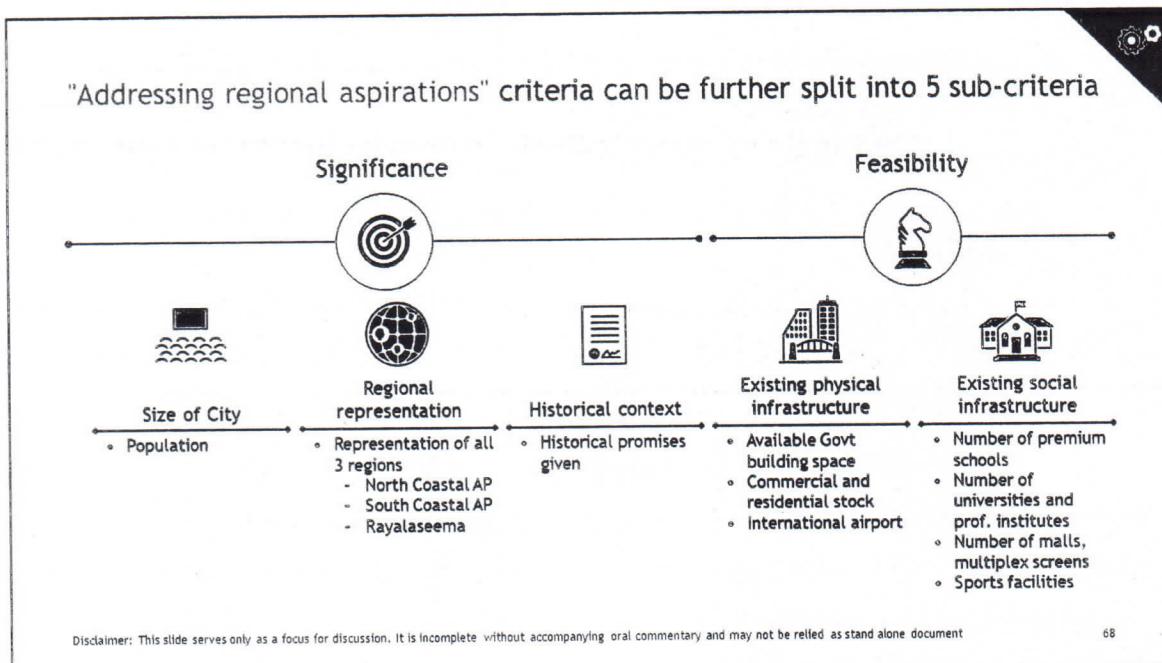


Fig 50. Address regional aspirations: Selection basis five point criteria

To fulfill the regional aspirations, three main cities from each of the three regions of the state were considered.

North Coastal AP

1. **Vishakhapatnam:** The most populous city of the region which already has the best physical infrastructure including operational international airport with direct international connectivity. In addition, it has good road and rail connectivity - NH 16 (Golden Quadrilateral) passes through the city, it has A1 railway station with 8 platforms. Historically also the city was promised University as part of Sribagh Pact. In terms of Social infrastructure the city hosts the highest quality of education including 4 central Institutions / Autonomous Universities, commercial and entertainment facilities.
2. **Rajahmundry**
3. **Kakinada**

South Coastal AP

1. **Vijayawada (inc. Amaravati):** The city is the most populous city in the region and was declared as state capital after Telangana bifurcation. The city has some existing infrastructure for government including a legislative assembly and six temporary secretariat blocks. The city has good road, rail and air connectivity - NH 16 passes through the city, has A1 railway station with 10 platform and domestic air connections to New Delhi, Chennai, Bengaluru etc. The city has numerous education, commercial and entertainment facilities.
2. **Guntur**
3. **Nellore**

Rayalaseema

1. **Kurnool:** The most populous city in the region and historical commitment was made to the city (Promised capital as part of Sribagh Pact). Physical and Social infrastructure is relatively better compared to the other two cities in the region.

2. Kadapa

3. Tirupati

Basis the above analysis, the cities of **Vishakhapatnam, Amaravati and Kurnool** are prioritized from each of the three regions. The analysis is also shown in figure below:

Vishakhapatnam, Amaravati & Kurnool prioritized basis "regional aspiration" criteria

		Population (Million)	Historical Context	Physical Infrastructure	Social Infrastructure	
Top 3 cities of each region considered						
1	Vishakhapatnam	1.7	<input checked="" type="checkbox"/> Promised university as part of Sribagh Pact	H	H	<input checked="" type="checkbox"/>
	Rajahmundry	0.3		M	L	
	Kakinada	0.3		L	L	
2	Vijayawada (inc. Amaravati)	1.0	<input checked="" type="checkbox"/> Declared new capital of AP	M	M	<input checked="" type="checkbox"/>
	Guntur	0.7	<input checked="" type="checkbox"/> Promised HC as part of Sribagh Pact	M	M	
	Nellore	0.5		L	L	
3	Kurnool	0.4	<input checked="" type="checkbox"/> Promised capital as part of Sribagh Pact	L	M	<input checked="" type="checkbox"/>
	Kadapa	0.3		L	L	
	Tirupati	0.3		L	L	
Infrastructure Score						
	(H) High	(M) Medium	(L) Low	Disclaimer: This slide serves only as a focus for discussion. It is incomplete without accompanying oral commentary and may not be relied as stand alone document		

Detailed rationale for city selection		
Visakhapatnam	Vijayawada (inc. Amaravati)	Kurnool
Largest city in AP <ul style="list-style-type: none"> ◦ Population of 1.7 Mn 	Existing Govt complex <ul style="list-style-type: none"> ◦ Has 6.2L sq feet of building space across legislative assembly and six temporary secretariat blocks 	Government land <ul style="list-style-type: none"> ◦ 3m sq. feet of government land
Best connectivity in AP <ul style="list-style-type: none"> ◦ NH 16 (Golden Quadrilateral) ◦ A1 railway station with 8 platforms ◦ International air with 10 weekly international flights 	Good connectivity <ul style="list-style-type: none"> ◦ NH 16 ◦ A1 railway station (10 platform) ◦ Domestic air connections to New Delhi, Chennai, Bengaluru 	Connectivity <ul style="list-style-type: none"> ◦ NH 44 (North-South Highway) ◦ Railway station, domestic airport
Best social infrastructure <ul style="list-style-type: none"> ◦ Free residential stock of ~5000 units ◦ 32 top tier schools ◦ 4 central universities ◦ 3 movie screens, 12 malls, 1 international stadium 	Social infrastructure from Vijayawada could be leveraged <ul style="list-style-type: none"> ◦ Top schools (16) & central universities (3) 	Social infrastructure <ul style="list-style-type: none"> ◦ 8 top tier schools ◦ One central university IIITDM Kurnool ◦ 7 commercial malls

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Fig 51. Evaluation of cities in each region

Vishakhapatnam lies in a cyclone prone region, the most recent being cyclone Hudhud in 2014. Hence the government must explore suitable disaster management initiatives and deploy latest disaster management technologies in order to control the impact of any such natural disasters.

8.2.2 Design Principle 2: Enable easy co-ordination between wings of Government

To evaluate the ease of co-ordination, engagement of government departments with other departments and external stakeholders are considered. Basis this the government is considered as the sum of 8 packages –

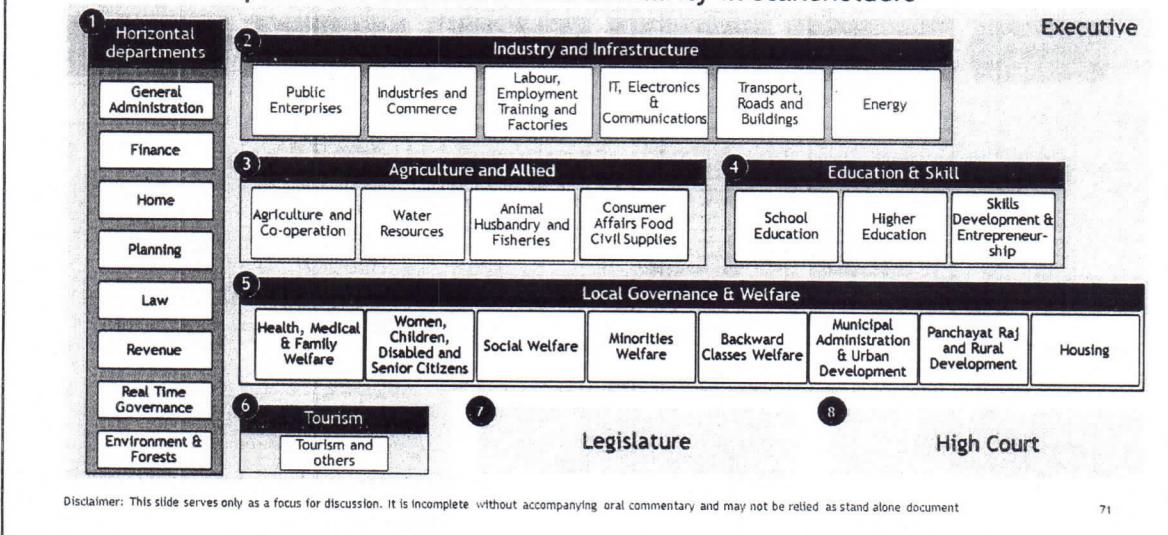
- 1. Horizontal departments:** Most other government departments engage frequently with these eight horizontal departments - *General Administration* for personnel appointment, promotion, leaves etc. *Finance* for financial proposals, and review of department schemes. *Home* for security cover across departments. *Planning* for collation of socio economic data. *Law* for advice and information on legal matters. *Revenue* for land, excise, commercial taxes. *Real Time Governance* for Grievance redressal across departments and *Environment & Forests* for forest land usage. Hence,

Horizontal departments should be considered as one group while exploring location options.

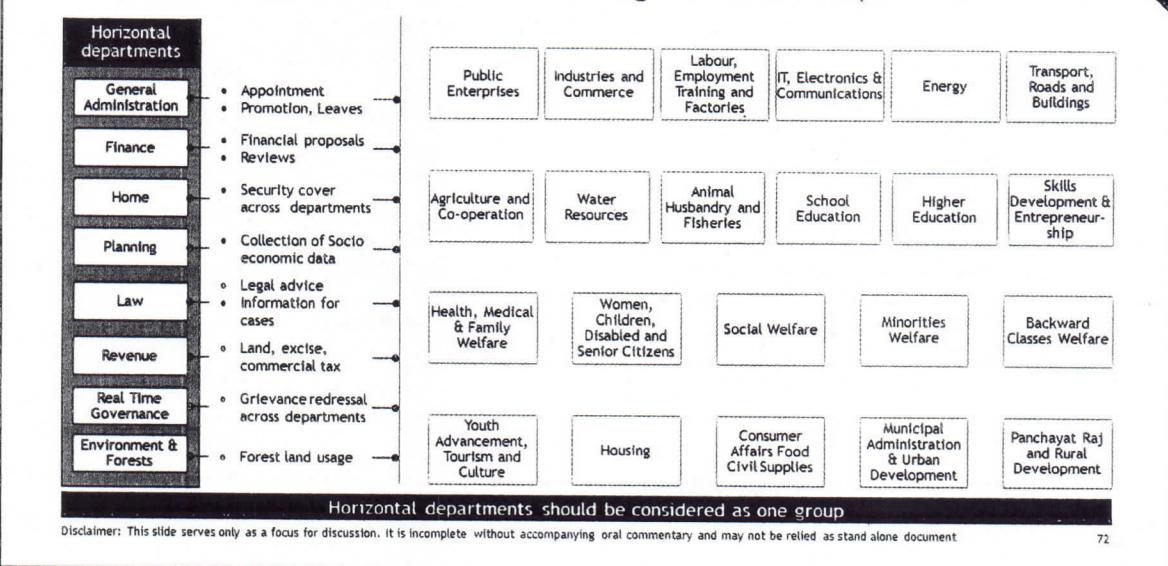
2. **Industry and Infrastructure:** Departments like *Industries and Commerce, Transport, Roads and Buildings, Public Enterprises, Labour, Employment Training and Factories, IT, Electronics & Communications and Energy* have similar stakeholders (such as investors, technology partners etc.) and should be considered as a group.
3. **Agriculture and Allied:** Departments like *Agriculture and Co-operation, Animal Husbandry and Fisheries, Consumer Affairs Food Civil Supplies and Water Resources* have similar stakeholders (such as farmers, agro processing units etc.) should be considered as a group.
4. **Education & Skill:** Departments like *School Education, Higher Education and Skills Development & Entrepreneur-ship* should be considered as a group.
5. **Local Governance & Welfare:** Departments like *Health, Medical & Family Welfare, Social Welfare, Backward Classes Welfare, Women, Children, Disabled and Senior Citizens, Minorities Welfare, Municipal Administration & Urban Development, Panchayat Raj and Rural Development and Housing* should be considered as a group.
6. **Tourism:** Should be considered as a group
7. **Legislature**
8. **High Court**

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"Ensuring easy co-ordination": Government could be considered as 8 packages basis inter-department interaction and similarity in stakeholders



Most departments have interactions with Eight horizontal departments



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Five clusters emerge basis similarity of stakeholders

Stakeholder category	Farmers & allied	Industry & Infrastructure	Education personnel	General Citizens	Others
	Agriculture and Co-operation	Public Enterprises	School Education	Health, Medical & Family Welfare	Tourism and Others
	Water Resources	Industries and Commerce	Higher Education	Women, Children, Senior Citizens	
	Animal Husbandry and Fisheries	Labour, Training & Factories	Skills & Entrepreneurship	Social Welfare	
	Consumer Affairs Food Civil Supplies	IT, Electronics & Communications		Minorities Welfare	
		Transport, Roads and Buildings		Backward Classes Welfare	
		Energy		Municipal & Urban Development	
				Panchayat Raj & Rural	
				Housing	

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Fig 52. Government could be considered as eight packages basis interactions and stakeholders

Combining the first two design principles – **Address regional aspirations** and **Enable easy co-ordination between wings of Government**, we have summarized the first and second location preferences for 8 packages of the government across the three prioritized cities of **Vishakhapatnam, Amaravati and Kurnool**.

1. **Legislature:** Vijayawada (inc. Amaravati) can be the first preference as it can leverage existing infrastructure/setup already developed in the city. The city has a functional building space for legislative assembly and six temporary secretariat blocks. Visakhapatnam can be considered as the second preference.
2. **Judiciary:** Given the historical commitment made to the city of Kurnool as part of Sribagh Pact, first preference for Judiciary is Kurnool. Second preference can be either Visakhapatnam or Vijayawada (inc. Amaravati)
3. **Horizontal Departments:** Visakhapatnam is the biggest city and can absorb the physical and social requirement for the government – hence it

is the first preference for locating Horizontal departments. Vijayawada (inc. Amaravati) can be second preference.

4. **Industry & Infrastructure:** Given the prominence of Visakhapatnam as the industrial hub of Andhra Pradesh and proximity and connectivity for critical stakeholders such as investors, technology partners it is the first preference of location of the group. Vijayawada (inc. Amaravati) can be second preference.
5. **Agriculture & allied:** Vijayawada (inc. Amaravati) is the first choice of hosting this group as the region is the biggest agriculture hub and its central location will make it equally accessible to all three regions of the state. Visakhapatnam can be considered as the second preference.
6. **Education & Skill:** Vijayawada (inc. Amaravati) is the first choice of hosting this group as Vijayawada has been an education hub and its central location will make it equally accessible to all three regions of the state. Visakhapatnam can be considered as the second preference.
7. **Local Govt & Welfare:** The group has common citizens as key stakeholder which are distributed across the state. Hence central location for this group is preferred - Vijayawada (inc. Amaravati) is the first preference. Visakhapatnam can be considered as the second preference.
8. **Tourism:** Owning to better domestic and international connectivity Visakhapatnam can be considered as gateway to the state for incoming tourists. Hence, Visakhapatnam is the first preference for hosting Tourism group.

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Basis first two design principles, priority locations identified for parts of Government

Govt Organ/department	First preference	Second preference
Legislature	Vijayawada (inc. Amaravati) <ul style="list-style-type: none"> • Can leverage existing Infrastructure / setup 	Visakhapatnam
Judiciary	Kurnool <ul style="list-style-type: none"> • Historical commitment as part of Sribagh Pact 	Visakhapatnam Vijayawada (inc. Amaravati)
Horizontal Departments (8)	Visakhapatnam <ul style="list-style-type: none"> • Biggest city - can absorb the requirements 	Vijayawada (inc. Amaravati)
Industry & Infrastructure (6)	Visakhapatnam <ul style="list-style-type: none"> • Industrial hub of AP • Proximity to stakeholders - Investors, tech. partners 	Vijayawada (inc. Amaravati)
Agriculture & allied (4)	Vijayawada (inc. Amaravati) <ul style="list-style-type: none"> • Biggest agri region, easy accessibility for rest of state 	Visakhapatnam
Education & Skill (3)	Vijayawada (inc. Amaravati) <ul style="list-style-type: none"> • Edu hub, easy accessibility for rest of state 	Visakhapatnam
Local Govt & Welfare (8)	Vijayawada (inc. Amaravati) <ul style="list-style-type: none"> • Central location for distributed stakeholders 	Visakhapatnam
Tourism (1)	Visakhapatnam <ul style="list-style-type: none"> • Best connected city 	

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Fig 53. Priority locations identified for parts of government

Based on above two design principles, two possible options emerge for the distributed capital model. The common theme across both the options are location of Governor, CM establishments Secretariat and Legislative Assembly (for emergency sessions) in Visakhapatnam, High Court in Kurnool with additional High Court benches in Visakhapatnam and Amaravati and Legislative Assembly in Amaravati. The difference between the two options are location of Executive department groups and HOD offices – In Option 1, Visakhapatnam will host Industry & Infrastructure group and Tourism group, Amaravati will host Education & Skill, Agriculture and Allied and Local Governance & Welfare groups. In Option 2, all Executive department groups and HOD offices will be hosted in Visakhapatnam.

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Two options possible for distributed capital model

Rationale	Option 1	Option 2
Visakhapatnam	All packages placed at first preference location	Keep all parts of a government organ together in a city
	Secretariat	Secretariat
	Governor and CM establishments	Governor and CM establishments
	HOD office	HOD office (all departments)
	<ul style="list-style-type: none"> • Industry & Infrastructure (6 depts) • Tourism (1 dept) 	Legislative Assembly (for emergency sessions)
	Legislative Assembly (for emergency sessions)	High Court Bench
Amaravati	High Court Bench	High Court Bench
	Legislative Assembly	Legislative Assembly
	HOD office <ul style="list-style-type: none"> • Education (3 depts) • Agriculture (4 depts) • Local Govt & Welfare (8 depts) 	High Court Bench
Kurnool	High Court Bench	High Court Bench
	High Court <ul style="list-style-type: none"> • Incl. State Commissions, Appellate bodies 	High Court <ul style="list-style-type: none"> • Incl. State Commissions, Appellate bodies

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Fig 54. Two options possible for distributed capital model

8.2.3 Design Principle 3: Minimize cost of setup

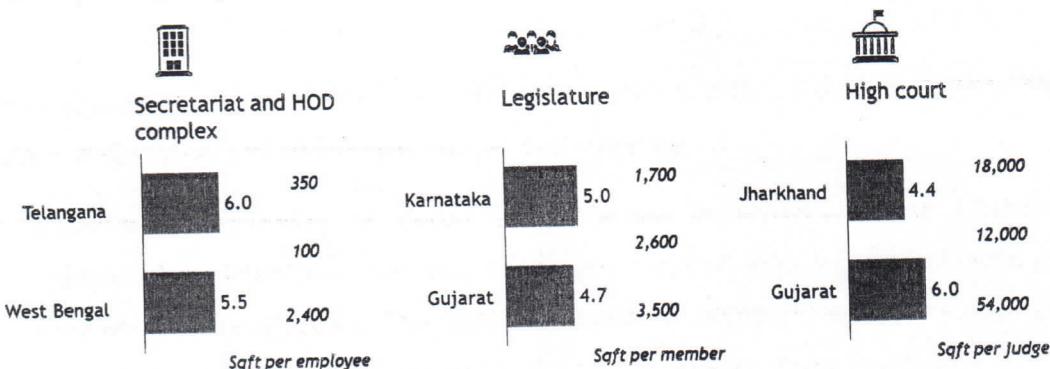
To add more perspective on the two choices we have applied the remaining two design principles – a) minimize cost of setup and b) enable easy citizen access to services.

To evaluate broader cost estimates, we have considered some available benchmarks for the required size of government complexes and construction cost estimates. While required size of government buildings is very subjective and depends on multiple factors such as availability of land, future growth expectations, land and building norms, location of buildings, features, facilities and amenities in the building etc. it can give some directional estimates. Similarly, cost of construction depends on multiple factors such as availability of input materials, soil condition, and topography of the region, climate, labor, required finishing and scale of required construction.

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Cost of setup: Benchmarking undertaken to identify space requirements

Figures in Lakh Sq. Feet



1. Telangana secretariat employee count estimated at ~1700, basis provisional allotment of employees for the two secretariats 1,060 in Andhra Pradesh and 805 in Telangana in 2014. West Bengal secretariat employee reported at 6,000. Andhra Pradesh total secretariat staff -2300
2. Total strength of Karnataka legislature across two houses 304. Strength of Gujarat Legislature 182. Total Strength of Andhra Pradesh Legislature 233 (Vidhan Sabha 75 + Vidhan Sabha 58)
3. Sqft per Judge based on approved Judge Strength as on 01/12/2019 - Andhra Pradesh (37 Judges), Gujarat (52 Judges), Jharkhand (25 Judges). Jharkhand High Court complex ground coverage area of 2.2 Lakh sq. feet (assumed FAR 2)
Source: MCP, Times of India, Business Standard, Karnataka Legislature, Gujarat Assembly
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Fig 55. Benchmarking to identify space requirements

Broad cost comparison indicates cost difference of INR 1,200-2,200 Cr. between the two options – majority of cost difference can be explained by

1. Relative unavailability of Social infrastructure in Amaravati and Vijayawada compared to Visakhapatnam and hence the required expenditure to create green field social infrastructure. The cost of creation of social infrastructure can be 60-80% of the total cost of construction of physical infrastructure like buildings.
2. Higher cost of Construction in Amaravati which is estimated at about 50% higher than Visakhapatnam due to unique soil condition, proximity to river front and lower level of bed rock.

The existing buildings at Amaravati Vis legislative assembly, temporary secretariat and accommodations with different percentages of completion have been factored into this analysis. Remaining sunk costs and costs that might arise in the region due to shifting of the capital have not been considered as it is out of scope.

Some key assumptions and estimates used for the above cost estimates are: Office space requirement per head at ~200 sq ft. mean of typical range of 150-250 sq ft.

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Legislature space per member ~2k sq ft. based on mean comparable benchmarks. Type 1 housing (~5k sq ft) for High Court Judges, Ministers and most senior bureaucrats (~1% of total secretariat staff). Type 2 (~1.7k sq ft) housing for MLAs, senior department employees (~15% of total secretariat staff), remaining secretariat staff and other employees considered for Type 3 housing (~1k sq ft). Available residential stock in Amravati considered at ~4k units (under construction ~60-70% complete). Cost of construction assumed to be INR 4,000 per sq ft in Vizag and Kurnool, INR 6,000 per sq ft in Amravati ; social amenities cost assumed to be 70% of office + accommodation cost; adequate social infrastructure already exists in Vishakhapatnam.

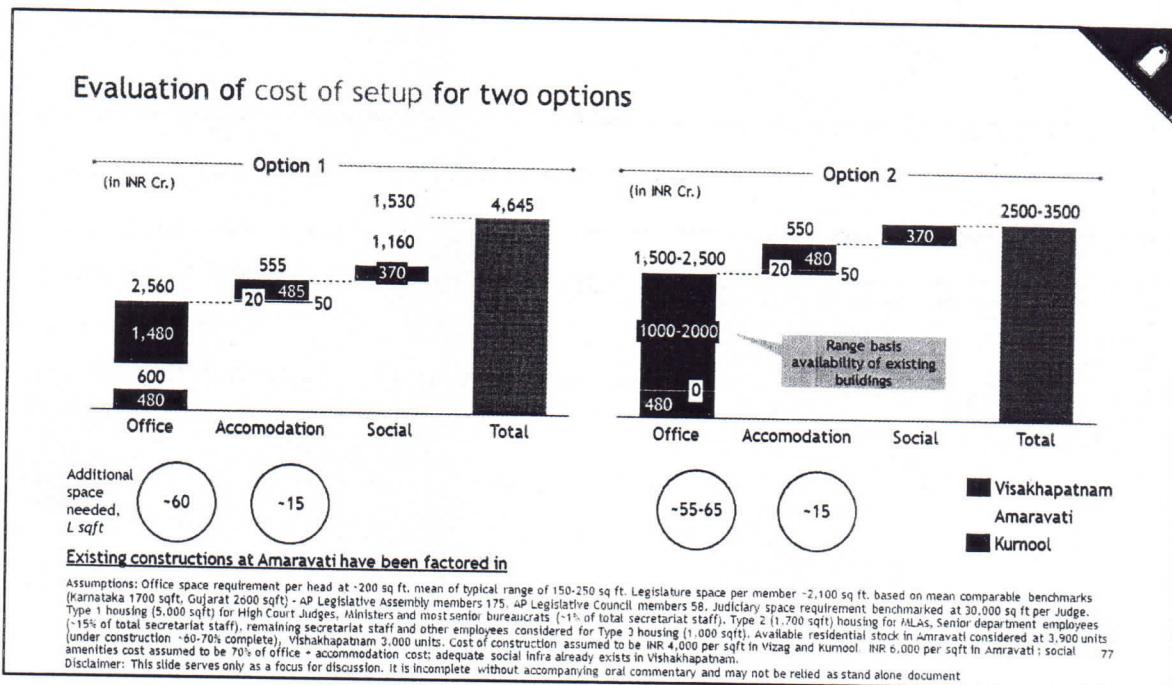


Fig 56. Evaluation of cost of set up for two options

8.2.4 Design Principle 4: Should enable easy citizen access to services (Government at door step)

It may be argued that if parts of Government shifts to Visakhapatnam, the distance to be travelled for ordinary citizens from southern part of the state would be high. To understand this further, exact nature of reasons for which citizens come to secretariat and alternate approaches to helping them have been studied.

Basis annualizing available visitor data at Secretariat gate, it is observed that nearly 1 lakh citizens visit secretariat annually. Further, ~80% of people visit three department clusters - Local Governance & Welfare, Horizontal departments and Industry and Infrastructure in that order.

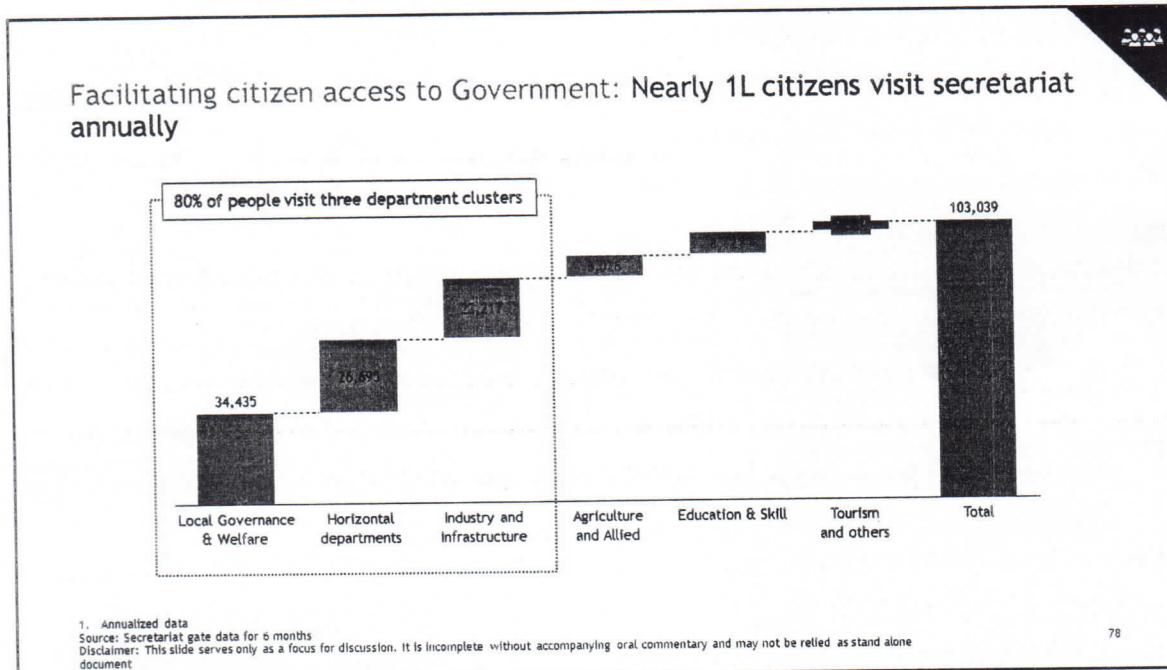


Fig 57. Nearly 1L citizens visit secretariat annually

Grievance redressal and applying for CM relief fund are some of the main objectives of citizen's visit to the secretariat. Grievance redressal include registering complaint on government benefits, Job application/ documents, Setting up/ repairing local facilities. Setting up intermediate co-ordination layers like satellite commissionerates in each region could be explored to effectively reduce citizen travel and improve ease of interaction.

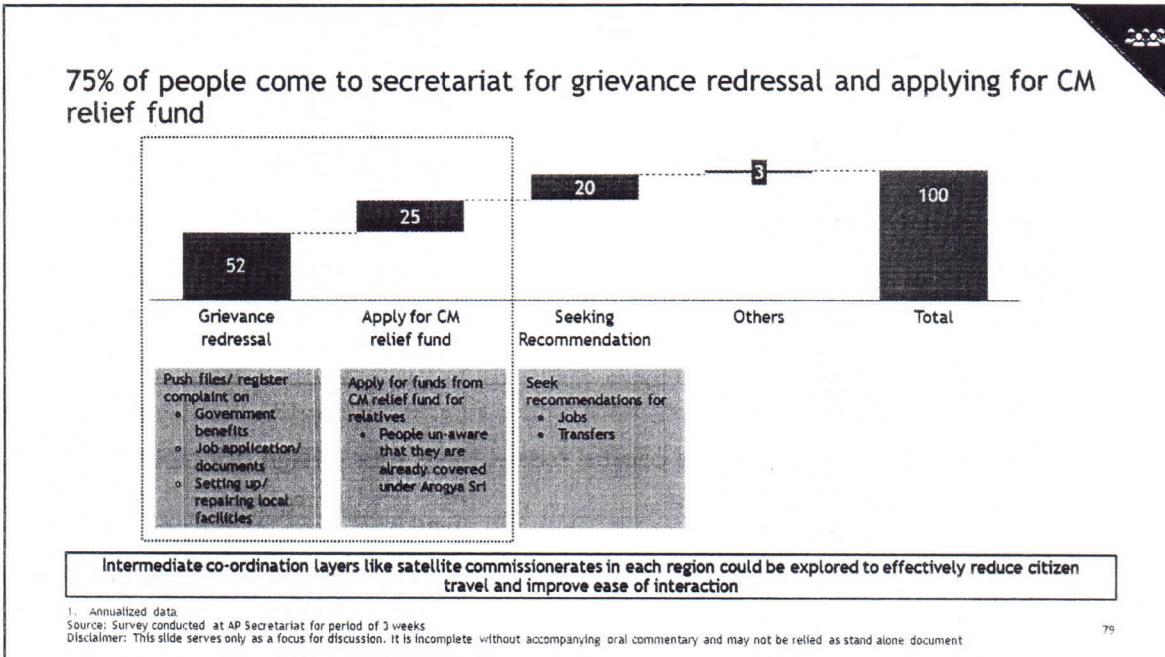


Fig 58. 75% of people come to secretariat for grievance redressal and CM relief fund

8.3 Summary - Option evaluation for distributed capital model basis 4 design principles

Summary evaluation of the two options on 4 design principles are

- 1. Regional representation:** High in both the options as all three regions are well represented.
- 2. Ease of co-ordination between departments:** Relatively lower in option 1 as frequent travels will be needed between Amaravati and Visakhapatnam compared to option 2.
- 3. Ease of setup:** Cost of set up will be lower in Option 2 as existing social amenities in Visakhapatnam could be leveraged more. In option 1, the cost of set up will be higher due to need to build social amenities in Amaravati and higher cost of construction.
- 4. Ease of citizen access:** While in option 2, citizens will need to travel to Visakhapatnam to meet key officials, the need for the same may be minimized by

having strong satellite commissionorate in South Andhra Pradesh. Hence ease of citizen access could be high in both the options if satellite commissionorates are setup in each region.

In considering the options above, the government may also keep in mind the commitments made to stakeholders especially farmers of the region and the whole state.

Option evaluation for distributed capital model basis four design principles

	Option 1	Option 2
Visakhapatnam	<ul style="list-style-type: none"> • Governor and CM establishments • Secretariat • HODs (15 departments) • Legislative Assembly (For emergency use) ◦ High Court Bench 	<ul style="list-style-type: none"> • Governor and CM establishments • Secretariat • HODs (All departments) • Legislative Assembly (For emergency use) ◦ High Court Bench
Vijayawada (Inc. Amaravati)	<ul style="list-style-type: none"> ◦ HODs (15 departments) ◦ Legislative Assembly ◦ High Court Bench 	<ul style="list-style-type: none"> ◦ Legislative Assembly ◦ High Court Bench
Kurnool	<ul style="list-style-type: none"> ◦ High Court and tribunals 	<ul style="list-style-type: none"> ◦ High Court and tribunals
[Relevant Accommodation]		[Relevant Accommodation]
Regional representation	<i>High as all three regions are represented</i>	<i>High as all three regions are represented</i>
Ease of co-ordination between departments	<i>Lower as frequent travels needed between Amaravati and Visakhapatnam</i>	<i>Higher as key personnel need to travel for assembly sessions only</i>
Ease of setup [Lower the cost, higher the ease]	<i>Expected to cost ~INR 4700 Cr. Higher due to need to build social amenities in Amaravati and higher cost of construction</i>	<i>Expected to cost ~INR 2500-3500 Cr. Lower cost as existing social amenities in Vizag could be leveraged more</i>
Ease of citizen access	<i>High if satellite secretaries are setup in each region</i>	<i>Visakhapatnam is far from South Andhra, however, access can be high if satellite secretaries are setup</i>
<u>GoAP may evaluate the options also keeping in mind the commitments made to stakeholders especially farmers of the region and the whole state</u>		

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Fig 59. Option evaluation for distributed capital model basis design principles

9. Considering implication on Stakeholders

Out of the 38,581 acres of land that was required for building Andhra Pradesh's new capital at Amravati, 32,637 acres was (89% of the requirement) given by farmers under the land pooling scheme. While procuring land under Land Pooling Scheme, the GoAP had made commitment to return reconstituted land per acre of land turned in as follows

	Dry	Jareebu
Patta		
Residential	1000 yd ²	1000 yd ²
Commercial	200 yd ²	300 yd ²
Assigned		
Residential	800 yd ²	800 yd ²
Commercial	100 yd ²	200 yd ²

Further, LPS granted benefits of per acre annuity for crop loss to be paid to the farmers at Rs 30,000 for dry and Rs 50,000 for semi urban lands for a period of 10 years. The benefit also included one-time additional payment of up to 1 lakh for gardens like lime, sapota, guava, amla and jasmine and up to Rs 1.5 lakh agriculture loan waver for each family.

Given the various commitments like annuities and pensions for a period of 10 years to the affected farmers by the previous Government, it is suggested that GoAP takes this into cognizance and works out a suitable program for the affected farmers.

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Appendix

Category	Overall							
Sub-Category	GDP							
	2018-19	2018-19	2018-19	2017 - 18	2017 - 18	2017 - 18	2017 - 18	2017 - 18
District	GDDP Current Prices (in Rs.)	GDDP Constant Prices (in Rs.)	PCI at Current Prices	Total GVA (at Current prices)	Agri & Allied GVA (at Current prices)	Industry (GVA at Current prices)	Services (GVA at Current prices)	
Srikakulam	38015003 1023	27050680 1223	124001	2798221	719109	695279	1383833	
Vizianagaram	32452618 1359	22853500 6910	120330	2595509	826958	477106	1291441	
Visakhapatnam	10155555 79332	78777675 4397	199596	8199350	1184472	2971348	4043530	
East Godavari	10279186 46465	80143384 6837	168748	7506974	2276741	2032552	3197681	
West Godavari	81623042 0106	57693752 1030	179003	7126817	3604793	1099758	2422266	
Krishna	12533215 04857	91125998 7640	244519	8882886	3607298	1307115	3968473	
Guntur	85901838 1510	64169448 1855	152653	7210749	2200169	1727466	3283114	
Prakasam	56965767 2740	39808858 5074	147744	4699442	1971861	914463	1813118	
SPS Nellore	60681374 7369	44222028 6471	178055	4835278	1649547	1147201	2038530	
Chittoor	76537047 5768	53986771 4411	159992	5895011	1999526	1274389	2621096	
YSR Kadapa	49985674 7224	33808434 8000	151815	3757835	1268627	897216	1591992	
Ananthapuramu	62629114 6828	44252386 9742	133564	5059166	2040140	757595	2261431	
Kurnool	58930989 1060	42438906 8541	128308	5003751	1935564	946707	2121480	
Andhra Pradesh	93340204 25642	68033182 72130	164025	73570989	25284805	16248196	32037985	

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Sub-Category	GDP								
	2018-19	2018-19	2018-19	2017 - 18	2017 - 18	2017 - 18	2017 - 18	2017 - 18	2017 - 18
District	GDDP at current prices % of AP	GDDP at current prices / capita	Total GVA (at current prices) / capita	Agri GVA / capita	Industries GVA (in Rs. Cr.) / capita	Services GVA / capita	Agri GVA / capita %	Industries GVA / capita %	Services GVA / capita %
Srikakulam	4%	140634	1.04	0.27	0.26	0.51	26%	25%	49%
Vizianagaram	3%	138422	1.11	0.35	0.20	0.55	32%	18%	50%
Visakhapatnam	11%	236694	1.91	0.28	0.69	0.94	14%	36%	49%
East Godavari	11%	194467	1.42	0.43	0.38	0.60	30%	27%	43%
West Godavari	9%	204275	1.78	0.90	0.28	0.61	51%	15%	34%
Krishna	13%	277443	1.97	0.80	0.29	0.88	41%	15%	45%
Guntur	9%	175747	1.48	0.45	0.35	0.67	31%	24%	46%
Prakasam	6%	167672	1.38	0.58	0.27	0.53	42%	19%	39%
SPS Nellore	7%	204759	1.63	0.56	0.39	0.69	34%	24%	42%
Chittoor	8%	183363	1.41	0.48	0.31	0.63	34%	22%	44%
YSR Kadapa	5%	173413	1.30	0.44	0.31	0.55	34%	24%	42%
Ananthapuramu	7%	153460	1.24	0.50	0.19	0.55	40%	15%	45%
Kurnool	6%	145384	1.23	0.48	0.23	0.52	39%	19%	42%
Andhra Pradesh	100%	188273	1.48	0.51	0.33	0.65	34%	22%	44%

Category	Overall					
	Sub-Category	Population				
		2011	2011	2011	2011	2011
District	# households (Rural)	Female Population (Rural)	Male Population (Rural)	# households (Urban)	Female Population (Urban)	Male Population (Urban)
Srikakulam	566016	1139523	1126888	108948	221853	214850
Vizianagaram	458112	933135	920428	123623	249862	241049
Visakhapatnam	585545	1141433	1113234	517625	1010246	1025676
East Godavari	1137695	1985943	1985909	354755	666577	647395
West Godavari	810982	1591123	1595842	214318	410872	397905
Krishna	785059	1330204	1343534	489371	919819	923841
Guntur	858504	1613584	1621491	419145	833708	819030
Prakasam	640221	1350225	1382641	168650	332459	332123
SPS Nellore	540661	1045117	1060810	209734	425466	432164
Chittoor	771931	1468626	1474052	302631	615234	616152
YSR Kadapa	488650	943644	959693	228492	487048	492084
Ananthapuramu	740002	1446280	1489157	267794	570373	575338
Kurnool	702698	1439608	1464569	248532	574628	574658
Andhra Pradesh	9086076	17428445	17538248	3653618	7318145	7292265

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Category	Population				
	Sub-Category	2011	2011	2011	2011
District	# HHs	Total Population	Female / Male Ration (Rural)	Female / Male Ration (Urban)	Female / Male Ration (Total)
Srikakulam	674964	2703114	101%	103%	101%
Vizianagaram	581735	2344474	101%	104%	102%
Visakhapatnam	1103170	4290589	103%	98%	101%
East Godavari	1492450	5285824	100%	103%	101%
West Godavari	1025300	3995742	100%	103%	100%
Krishna	1274430	4517398	99%	100%	99%
Guntur	1277649	4887813	100%	102%	100%
Prakasam	808871	3397448	98%	100%	98%
SPS Nellore	750395	2963557	99%	98%	99%
Chittoor	1074562	4174064	100%	100%	100%
YSR Kadapa	717142	2882469	98%	99%	99%
Ananthapuramu	1007796	4081148	97%	99%	98%
Kurnool	951230	4053463	98%	100%	99%
Andhra Pradesh	12739694	49577103	99%	100%	100%

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Category	Agriculture	
Sub-Category	Irrigation	
	2018 - 19	2018 - 19
District	Net Area Irrigated (Area in Lakh ha)	Total Area (in sq. km.)
Srikakulam	1.9	5837
Vizianagaram	1.54	6539
Visakhapatnam	1.14	11161
East Godavari	2.77	10807
West Godavari	3.59	7742
Krishna	3.03	8727
Guntur	4.13	11391
Prakasam	1.5	17626
SPS Nellore	1.87	13076
Chittoor	1.41	15152
YSR Kadapa	1.44	15359
Ananthapuramu	1.42	19130
Kurnool	2.22	17658
Andhra Pradesh	27.96	160205

Sub-Category	Irrigation	
	2018 - 19	2018 - 19
District	% irrigated land / agri land	% Irrigated land / total land
Srikakulam	54%	33%
Vizianagaram	45%	24%
Visakhapatnam	28%	10%
East Godavari	55%	26%
West Godavari	76%	46%
Krishna	60%	35%
Guntur	59%	36%
Prakasam	18%	9%
SPS Nellore	39%	14%
Chittoor	23%	9%
YSR Kadapa	27%	9%
Ananthapuramu	11%	7%
Kurnool	21%	13%
Andhra Pradesh	35%	17%

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Category		Agriculture								
Sub-Category		Paddy - Production								
		2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District		Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	209426	5236	214662	3088	4276	3117	646766	22389	669155	
Vizianagaram	121499	3119	124618	3507	4814	3540	426092	15015	441107	
Visakhapatnam	99900	2984	102884	2528	3892	2568	252595	11614	264209	
East Godavari	222214	163384	385598	5603	8205	6705	1245025	1340566	2585591	
West Godavari	226925	169952	396877	5669	7830	6594	1286333	1330724	2617057	
Krishna	245815	28199	274014	6239	6629	6279	1533640	1869311	1720571	
Guntur	216433	30405	246838	5945	5989	5950	1286694	182096	1468790	
Prakasam	27778	37490	65268	5510	5064	5254	153054	189849	342903	
SPS Nellore	26638	140225	166863	5294	6324	6159	141016	886761	1027777	
Chittoor	17422	26519	43941	5521	5410	5454	96183	143468	239651	
YSR Kadapa	39041	6799	45840	4871	4618	4833	190169	31398	221567	
Ananthapuramu	21938	9066	31004	4012	3744	3933	88009	33943	121952	
Kurnool	88858	21039	109897	5844	5332	5746	519298	112180	631478	
Andhra Pradesh	1563887	6444174	2208304	5029	6963	5593	7864874	4486934	12351808	

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Category	Jowar - Production								
Sub-Category	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Production - Kharif (in MT)	Production - Rabi (in MT)	Production - Total (in MT)
Srikakulam	8	0	8	130	0	130	1	0	1
Vizianagaram	6	0	6	130	0	130	1	0	1
Visakhapatnam	222	0	222	130	0	130	29	0	29
East Godavari	169	1674	1843	130	682	631	22	1142	1164
West Godavari	0	2	2	0	2746	2746	0	5	5
Krishna	0	263	263	0	2746	2746	0	722	722
Guntur	40	32193	32233	130	4647	4641	5	149601	149606
Prakasam	375	20714	21089	130	156	156	49	3231	3280
SPS Nellore	2	2168	2170	130	861	860	0	1867	1867
Chittoor	31	0	31	130	0	130	4	0	4
YSR Kadapa	533	16701	17234	787	634	639	419	10588	11007
Ananthapuramu	12986	3263	16249	84	133	94	1091	434	1525
Kurnool	742	63673	64415	453	941	935	336	59916	60252
Andhra Pradesh	15114	140651	155765	130	1618	1474	1957	227506	229463

Category	Agriculture								
Sub-Category	Maize - Production								
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	14747	14488	29235	4570	4711	4640	67394	68253	135647
Vizianagaram	18264	15932	34196	4745	6792	5699	86663	108210	194873
Visakhapatnam	5814	574	6388	2791	7076	3176	16227	4062	20289
East Godavari	769	8451	9220	4274	8128	7807	3287	68690	71977
West Godavari	1270	47279	48549	5805	7193	7157	7372	340078	347450
Krishna	4063	17370	21433	3510	6566	5987	14261	114051	128312
Guntur	455	37423	37878	4274	9197	9138	1945	344179	346124
Prakasam	1290	4267	5557	1804	4744	4062	2327	20243	22570
SPS Nellore	254	488	742	4274	6334	5629	1086	3091	4177
Chittoor	1307	729	2036	879	3906	1963	1149	2847	3996
YSR Kadapa	665	3545	4210	4019	2689	2899	2673	9533	12206
Ananthapuramu	14627	3759	18386	2837	2958	2862	41497	11119	52616
Kurnool	40845	7548	48393	4543	4950	4606	185559	37363	222922
Andhra Pradesh	104370	161853	266223	4134	6992	5872	431440	113171 9	156315 9

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Category									
Sub-Category Ragi - Production									
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	253	3518	3771	1274	1561	1542	322	5492	5814
Vizianagaram	1026	1009	2035	833	2188	1505	855	2208	3063
Visakhapatnam	16623	401	17024	1097	2283	1125	18235	915	19150
East Godavari	267	0	267	1085	0	1085	290	0	290
West Godavari	0	0	0	0	0	0	0	0	0
Krishna	0	0	0	0	0	0	0	0	0
Guntur	0	918	918	0	832	832	0	764	764
Prakasam	29	379	408	1085	1773	1724	31	672	703
SPS Nellore	110	41	151	1085	1614	1229	119	66	185
Chittoor	4620	768	5388	1624	1318	1580	7503	1012	8515
YSR Kadapa	10	91	101	1691	1984	1955	17	181	198
Ananthapuramu	1055	1024	2079	1986	2483	2231	2095	2543	4638
Kurnool	0	0	0	0	0	0	0	0	0
Andhra Pradesh	23993	8149	32142	1228	1700	1348	29467	13853	43320

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Category	Agriculture									
Sub-Category	Horsegram - Production									
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)	
Srikakulam	2	2643	2645	184	770	770	0	2035	2035	
Vizianagaram	0	2625	2625	0	517	517	0	1357	1357	
Visakhapatnam	0	638	638	0	662	662	0	422	422	
East Godavari	5	17	22	184	646	541	1	11	12	
West Godavari	0	50	50	0	646	646	0	32	32	
Krishna	0	1141	1141	0	646	646	0	737	737	
Guntur	0	44	44	0	646	646	0	28	28	
Prakasam	0	1398	1398	0	646	646	0	903	903	
SPS Nellore	0	448	448	0	646	646	0	289	289	
Chittoor	14571	39182	53753	347	427	405	5056	16731	21787	
YSR Kadapa	222	6948	7170	0	234	227	0	1626	1626	
Ananthapuramu	42322	6335	48657	129	556	185	5460	3522	8982	
Kurnool	0	207	207	0	175	175	0	36	36	
Andhra Pradesh	57122	61676	118798	184	450	322	10517	27729	38246	

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Greengram - Production									
Sub-Category	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	313	30361	30674	479	512	512	150	15545	15695
Vizianagaram	261	7974	8235	302	468	463	79	3732	3811
Visakhapatnam	706	1803	2509	507	376	413	358	678	1036
East Godavari	153	11538	11691	972	676	680	149	7800	7949
West Godavari	146	9851	9997	1455	1020	1026	212	10048	10260
Krishna	4158	3888	8046	300	1003	640	1247	3900	5147
Guntur	1252	30510	31762	775	1084	1072	970	33073	34043
Prakasam	1327	647	1974	727	358	606	965	232	1197
SPS Nellore	93	2359	2452	497	802	790	46	1892	1938
Chittoor	486	294	780	113	627	307	55	184	239
YSR Kadapa	32	1954	1986	1272	627	637	41	1225	1266
Ananthapuramu	8346	1472	9818	86	627	167	718	923	1641
Kurnool	601	430	1031	427	627	510	257	270	527
Andhra Pradesh	17874	103081	120955	294	771	701	5247	79502	84749

Category		Agriculture								
Sub-Category		Blackgram - Production								
		2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District		Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	269	45441	45710	773	558	559	208	25356	25564	
Vizianagaram	348	11430	11778	773	416	427	269	4755	5024	
Visakhapatnam	674	4229	4903	342	548	520	231	2317	2548	
East Godavari	3734	15641	19375	1153	646	744	4305	10104	14409	
West Godavari	1912	6356	8268	1159	1247	1227	2216	7926	10142	
Krishna	1972	142742	144714	1048	1294	1291	2067	184708	186775	
Guntur	3979	30396	34375	453	988	926	1802	30031	31833	
Prakasam	1628	14890	16518	398	399	399	648	5941	6589	
SPS Nellore	2175	7034	9209	532	414	442	1157	2912	4069	
Chittoor	610	3991	4601	919	949	945	561	3787	4348	
YSR Kadapa	46	2454	2500	430	440	440	20	1080	1100	
Ananthapuramu	62	24	86	919	1049	955	57	25	82	
Kurnool	4955	11023	15978	924	1222	1130	4578	13470	18048	
Andhra Pradesh	22364	295651	318015	810	989	976	18119	292412	310531	

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Category		Redgram - Production								
Sub-Category		2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District		Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	692	0	692	274	0	274	190	0	190	
Vizianagaram	692	2	694	285	285	285	197	1	198	
Visakhapatnam	1189	0	1189	373	0	373	443	0	443	
East Godavari	1406	39	1445	211	211	211	297	8	305	
West Godavari	100	16	116	237	237	237	24	4	28	
Krishna	1972	144	2116	819	819	819	1615	118	1733	
Guntur	18948	1060	20008	675	675	675	12790	716	13506	
Prakasam	93144	314	93458	133	133	133	12388	42	12430	
SPS Nellore	50	84	134	515	515	515	26	43	69	
Chittoor	6990	2	6992	162	162	162	1132	0	1132	
YSR Kadapa	4178	121	4299	144	144	144	602	17	619	
Ananthapuramu	48972	2	48974	57	57	57	2791	0	2791	
Kurnool	67342	2315	69657	174	174	174	11718	403	12121	
Andhra Pradesh	245675	4099	249774	180	330	182	44213	1352	45565	

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Category	Agriculture								
Sub-Category	Bengalgram - Production								
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/ hectare s)	Yield - Rabi (in kgs/ hectare s)	Yield - Total (in kgs/ hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	0	0	0	0	0	0	0	0	0
Vizianagaram	0	57	57	0	1078	1078	0	61	61
Visakhapatnam	5	178	183	1078	1078	1078	5	192	197
East Godavari	0	2383	2383	0	1078	1078	0	2569	2569
West Godavari	0	36	36	0	1078	1078	0	39	39
Krishna	0	2851	2851	0	2420	2420	0	6899	6899
Guntur	0	24815	24815	0	2074	2074	0	51466	51466
Prakasam	0	109283	109283	0	833	833	0	91033	91033
SPS Nellore	0	11040	11040	0	929	929	0	10256	10256
Chittoor	26	0	26	0	0	0	0	0	0
YSR Kadapa	0	101525	101525	0	251	251	0	25483	25483
Ananthapuramu	0	78340	78340	0	248	248	0	19428	19428
Kurnool	0	147343	147343	0	239	239	0	35215	35215
Andhra Pradesh	31	477851	477882	174	508	508	5	242641	242646

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Category	Chillies - Production								
Sub-Category	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	27	783	810	3284	3465	3459	89	2713	2802
Vizianagaram	68	459	527	3284	883	1193	223	405	628
Visakhapatnam	127	275	402	904	1694	1444	115	466	581
East Godavari	377	2335	2712	3284	3819	3745	1238	8917	10155
West Godavari	3	1307	1310	3284	2493	2495	10	3258	3268
Krishna	13130	826	13956	5411	5252	5402	71046	4338	75384
Guntur	80814	592	81406	3202	6425	3225	258766	3804	262570
Prakasam	25264	5127	30391	2453	2884	2526	61973	14786	76759
SPS Nellore	0	930	930	0	5473	5473	0	5090	5090
Chittoor	45	1603	1648	2422	2964	2949	109	4751	4860
YSR Kadapa	890	132	1022	4582	2964	4373	4078	391	4469
Ananthapuramu	6514	355	6869	782	2964	895	5094	1052	6146
Kurnool	16238	207	16445	2961	2964	2961	48081	614	48695
Andhra Pradesh	143497	14931	158428	3142	3388	3165	450822	50585	501407

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Category	Agriculture					
Sub-Category	Sugarcane - Production					
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectares)	Area - Total (in hectares)	Yield - Kharif (in kgs/ hectares)	Yield - Total (in kgs/ hectares)	Production - Kharif (in MT)	Production - Total (in MT)
Srikakulam	6007	6007	75470	75470	453349	453349
Vizianagaram	11695	11695	65021	65021	760415	760415
Visakhapatnam	31417	31417	62759	62759	1971707	1971707
East Godavari	9854	9854	90282	90282	889636	889636
West Godavari	9946	9946	99063	99063	985278	985278
Krishna	13133	13133	99367	99367	1304989	1304989
Guntur	221	221	95778	95778	21167	21167
Prakasam	75	75	82000	82000	6150	6150
SPS Nellore	738	738	84919	84919	62670	62670
Chittoor	17169	17169	87134	87134	1496011	1496011
YSR Kadapa	402	402	65468	65468	26318	26318
Ananthapuramu	173	173	95000	95000	16435	16435
Kurnool	695	695	90360	90360	62800	62800
Andhra Pradesh	101525	101525	79359	79359	8056925	8056925

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Category	Cotton - Production								
Sub-Category	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	5488	0	5488	1495	0	1495	8205	0	8205
Vizianagaram	11485	0	11485	1144	0	1144	13139	0	13139
Visakhapatnam	1092	0	1092	755	0	755	824	0	824
East Godavari	11933	0	11933	1339	0	1339	15978	0	15978
West Godavari	5235	0	5235	1639	0	1639	8580	0	8580
Krishna	47109	0	47109	1870	0	1870	88094	0	88094
Guntur	176679	16	176695	2125	2125	2125	375443	34	375477
Prakasam	38467	255	38722	1014	1014	1014	39006	259	39265
SPS Nellore	791	2223	3014	1339	1339	1339	1059	2977	4036
Chittoor	177	94	271	624	624	624	110	59	169
YSR Kadapa	10940	677	11617	1028	1028	1028	11246	696	11942
Ananthapuramu	47976	139	48115	701	701	701	33631	97	33728
Kurnool	259498	0	259498	592	0	592	153623	0	153623
Andhra Pradesh	616870	3404	620274	1214	1211	1214	748938	4122	753060

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Category	Agriculture								
Sub-Category	Groundnut - Production								
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	2041	4348	6389	1098	1545	1402	2241	6718	8959
Vizianagaram	1825	1047	2872	1014	2312	1487	1851	2421	4272
Visakhapatnam	1726	411	2137	1511	1695	1546	2608	697	3305
East Godavari	0	181	181	0	2929	2929	0	530	530
West Godavari	872	1182	2054	2901	2844	2868	2530	3362	5892
Krishna	1029	547	1576	4065	4322	4154	4183	2364	6547
Guntur	597	2210	2807	2901	3933	3714	1732	8692	10424
Prakasam	1105	855	1960	3836	3951	3886	4239	3378	7617
SPS Nellore	6463	3025	9488	4029	4058	4038	26039	12275	38314
Chittoor	99275	10478	109753	903	3113	1114	89645	32618	122263
YSR Kadapa	8627	11113	19740	515	973	773	4443	10813	15256
Ananthapuramu	474392	16184	490576	318	1591	360	150857	25749	176606
Kurnool	89187	9225	98412	477	2103	629	42542	19400	61942
Andhra Pradesh	687139	60806	747945	484	2122	617	332910	129017	461927

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Category	Sesame - Production								
Sub-Category	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectare s)	Area - Rabi (in hectare s)	Area - Total (in hectare s)	Yield - Kharif (in kgs/hectare s)	Yield - Rabi (in kgs/hectare s)	Yield - Total (in kgs/hectare s)	Product ion - Kharif (in MT)	Product ion - Rabi (in MT)	Product ion - Total (in MT)
Srikakulam	120	7832	7952	146	153	153	18	1198	1216
Vizianagaram	9585	5284	14869	267	275	270	2559	1453	4012
Visakhapatnam	2108	3424	5532	184	277	242	388	948	1336
East Godavari	161	2231	2392	234	146	152	38	326	364
West Godavari	10	364	374	270	309	308	3	112	115
Krishna	11	465	476	270	169	171	3	79	82
Guntur	1930	196	2126	435	263	419	840	52	892
Prakasam	2032	2702	4734	265	79	159	538	213	751
SPS Nellore	561	2652	3213	142	134	135	80	355	435
Chittoor	51	1129	1180	270	602	588	14	680	694
YSR Kadapa	28	4265	4293	270	649	647	8	2768	2776
Ananthapuramu	1	10	11	270	602	572	0	6	6
Kurnool	0	560	560	0	243	243	0	136	136
Andhra Pradesh	16598	31114	47712	270	268	269	4489	8326	12815

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Category		Agriculture				
Sub-Category	Palm Oil - Production					
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Area - Kharif (in hectares)	Area - Total (in hectares)	Yield - Kharif (in kgs/ hectares)	Yield - Total (in kgs/ hectares)	Production - Kharif (in MT)	Production - Total (in MT)
Srikakulam	535	535	23469	23469	12556	12556
Vizianagaram	5877	5877	20842	20842	122488	122488
Visakhapatnam	2254	2254	19572	19572	44115	44115
East Godavari	17619	17619	24502	24502	431701	431701
West Godavari	55219	55219	19768	19768	1091569	1091569
Krishna	11471	11471	21376	21376	245204	245204
Guntur	7	7	20906	20906	146	146
Prakasam	0	0	0	0	0	0
SPS Nellore	999	999	17026	17026	17009	17009
Chittoor	6	6	20906	20906	125	125
YSR Kadapa	0	0	0	0	0	0
Ananthapuramu	0	0	0	0	0	0
Kurnool	0	0	0	0	0	0
Andhra Pradesh	93987	93987	20906	20906	1964913	1964913

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Category	Fertilizer Sales					
Sub-Category	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	UREA (in MTs)	D.A.P (in MTs)	S.S.P (in MTs)	M.O.P (in MTs)	Complex (in MTs)	Total Fertilizers (in MTs)
Srikakulam	66,191	21,723	2,790	11,549	15,010	117,263
Vizianagaram	53,534	15,830	5,315	11,772	15,979	102,430
Visakhapatnam	37,653	5,776	2,903	4,222	6,316	56,870
East Godavari	159053	30,258	14,817	31,643	80,443	316,214
West Godavari	199007	30,115	49,109	65,075	153269	496,575
Krishna	154568	29,720	29,156	30,229	111168	354,841
Guntur	217857	58,374	10,835	17,622	201583	506,271
Prakasam	72,479	24,648	10,923	6,208	103130	217,388
SPS Nellore	122589	17,937	11,158	17,775	65,134	234,593
Chittoor	67,254	14,473	3,784	6,721	37,906	130,138
YSR Kadapa	63,809	11,047	10,235	12,039	62,348	159,478
Ananthapuramu	58,295	16,308	7,331	10,128	62,780	154,842
Kurnool	145725	37,406	4,884	16,407	224148	428,570
Andhra Pradesh	1,351,823	291,892	160,450	229,841	1,124,204	3,158,210

Category	Agriculture					
Sub-Category	Fertilizer Sales					
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Fertilizers/ Agri land area	UREA (in MTs)	D.A.P (in MTs)	S.S.P (in MTs)	M.O.P (in MTs)	Complex (in MTs)
Srikakulam	335.60	56%	19%	2%	10%	13%
Vizianagaram	299.08	52%	15%	5%	11%	16%
Visakhapatnam	142.15	66%	10%	5%	7%	11%
East Godavari	630.70	50%	10%	5%	10%	25%
West Godavari	1056.43	40%	6%	10%	13%	31%
Krishna	697.94	44%	8%	8%	9%	31%
Guntur	721.80	43%	12%	2%	3%	40%
Prakasam	256.50	33%	11%	5%	3%	47%
SPS Nellore	489.84	52%	8%	5%	8%	28%
Chittoor	207.79	52%	11%	3%	5%	29%
YSR Kadapa	294.02	40%	7%	6%	8%	39%
Ananthapuramu	121.16	38%	11%	5%	7%	41%
Kurnool	408.13	34%	9%	1%	4%	52%
Andhra Pradesh	390.07	43%	9%	5%	7%	36%

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Category	Land Holding Pattern								
Sub-Category	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20
District	# - Margin al Farmers (<1 hectare)	Area - Margin al Farmers (<1 hectare)	Avg. Holding Size - Margin al Farmers (<1 hectare)	# - Small Farmer s (1-2 hectare s)	Area - Small Farmer s (1-2 hectare s)	Avg. Holding Size - Small Farmer s (1-2 hectare s)	# - Semi-mediu m Farmer s (2-4 hectare s)	Area - Semi-mediu m Farmer s (2-4 hectare s)	Avg. Holding Size - Semi-mediu m Farmer s (2-4 hectare s)
Srikakulam	427,437	157,495	0.37	70,894	97,255	1.37	21,851	57,756	2.64
Vizianagaram	345,424	128,075	0.37	67,198	92,882	1.38	26,153	70,692	2.7
Visakhapatnam	360,844	136,908	0.38	68,929	95,437	1.38	32,316	86,893	2.69
East Godavari	562,515	203,510	0.36	86,674	119,730	1.38	37,107	99,290	2.68
West Godavari	428,699	173,328	0.4	87,299	121,288	1.39	37,856	101,314	2.68
Krishna	396,416	173,229	0.44	97,699	136,477	1.4	43,870	118,651	2.7
Guntur	536,458	248,125	0.46	150,845	209,008	1.39	58,319	155,633	2.67
Prakasam	378,940	182,087	0.48	170,081	242,517	1.43	93,392	247,513	2.65
SPS Nellore	308,612	132,154	0.43	92,262	129,146	1.4	40,450	107,198	2.65
Chittoor	455,190	199,009	0.44	144,431	203,305	1.41	54,981	142,473	2.59
YSR Kadapa	241,721	121,070	0.5	123,474	176,992	1.43	62,290	161,924	2.6
Ananthapuramu	258,950	147,206	0.57	243,528	358,835	1.47	175,194	447,417	2.55
Kurnool	282,405	158,156	0.56	187,698	267,721	1.43	112,419	303,055	2.7
Andhra Pradesh	4,983,611	2,160,352	0.43	1,591,012	2,250,593	1.41	796,198	2,099,809	2.64

Category		Agriculture								
Sub-Category		Land Holding Pattern								
		2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20
District	# - Medium Farmers (4-10 hectares)	Area - Medium Farmers (4-10 hectares)	Avg. Holding Size - Medium Farmers (4-10 hectares)	# - Large Farmers (>10 hectares)	Area - Large Farmers (>10 hectares)	Avg. Holding Size - Large Farmers (>10 hectares)	# - Total Land Holdings	Area - Total Land Holdings (in hectares)	Avg. Holding Size - Total Land Holdings	
Srikakulam	5,243	28,109	5.36	445	8,797	19.77	525,870	349,412	0.66	
Vizianagaram	7,463	40,930	5.48	603	9,905	16.43	446,841	342,484	0.77	
Visakhapatnam	11,569	65,186	5.63	1,080	15,660	14.5	474,738	400,084	0.84	
East Godavari	11,398	62,856	5.51	1,020	15,980	15.67	698,714	501,366	0.72	
West Godavari	11,127	61,470	5.52	850	12,649	14.88	565,831	470,049	0.83	
Krishna	12,899	70,064	5.43	683	9,992	14.63	551,567	508,413	0.92	
Guntur	14,408	76,450	5.31	618	12,188	19.72	760,648	701,404	0.92	
Prakasam	26,048	145,503	5.59	2,092	29,888	14.29	670,553	847,508	1.26	
SPS Nellore	13,686	78,146	5.71	2,005	32,275	16.1	457,015	478,919	1.05	
Chittoor	11,511	63,761	5.54	1,069	17,756	16.61	667,182	626,306	0.94	
YSR Kadapa	12,948	69,913	5.4	873	12,499	14.32	441,306	542,398	1.23	
Ananthapuramu	45,853	257,599	5.62	4,426	66,954	15.13	727,951	1,278,011	1.76	
Kurnool	46,266	262,022	5.66	4,114	59,132	14.37	632,902	1,050,086	1.66	
Andhra Pradesh	230,419	1,282,009	5.56	19,878	303,675	15.28	7,621,118	8,096,440	1.06	

Land Holding Pattern						
Sub-Category	2019 - 20	2019 - 20	2019 - 20	2019 - 20	2019 - 20	
District	% Marginal Farmers	% Small Farmers	% Semi Medium Farmers	% Medium Farmers	% Large Farmers	% Marginal Farms
Srikakulam	81.3%	13.5%	4.2%	1.0%	0.1%	45%
Vizianagaram	77.3%	15.0%	5.9%	1.7%	0.1%	37%
Visakhapatnam	76.0%	14.5%	6.8%	2.4%	0.2%	34%
East Godavari	80.5%	12.4%	5.3%	1.6%	0.1%	41%
West Godavari	75.8%	15.4%	6.7%	2.0%	0.2%	37%
Krishna	71.9%	17.7%	8.0%	2.3%	0.1%	34%
Guntur	70.5%	19.8%	7.7%	1.9%	0.1%	35%
Prakasam	56.5%	25.4%	13.9%	3.9%	0.3%	21%
SPS Nellore	67.5%	20.2%	8.9%	3.0%	0.4%	28%
Chittoor	68.2%	21.6%	8.2%	1.7%	0.2%	32%
YSR Kadapa	54.8%	28.0%	14.1%	2.9%	0.2%	22%
Ananthapuramu	35.6%	33.5%	24.1%	6.3%	0.6%	12%
Kurnool	44.6%	29.7%	17.8%	7.3%	0.7%	15%
Andhra Pradesh	65.4%	20.9%	10.4%	3.0%	0.3%	27%

Category		Agriculture					
Sub-Category		Land Holding Pattern					
		% Small Farms	% Semi Medium Farms	% Medium Farms	% Large Farms	2019 - 20	2019 - 20
District							
Srikakulam	28%	17%	8%	3%	2.06	60%	
Vizianagaram	27%	21%	12%	3%	2.41	52%	
Visakhapatnam	24%	22%	16%	4%	2.96	36%	
East Godavari	24%	20%	13%	3%	4.54	46%	
West Godavari	26%	22%	13%	3%	7.67	61%	
Krishna	27%	23%	14%	2%	7.10	58%	
Guntur	30%	22%	11%	2%	3.14	62%	
Prakasam	29%	29%	17%	4%	2.33	48%	
SPS Nellore	27%	22%	16%	7%	3.44	37%	
Chittoor	32%	23%	10%	3%	3.19	41%	
YSR Kadapa	33%	30%	13%	2%	2.34	35%	
Ananthapuramu	28%	35%	20%	5%	1.60	67%	
Kurnool	25%	29%	25%	6%	1.84	59%	
Andhra Pradesh	28%	26%	16%	4%	3.12	51%	

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Category				
Sub-Category				
	Cold Storage			
	2019 - 20	2019 - 20	2019 - 20	2019 - 20
District	# - Cold Storage Facilities	Capacity - Cold Storage Facilities (in MT)	Cold Storage Capacity / GVA Agri & Allied	Avg. capacity of Cold Storage
Srikakulam	2	8420	1.2	4,210
Vizianagaram	7	31315	3.8	4,474
Visakhapatnam	6	23560	2.0	3,927
East Godavari	3	7500	0.3	2,500
West Godavari	4	10900	0.3	2,725
Krishna	34	175065	4.9	5,149
Guntur	127	615405	28.0	4,846
Prakasam	77	385854	19.6	5,011
SPS Nellore	4	8559	0.5	2,140
Chittoor	30	47920	2.4	1,597
YSR Kadapa	5	43857	3.5	8,771
Ananthapuramu	29	65211	3.2	2,249
Kurnool	27	142602	7.4	5,282
Andhra Pradesh	355	1566168	6.2	4,412

Category	Agriculture					
Sub-Category	Fisheries					
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	Marine Fish - Production (in MT)	Marine Shrimp - Production (in MT)	Brackish Water Prawn - Production (in MT)	Inland Fish - Production (in MT)	Fresh Water Prawn - Production (in MT)	Total Fisheries (in MT)
Srikakulam	37703	9443	9639	70400	434	127619
Vizianagaram	12001	2639	358	35777	63	50838
Visakhapatnam	104005	28802	6577	50252	82	189718
East Godavari	93616	23878	72165	165385	43192	398236
West Godavari	902	265	24852	898886	227296	1152201
Krishna	39585	10891	229618	799201	151321	1230616
Guntur	43487	12230	59839	78066	1863	195485
Prakasam	52092	14041	39817	32033	491	138474
SPS Nellore	91701	23136	86118	210980	30423	442358
Chittoor	0	0	0	4353	2	4355
YSR Kadapa	0	0	0	5330	6	5336
Ananthapuramu	0	0	0	9115	32	9147
Kurnool	0	0	0	47839	136	47975
Andhra Pradesh	475092	125325	528983	2407617	455341	3992358

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Sub-Category Animal Husbandry						
	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	MILK (Thousand MTs)	Eggs (Lakh Nos)	MEAT (Thousand MTs)	Milk / Capita	Eggs / Capita	Meat / Capita
Srikakulam	695.08	2031.88	24.65	25.71	7.52	9.12
Vizianagaram	728.38	4920.61	35.77	31.07	20.99	15.26
Visakhapatnam	811.77	13198.42	50.64	18.92	30.76	11.80
East Godavari	1287.38	62411.43	64.65	24.36	118.07	12.23
West Godavari	1366.83	37901.65	50.27	34.21	94.86	12.58
Krishna	1721.44	30429.09	95.90	38.11	67.36	21.23
Guntur	1584.92	19949.21	68.45	32.43	40.81	14.01
Prakasam	1548.84	2772.29	81.78	45.59	8.16	24.07
SPS Nellore	840.12	2738.31	31.57	28.35	9.24	10.65
Chittoor	1800.64	14597.38	89.56	43.14	34.97	21.46
YSR Kadapa	559.39	1932.28	35.04	19.41	6.70	12.16
Ananthapuramu	889.64	2741.36	62.61	21.80	6.72	15.34
Kurnool	1209.94	1921.30	89.71	29.85	4.74	22.13
Andhra Pradesh	15044.36	197545.20	780.61	30.35	39.85	15.75

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Category	Infrastructure - Physical, Social & Commercial						
Sub-Category	Sanitation & Water connection						
	As of Sep 19	As of Sep 19	As of Sep 19	As of Sep 19	As of Sep 19	2019	2019
District	No. Households already having toilets (before 2nd Oct'2014)	HHs covered after the launch of SBM(G) - 2nd Oct'2014	HHs Covered with toilets in LOB category under SBM(G)	Total # of HHs with toilets	% of HHs with toilets	Rural Household s having tap Connectio ns	% Rural Household s having tap Connectio ns
Srikakulam	56265	352943	4554	413762	55%	10460	1.85
Vizianagaram	90151	336797	415	427363	76%	43104	9.41
Visakhapatnam	146743	314924	8459	470126	37%	85088	14.53
East Godavari	531442	319183	34900	885525	61%	315398	27.72
West Godavari	343210	248138	34567	625915	56%	407972	50.31
Krishna	431583	186109	17114	634806	42%	282820	36.03
Guntur	374138	349328	10836	734302	42%	237911	27.71
Prakasam	197607	318863	19001	535471	49%	173280	27.07
SPS Nellore	61457	365171	12806	439434	42%	309732	57.29
Chittoor	156800	431413	3648	591861	43%	572260	74.13
YSR Kadapa	38612	302245	2625	343482	42%	253644	51.91
Ananthapuramu	226758	331529	10721	569008	51%	362583	49.00
Kurnool	293232	299410	20718	613360	56%	333908	47.52
Andhra Pradesh	2947998	4156053	180364	7284415	49%	3388160	37.29

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Category	Power	As of Aug 19	As of Aug 19
Sub-Category	District	# HHs electrified	% of HHs electrified
Srikakulam		751822	100%
Vizianagaram		565104	100%
Visakhapatnam		1287680	100%
East Godavari		1460112	100%
West Godavari		1120313	100%
Krishna		1509726	100%
Guntur		1761737	100%
Prakasam		1100807	100%
SPS Nellore		1037100	100%
Chittoor		1373015	100%
YSR Kadapa		808769	100%
Ananthapuramu		1111999	100%
Kurnool		1103382	100%
Andhra Pradesh		14991566	100%

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Category	Infrastructure Physical, Social & Cultural							
	Healthcare							
Sub-Category	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19	2018 - 19
District	PHCs - OP	PHCs - IP	CHCs - OP	CHCs - IP	SDHs - OP	SDHs - IP	DH, TH - OP	DH, TH - IP
Srikakulam	1413116	76713	625762	74508	217068	18263	355076	30037
Vizianagaram	1890453	93561	855717	70013	159930	19449	371205	43356
Visakhapatnam	2616667	82300	1113966	60147	702938	43525	1359400	129407
East Godavari	2900981	105728	1541238	93221	347014	29502	1177846	99362
West Godavari	2083567	73159	919469	63246	358810	42858	445183	42981
Krishna	2473442	62163	764272	39240	214594	13735	855276	83502
Guntur	2082859	72137	1078943	72942	383799	26817	1302720	103085
Prakasam	1575850	66675	1017351	77434	296042	14763	563184	38406
SPS Nellore	1319789	38823	645776	35508	301176	19797	376703	38739
Chittoor	2961098	108695	1459798	94531	649635	63826	1399571	118345
YSR Kadapa	2588850	100264	1186064	69531	127541	6422	721224	80226
Ananthapuramu	2998011	120682	1770835	130256	348330	36507	999073	100235
Kurnool	2576467	103257	1166087	83718	165930	13913	1292669	107165
Andhra Pradesh	2948115 0	1104157	1414527 8	964295	4272807	349377	1121913 0	1014846

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Category								
Sub-Category	Healthcare							
District	# of PHCs	PHCs with 6 beds	PHCs with 30 beds	# of beds at PHCs	# PHC ips + ops / # of PHCs	# of PHCs / 1l capita	# of PHC beds / 1l capita	# ips + ops / capita
Srikakulam	80	78	2	528	0.55	2.96	19.53	1.04
Vizianagaram	68	68	0	408	0.85	2.90	17.40	1.49
Visakhapatnam	88	87	1	552	0.63	2.05	12.87	1.42
East Godavari	128	127	1	792	0.57	2.42	14.98	1.19
West Godavari	91	91	0	546	0.54	2.28	13.66	1.01
Krishna	88	86	2	576	0.56	1.95	12.75	1.00
Guntur	86	86	0	516	0.44	1.76	10.56	1.05
Prakasam	90	88	2	588	0.48	2.65	17.31	1.07
SPS Nellore	75	72	3	522	0.46	2.53	17.61	0.94
Chittoor	102	100	2	660	0.74	2.44	15.81	1.64
YSR Kadapa	74	69	5	564	0.93	2.57	19.57	1.69
Ananthapuramu	88	82	6	672	0.76	2.16	16.47	1.59
Kurnool	87	80	7	690	0.66	2.15	17.02	1.36
Andhra Pradesh	1145	1114	31	7614	0.62	2.31	15.36	1.26

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Category	Sub-Category	As of Sep 19	As of Sep 19	
District	# of Bus stations	Total Extent (in acres)	Bus station area / 1l capita	
Srikakulam	28	31.30	1.16	
Vizianagaram	20	36.60	1.56	
Visakhapatnam	33	45.46	1.06	
East Godavari	37	56.78	1.07	
West Godavari	31	38.89	0.97	
Krishna	35	65.48	1.45	
Guntur	41	74.26	1.52	
Prakasam	35	66.58	1.96	
SPS Nellore	29	53.45	1.80	
Chittoor	36	72.89	1.75	
YSR Kadapa	24	51.25	1.78	
Ananthapuramu	38	70.03	1.72	
Kurnool	36	99.36	2.45	
Andhra Pradesh	423	762.324	1.54	

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Category : District wise Industrial Parks - Status as on Sep 19					
Sub-Category	Industrial Parks				
	As of Sep 19	As of Sep 19	As of Sep 19		
District	# of Industrial Parks	Industrial Parks - Total Area (in Acres)	Industrial Parks - Vacant Area (in Acres)	GDDP / Area of used IP	% IP Vacant
Srikakulam	11	3862	27	99,135,019	1%
Vizianagaram	8	1723	250	220,375,485	15%
Visakhapatnam	72	20826	2023	54,011,626	10%
East Godavari	46	6311	58	164,394,480	1%
West Godavari	13	1081	0	755,074,084	0%
Krishna	38	3787	10	331,878,989	0%
Guntur	27	1761	4	488,662,052	0%
Prakasam	14	5298	4290	564,835,980	81%
SPS Nellore	58	19993	1153	32,208,702	6%
Chittoor	91	17075	1019	47,669,533	6%
YSR Kadapa	40	10108	61	49,753,311	1%
Ananthapuramu	39	16836	1324	40,373,357	8%
Kurnool	24	9000	236	67,244,626	3%
Andhra Pradesh	481	117661	10456	87,066,932	9%

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Category	Infrastructure	Physical Social & Commercial
Sub-Category	Schools	
	As of Sep 19	
District	No. of Schools	Schools / 1l capita
Srikakulam	3778	139.8
Vizianagaram	3342	142.5
Visakhapatnam	5331	124.2
East Godavari	5907	111.8
West Godavari	4364	109.2
Krishna	4441	98.3
Guntur	4857	99.4
Prakasam	4361	128.4
SPS Nellore	4434	149.6
Chittoor	6144	147.2
YSR Kadapa	4511	156.5
Ananthapuramu	5062	124.0
Kurnool	4354	107.4
Andhra Pradesh	57108	115.2

Category	Physical, Social & Commercial							
	Tourism							
Sub-Category	2018	2018	2018	2018	2018	2018	2018	2018
District	Domestic tourists	International tourists	Total tourists	Star Hotels - Suit Rooms	Star Hotels - AC Rooms	Star Hotels - Non AC Rooms	Star Hotels - Total Rooms	
Srikakulam	20,189,135	6,065	20,195,200	8	237	25	270	
Vizianagaram	5,746,734	7,990	5,754,724	0	56	8	64	
Visakhapatnam	19,766,045	57,298	19,823,343	130	1910	82	2122	
East Godavari	20,391,100	15,817	20,406,917	57	1015	376	1448	
West Godavari	12,615,214	11,911	12,627,125	38	459	49	546	
Krishna	18,258,372	90,715	18,349,087	89	932	0	1021	
Guntur	24,699,624	4,086	24,703,710	23	216	23	262	
Prakasam	4,024,095	6,526	4,030,621	14	190	0	204	
SPS Nellore	5,632,781	13,513	5,646,294	56	400	243	699	
Chittoor	42,962,594	12,410	42,975,004	88	1582	155	1825	
YSR Kadapa	7,791,754	9,928	7,801,682	26	168	76	270	
Ananthapuramu	3,803,503	22,167	3,825,670	39	275	89	403	
Kurnool	8,886,923	22,657	8,909,580	45	257	85	387	
Andhra Pradesh	194,767,874	281,083	195,048,957	613	7697	1211	9521	

