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White Paper on Energy and Trunk Infrastructure

Practice Questions

01. The Global Competitiveness report is published by which of the following organisation?
    (A) World Economic Forum
    (B) World Bank
    (C) International Monetary Fund
    (D) World Intellectual Property Right organisation

02. Andhra Pradesh was the first state to introduce reforms in Power Sector in the year?
    (A) 1990 (B) 1992
    (C) 1996 (D) 1998

03. Consider the following statements and choose the correct statement regarding UDAY scheme.
    I. Andhra Pradesh has joined this scheme in June 2016
    II. As per the scheme the state government has issued DISCOM bonds and guaranteed the loss
    Choose from below
    (A) I only (B) Both I & II
    (C) II only (D) None

04. Consider the following statements and choose the correct statement regarding IPDS scheme.
    I. IPDS stands for Integrated Power Development Scheme
    II. The objective of this scheme is to strengthen sun transmission and distribution networks in urban areas.
    III. A total of 690 Cr has been allocated for the scheme
    Choose from below
    (A) I,II,III (B) III only
    (C) I,II only (D) I only

05. Consider the following statements and choose the correct statement regarding DDUGJY scheme.
    I. DDUGJY stands for Deen Dayal Upadhyaya Gram Jyoti Yojana started by Government of India
    II. Government of Andhra Pradesh has signed the scheme which enables the state reach the target of rural developments objectives

III. A total of 921 Cr has been allocated for this scheme

Choose from Below

(A) I,II only (B) I,II,III

(C) II,III only (D) III only

06. Which of the following schemes has been funded by World Bank?

(A) Power for all Scheme

(B) Andhra Pradesh Disaster recovery Project

(C) Both (A) & (B)

(D) None

07. Underground cabling project which is supported World Bank was started at which city?

(A) Vijayawada (B) Visakhapatnam

(C) Kakinada (D) Tirupati

08. Consider the following

I. AP government has started Andhra Pradesh Solar Power Policy in 2015

II. AP government has started Andhra Pradesh Wind Power Policy in 2015

Which of the above statements is/are correct?

(A) Both I & II (B) None

(C) II only (D) I only

09. Consider the following statements and choose the correct statement regarding Solar Park Project.

I. AP is the first state to sign a Solar Park project with Government of India.

II. 4000 MV capacity solar park has been planned at Ananthapur, Kurnool & Kadapa Districts

Choose from below

(A) I only (B) II only

(C) Both I & II (D) None

10. Consider the following statements and choose the correct statement regarding Wind Solar Hybrid Project.

I. The Andhra Pradesh state has taken 160 MW storage solar project with the help of World Bank

II. This is the first of its kind in the entire world and would be completed by Mid 2019

Choose from Below

(A) I only (B) Both I & II

(C) None (D) II only

11. The total energy install capacity in Andhra Pradesh has grown from 9529 MW to

(A) 19060 MW (B) 19065 MW

(C) 19070 MW (D) 19080 MW

12. Which state has become the 2nd state in India to achieve 100% electrification of all households by June 2016?

(A) Tamil Nadu

(B) Telangana

(C) Andhra Pradesh

(D) Both (B) & (D)

13. How many solar pump sets has been installed in the state by November 2018?
(A) 31725 (B) 31750
(C) 32725 (D) 32750

14. Consider the following statements and choose the correct statement regarding Smart Meters.
I. Andhra Pradesh has signed an MOU with EESL for the supply of 17 Lakh Smart Meters
II. 2.5 Lakh meters has been expected to be installed by 2018-19
Choose from Below
(A) I only (B) II only
(C) Both I & II (D) None

15. Consider the following
I. Bhogapuram, Vizianagaram
II. Dagadarthi,Nellore
III. Oravakallu,Kurnool
IV. Kuppam, Chittoor
V. Donakonda,Prakasham
The new Airports for the state of Andhra Pradesh are proposed at which place?
(A) I,II,III,IV,V (B) I,II,III,IV only
(C) I,II,III only (D) II,III,IV only

16. Consider the following
I. Andhra Pradesh has a coastal line of 974 KM
II. There are 1 major port and 14 Notified ports in Andhra Pradesh
III. Government of India has planned to develop the second major port at Durgarajapatnam, Nellore
Which of the above statements is/are correct?
(A) I,II,III (B) I only
(C) I,II only (D) I,III only

17. Consider the following with regard to Amaravati- Ananthapur Expressway and choose the correct statement
I. It is a Greenfield expressway with a length of 384 KM
II. The total cost of the expressway is 20000 Cr and is executed by NHAI
III. The land Acquisition cost will be shared equally between GOI and State Government
Choose from below
(A) I,III only (B) I,II,III
(C) II,III only (D) I,II only

18. Consider the following and choose which of the following routes are part of GOIs BhataMala Project
I. Ongole – Bestavaripeta Road in Prakasham District
II. Malkangiri – Sabbavaram road in Visakhapatnam District
Choose from Below
(A) I only (B) II only
(C) Both I & II (D) None

19. The present state road network has been increased from 41956 KM in 2014-15 to
(A) 46342 KM (B) 46352 KM
(C) 46362 KM (D) 46382 KM

20. Choose the correct Match
I. VCIC Project – Asian Development Bank
II. AP Road sector project – World Bank
III. National Cyclone Risk Mitigation Project – World Bank
IV. AP Disaster recovery project – World Bank
V. AP Mandal Connectivity and rural Connectivity projects – New Development Projects
Choose from Below
(A) I,III,IV,V only (B) I,II,III,IV only
(C) II,IV,V only (D) I,II,III,IV,V

21. As a part of Economic cities vision in Andhra Pradesh which of the following is rightly matched
I. Srikakulam – Cold Chain
II. West Godavari – Retail Park
III. East Godavari – Food Processing
IV. Guntur – Textile
V. Prakasham – Bio City
VI. Ananthapur – Defence City
VII. Chittoor – Timber
Choose from Below
(A) I,II,III,IV,V,VI,VII
(B) I,II,III,IV,V,VI
(C) I,II,III,IV,V
(D) I,II,III,IV

22. Which of the following recognitions or awards has been won by Amaravati City?
(A) It is certified as Platinum by Indian Green Building Council
(B) Skoch Order of the merit for implementing Blockchain Technology for pooling land
(C) Both (A) & (B)
(D) None

Note: Key Sheet available in last page.

Government of Andhra Pradesh

White Paper on Energy and Trunk Infrastructure

Including Capital City of Amaravati

Date : 29.12.2018

N. CHANDRABABU NAIDU

Chief Minister, Andhra Pradesh

Contents

White Paper on Energy and Trunk Infrastructure

Including capital city of Amaravati

Infrastructure matters to growth is a fact that is well recognized and widely understood amongst researchers and policy makers. The Global Competitiveness Report by theWorld Economic Forum has considered thequality of infrastructure as one of thecritical components to determine thecompetitiveness of a country.In general, infrastructure investments require large tracts of land and are also capital intensive.They have long gestation period for both implementation and operations phase necessitating long duration for realizing the expected returns on the project. Infrastructure is the mainstay of the other sectors such as primary sector, industries, services, urban development, skill development and social empowerment.

Some key facts on infrastructure development are as follows:

1. Infrastructure accelerates annual growth convergence rates by as much as 13% while increasing per capita annual growth rate by almost 1%. (African Development Bank)
2. Multiplier effect of investments in core infrastructure generates economic returns of between 5% to 25% (World Economic Forum)
3. An additional 1% of GDP invested in transport and communications on a sustained basis increases the GDP per capita growth rate by 0.6% (African Development Bank)
4. Quality infrastructure reduces incomeinequalities and parities by fosteringeconomic growth (empirical research by Ramon Lopez)

In this paper the following sectors are discussed:

1. Energy Sector
2. Aviation Sector
3. Maritime Sector
4. Gas Infrastructure Sector
5. Fiber Grid Sector
6. Roads and Buildings
7. Economic Cities
8. Amaravati Capital City

1. Energy Sector

1.Background and Objective:

Power Sector plays a vital role in the economic growth and Human development of any country. It definitely improves the quality of life of human beings and the biotic of this sphere. Electricity consumption is one of the most important indices for measuring the development level of a nation. Power is one of the most critical components of infrastructure and crucial for the welfare of the Nations.

An efficient, resilient and financially robust power sector is essential for growth and poverty reduction. The availability of reliable, quality and affordable power helps in the rapid Agriculture and Industrial development and the overall economy of the state. The objective of this white paper is to provide an understanding of the dynamics of the power sector in Andhra Pradesh, various challenges being faced by the power sector which has aggravated due to bifurcation of state, analyze the underlying causes and proactive measures taken to address the issues plaguing the Andhra Pradesh power sector and also showcasing the roadmap on what is lying ahead with respect to Andhra Pradesh power sector

Andhra Pradesh was the first State in the country to introduce Power Sector Reforms during 1998.As a result of the reforms, the APSEB was unbundled into APTRANSCO, APGENCO and DISCOMS and independent APERC was established. Many path breaking initiatives were taken since then. However the power sector faced certain critical issues during the decade 2004-14 as a result of which the sector was facing critical issues at the time of state bifurcation.

2. Position as on June 2014:

The bifurcation of the state had only increased problems of the power sector in Andhra Pradesh due to allocation of power based on consumption of FY 2006-07 instead of allocation as per geographical location or population criteria resulting in severe power deficit in the residuary Andhra Pradesh. The state was facing severe energy deficit (22 MU per day) at the time of State formation in June, 2014.

The bifurcation of the combined state into Andhra Pradesh and Telangana had an adverse impact on Andhra Pradesh. The allocation of power from APGENCO stations has been done based on G.O. 20 dated 08th May 2014 which has allocated 46.11% of the total capacity of APGENCO stations (Existing & Under construction) to Andhra Pradesh. This figure was arrived at based on consumption of FY 2006-07. Though the ownership of power stations is with the respective GENCOs based on geographical location, power was not allocated based on geographical location. The

allocation of power based on G.O 20 instead of allocation based on geographical location has resulted in a capacity loss of 1,142 MW to Andhra Pradesh. This resulted in an annual energy shortage of 8,700 MU for the state. The financial impact on the state over the PPA term for meeting this shortfall from open market would be an NPV of around Rs.10,000Crs.

Impact on capacity from Central Generating Stations

As per AP Reorganization Act, power of Central Generating Stations (CGS) should be allocated based on last 5 years consumption (AP – 47.88%). However, the allocation from CGS was done based on FY 2006-07 consumption only (AP – 46.11%). Due to this, AP has lost a capacity of 62 MW which implies an energy loss of around 422 MU per annum.

3.Schemes and Policies adopted by the Government of Andhra Pradesh since 2014:

There was an urgent need for the Government of Andhra Pradesh to be proactive and turnaround the fortunes of Energy sector to meet the following key objectives which was met through implementation of various innovative schemes and policy reforms,

- Provide 24 hours availability to all industrial and domestic customers
- Provide 7 hours availability to agriculture sector with a view to gradually increase it to 9 hours over a period of time
- Ensure reliable and affordable power to all consumers
- Thrust for optimum harnessing of renewable sources of energy
- Monitor and improve customer satisfaction
- Reduce power loss levels to lowest in the country
- Focus on Energy efficiency and Energy conservation activities.

Key Schemes, Policies and Initiatives:

3.1 UDAY Scheme

Government of Andhra Pradesh have joined UDAY scheme during June, 2016.As per the scheme, 75% of the losses of AP DISCOMS as on 30.9.2015 amounting to Rs.8892 crores have been taken over by State Government and DISCOM bonds with the State Government guarantee are being issued for the remaining 25% of the losses.As a result of this and various other cost reduction and efficiency improved

measures initiated by the Power Sector utilities, the financial position of the DISCOMS is improved substantially and the cumulative losses have come down drastically.

3.2 IPDS Scheme

The Government of Andhra Pradesh proactively signed up for IPDS scheme with the objectives of Strengthening of sub-transmission and distribution network in the urban areas for which an amount of Rs.690 Crores has been sanctioned out of which expenditure has been incurred for Rs.625 crores.

3.3 DDUGJY Scheme

The Government of Andhra Pradesh signed up for DDUGJY scheme which will enable to initiate much awaited reforms in the rural areasfor which an amount of Rs.921 Crores has been sanctioned out of which expenditure has been incurred for Rs.713 Crores.

3.4 World Bank funded Projects

A) "Power for All" Scheme

Andhra Pradesh is one of the three states (along with Rajasthan and Delhi) selected by the Government of India to roll out the 'Power for All' program launched in 2014. The development objective of Andhra Pradesh 24X7 Power for All Project for India is to increase the delivery of electricity to customers and to improve the operational efficiency and system reliability in distribution of electricity.

B) APDRP – Andhra Pradesh Disaster Recovery Project

Andhra Pradesh Disaster Recovery Project is being implemented by Government of Andhra Pradesh with Financial assistance from World bank for providing Under Ground cabling in Visakhapatnam City.

3.5 Renewable Energy

i) Solar and Wind Policies

After the bifurcation of the State, the Government has decided to promote the RE power projects to meet the growing energy needs and to have energy security. In order to accelerate the capacity addition in RE sector particularly in Wind and Solar power sector, the State Govt. has come up with AP Solar Power Policy 2015 and AP Wind Power Policy 2015 with fiscal incentives for large scale promotion of projects. The AP State is first in the country that announced policy for promotion of Solar and Wind hybrid power projects. The state is set to announce an exclusive policy for

Wind-solar-Hybrid Power projects.

ii) Solar Parks

Under the Solar Park initiatives taken by MNRE, the Govt. of A.P. is the first state which signed MOU with GOI to develop solar parks and has planned to develop solar parks in the state.4000 MW capacity solar parks are being developed in the state in Anathapuramu, Kurnool and Kadapa districts.

iii) Solar Pumpsets

NREDCAP has formulated an innovative scheme for large scale promotion of solar pump sets to benefit the farmers and to minimize the subsidy component towards free power to the State Government.Under the scheme, the APDISCOMs are availing loan from PFC and other financial institutions to extend loan for promotion of the solar pump sets.The loan repayment will be made by the DISCOMs only.The farmers will bear an amount of Rs.55,000/- per each solar pump set and balance will be provided by MNRE/APDISCOMs.

iv) Waste to Energy Projects

Waste to Energy Projects are conceptualized under Swachh Bharat Abhiyan for a scientific and efficient municipal waste management as a priority project. A tariff based bidding process has been undertaken to select developers for implementing Waste to Energy Projects in 10 clusters on Design, Build, Finance, Operate and Transfer (DBFOT) basis. LOI was issued for an aggregate capacity of 63 MW in 10 clusters.

v) Solar Rooftop Programme

The Government of Andhra Pradesh is promoting solar rooftop schemes which is already encouraging consumers across categories to install such systems through net metering as well as Gross metering options.

vi) 160 MW Wind Solar HybridProject

The State is also taking up 160 MW Wind Solar Hybrid Project with storage with the help of SECI and World Bank.This would be the first of its kind “Wind Solar Hybrid Project Storage” in the entire world and would be completed by mid-2019

3.6 Energy Efficiency and Conservation

APSECM (Andhra Pradesh State Energy Conservation Mission) is a society registered under AP Societies Act to take up initiatives to spread awareness regarding Energy Conservation measures in all sectors. SECM is responsible for

monitoring the implementation of Demand Side Management (DSM) measures in Domestic, Municipal, Agricultural and Industrial sector.

3.7 BLDC Pumpsets schemes

With an ultimate commitment to increase the income of farmers, provide assured power to agriculture pump sets during day time and change the agriculture as a most reliable sector, State Government is contemplating to introduce another unique "Grid connected solar pump set and income generating scheme" using Brushless DC motor (BLDC) pumpsets

Under this scheme, the government will provide "Grid connected solar pump sets" to farmers. The farmers can use the free power for irrigation and sell the remaining surplus to the grid.

3.8 Electric Vehicles and Charging Station

Government with a view to make Andhra Pradesh one of the major hubs for electric mobility, has introduced "Electric Mobility Policy 2018-23". This Policy aims to support every aspect of Electric Mobility and accelerating adoption of Electric Vehicles that eventually lead to healthier climate.

4. Key Achievements During the Period (June 2014 – Present):

4.1 Power Surplus State

The state was facing severe energy deficit (22.5 MU per day) at the time of State formation in June, 2014.Due to various steps initiated by the Government, the power deficit has been reduced to nil.The state has significantly shifted from being a power deficit state to currently a power surplus State.All the agricultural feeders are being supplied 7 hours of free power.All the consumers other than Agriculture are being extended 24x7 power supply.

4.2 Installed Capacity

The installed capacity in the State has increased by 100% during last four and half years.It has increased from 9,529 MW to 19,080 MW.APGENCO has added 2250 MW during the period.Krishnapatnam Super Critical Thermal Power Station (2x800 MW) RTPP Stage IV (1x600 MW) and Nagarjunasagar Tail Pond Hydel Station (2x25 MW) have been commissioned. The balance is through Renewable Energy Sources. APGENCO is also taking up Polavaram Hydro Electric Project (960 MW) and two 800 MW Super Critical Thermal Units at Vijayawada and Krishnapatnam.

4.3 Per capita Consumption

The energy met has increased from 43,810 MU during 2013-14 to 62,000 MU during 2018-19, registering an increase of 9% annually.The per capita consumption of electricity has increased to 1,174 units from 957 units during the period.

4.4 100% Households Electrification

Andhra Pradesh has become the second state in India to achieve 100% electrification of all households during June 2016.

4.5 System Strengthening

The number of EHT substations of AP TRANSCO have increased from 243 to 321, while 33/11 KV of AP DISCOMS have increased from 2,453 to 2,923 since 2014.

4.6 Externally Aided Projects & Investments attracted to the state

AP TRANSCO has taken up green energy corridor for evacuation of power from wind and solar projects at a total sanctioned cost of Rs.777.76 crores with funding from KFW.

ADB has sanctioned Rs.637 crores to APTRANSCO for taking up EHT substations and lines for evacuation of power under Visakhapatnam Chennai Industrial Corridor (VCIC).

4.7 Improvement in State Discom Ratings

Ministry of Power formulated an Integrated Rating Methodology in July 2012 for evaluating performance of State Power Distribution utilities on a range of parameters covering operational, financial, regulatory and reform parameters.

APEPDCL has improved from “B+” rating to “A” rating during 2018-19.

APSPDCL has improved from “B” rating to “B+” rating during 2018-19.

4.8 Renewable Energy

As a result of policy push and promotion,

- The cumulative renewable energy capacity in the State has reached 7,464 MW which includes 4,059 MW of wind and 2,591 MW of Solar. The state has also discovered very low tariff for solar power @ Rs.2.70 per unit which was reduced from Rs.6.49 per unit in the year 2014.

- The state is meeting around 22% (RPPO) of power through renewable sources during the current year (FY 2018-19) as against only 1.85% during 2013-14.
- Around 68 MW of Solar rooftop installations has also been installed in the state of Andhra Pradesh as on November 2018.
- 31,725 No's of solar pumpsets has been installed in the state as on November 2018.
- Solar Parks with total capacity of 4,000 MW are being developed in Anantapur, Kurnool and Kadapa Districts, of which 1,850 MW are already commissioned. The 1000 MW Kurnool solar park is the largest solar park at one location when it was commissioned.
- An investment of around Rs.36,604 crores has been made in the State in Renewable Energy since June 2014 which is generating employment around 13,000 No's (Majorly in Drought prone Rayalaseema Zone thereby improving the economy around that locality).
- Leading wind manufacturers like M/s Suzlon, M/s Gamesa and M/s ReGen have set up their manufacturing facility in the State.

4.9 Energy Efficiency

The State is promoting energy conservation and efficiency measures in a big way. Under these schemes,

(i) 2.20 crores LED bulbs have been distributed to households as a replacement for incandescent bulbs. **(Savings of 1621 MU's Annually)**

(ii) 6.23 lakh street lights have been replaced in urban local bodies with energy efficient lights. **(Savings of 133 MU's Annually)**

(iii) 20.09 lakh street lights have been replaced in Gram panchayats with energy efficient lights. **(Savings of 232 MU's Annually)**

(iv) 2.84 lakh energy efficient fans and 1.42 lakh numbers of energy efficient tube lights have been distributed to the households. **(Savings of 20 MU's Annually)**

(v) 44,874 No's of non-ISI pump sets have been replaced with energy efficient ISI pump sets. A target of one lakh in-efficient pump sets were proposed for replacement with energy efficient ISI pump sets.

4.10 Digital Initiatives

APDISCOM's have implemented consumer centric digital initiatives. These include providing consumers with real-time information, advanced complaint management systems and collection of consumer feedback to improve various services provided. These initiatives are helping transitions consumers to digital interaction platforms such as payments and service request processes from the current manual platforms.

4.11 Reduction in Transmission and Distribution Losses

APTransco has achieved transmission availability of 99.90% which is amongst highest in the country. Transmission losses decreased to 3.12% in FY 2019 from 3.59% in FY 2014.

The AP Discoms have also achieved T&D losses of 9.72% by September, 2018 which is lowest amongst the state owned utilities in the country.

4.12 BLDC Pumpset Scheme

- A pilot project of replacing 250 conventional pumpsets with BLDC pumpsets was successfully completed in APEPDCL and the feedback from farmers has been very positive.
- Tenders for 10,000 No's of grid connected solar BLDC pumpsets in developers model in East Godavari and West Godavari has been floated by APEPDCL.

4.13 Smart Meters

- MoU Signed with EESL for the supply for 17 lakh smart meters (11 lakh for APSPDCL and 6 lakh for APEPDCL) during the Partnership Summit in February 2018.
- The expenditure for these smart meters are paid on monthly rates per service smart meters as optional for consumers consuming energy between 200 to 500 units per month.
- 2.5 lakhs meters are expected to be installed by the end of FY 2018-19.

5.Tariff Proposals since 2014:

No tariff increase to Agricultural and Domestic Consumers in the 0-900 Units / annum range during the last four years.

The state has given subsidies to various categories in the last four and half years namely,

- **Dhobi Ghats:** Free supply to Dhobi Ghats.

- **Rural Horticulture Nurseries:** Free supply to nursery farmers; 4,000 Consumers benefited.
- **Electric Vehicles EV's /Charging stations:** Tariff Reduction by Rs.1 per unit from Rs.6.95 per unit to 5.95 per unit. (For FY 2019-20)
- **Aquaculture:** Reduction from Rs.4.13 per unit in FY 2015-16 to Rs.2.00 per unit in FY 2018-19
- **Free power upto 100 Units** for SC/ST categories under JagjeevanJyoti scheme (**Benefitting around 18 lakh consumers)**
- Reduction of Tariff for Religious Places, Poultry and Hatcheries

For the next financial year (FY 2019-20), there has been no proposal for increase in tariff.GoAP have provided a subsidy of Rs.6030 crores to Power Sector during 2018-19.

6. Awards:

Since 2014, The Government of Andhra Pradesh have been conferred with various prestigious awards. Total of 137 Awards have been conferred since 2014 across various organizations. The notable ones are mentioned below,

6.1 State of Andhra Pradesh (3 Awards):

Notable ones are *"Best State Of India For Energy Security, Governance & Sustainability"- 2nd Renewable Energy Promotion Association (REPA) State Awards 2016," Best State for PSE's Investment in India"," Best Emerging State in Solar Power"*.

6.2 APTRANSCO (10 Awards):

Notable ones are *"Best Performing Bureaucrats Affecting Sector Transformation - STATE --9th ENERTIA Awards 2015", "India & South Asia's Awards for Sustainable Energy & Power- 9th ENERTIA Awards 2015"," Best State Load Dispatch Centre (SLDC) -"IPPAI Award 2016", "Golden peacock HR Excellence Award for 2016"," Skoch Award", "IPPAI Award-2018- best transmission Utility", "CBIP award for best performing power transmission utility"*.

6.3 APGENCO (22 Awards):

Notable ones are *"Best Performing Utilities – Power Generation -9th ENERTIA Awards 2015", "Pride of India Award, Best performing utility in Thermal Sector", "International Icon Award"," IPPAI Award-2018 for Best Thermal units"," Greentech*

Gold Award-2017".

6.4 APDISCOMS (46Awards):

Notable ones are *"Most Progressive State in the Power Sector"--IPPAI Power Awards 2015, "Best DISCOM - National Energy Conservation Awards-2015 (APSPDCL)", "Certificate of recognition for "Implementation of Ag DSM Project" 17th Regulators & Policymakers Retreat-2016 (APEPDCL), "Vigilance excellence Award 2016-17" (APSPDCL), "Best DISCOM - National Energy Conservation Awards 2016 (APEPDCL)", "Winner in India Green Energy Awards 2018 (APSPDCL)", "Skoch Award-2018(State of Power, Oil & Gas)- GOLD (APEPDCL)"*.

6.5 NREDCAP (42 Awards):

Notable ones are *"India Solar Week Leadership Awards 2017", "India Solar Week Excellence Awards 2017"," Achievement Awards 2016-17 (Promotion of Wind Power and Solar Power Projects and AP Stood first in the country for the year 2016-17)"," Solar Quarter's Business Leadership Awards"," SKOCH order of Merit award for the year 2018", "SKOCH -Bronze Shield"*.

6.6 APSECM (9 Awards):

Notable ones are *"No.1 state in Country in Energy Efficiency"," Best State Designated Agency (SDA) - National Energy Conservation Awards-2015"," Excellence in Promotion of Energy Efficiency"*.

6.7 APSPCL (5 Awards):

Notable ones are *"SouryaRatna Award", "Progressive State Agency of the Year", "Skoch- Order of Merit Award"*.

7.Way Forward:

- Implement Second Generation Power Sector Reforms in the State of Andhra Pradesh
- Reduction in the Cost of power through local smart grids, Wind and Solar hybrid with storage and other means of Power Purchase Cost Optimization. Encouragement of distributed Solar generation through BLDC pumpsets.
- Reduction in T&D losses to well below 6%
- **IoT (Internet of Things):** APDISCOMS are making huge strides in the IoT spaces

related to asset monitoring and automation. Several initiatives are planned in the near future related to better maintenance of critical assets to reduce repair costs and improve lifespans. Various automation initiatives are planned to maximize use of renewable sources while maintain grid stability. These would use advanced analytics to make optimal decision in real time.

- Grid automation based on adoption of digital technologies for RE integration. For ex - Remote agriculture feeder management, Demand response etc.

8.Conclusion:

The Government has accorded the highest priority for development of power sector in Andhra Pradesh. The Government is committed to provide quality, reliable and affordable 24 hours power supply to all domestic, commercial and industrial consumers and 9 hours power supply to farming community. This white paper is prepared in line with the key objectives of the Government for developing power sector and also the short term to long term plans to achieve these objectives.

The Government requests all stakeholders and general public to study this white paper and provide their valuable suggestions / comments which would help the AP power sector to become the role model in the country.

2. Aviation Sector

A. Background:

Civil aviation plays a major role for economic development of the State. Apart from serving as hub for the air passengers, Airports are acknowledged as triggers of employment generation, tourism and industrial development in the region. The sector brings multitude of benefits by creating direct and in-direct employment opportunities. Ancillary sectors benefitting from airports include the hospitality, tourism, road transportation services etc.

In Air Transport, every US$ 100 expenditure produces benefits worth US$ 325 for the local economy and every 100 additional jobs result in 610 new jobs created in the local economy (Source: International Civil Aviation Organization).

B. Issues and Challenges:

The newly formed state of Andhra Pradesh had 04 public operational airports and 01 private airport namely: Visakhapatnam, Vijayawada, Rajahmundry, Tirupati, and Puttaparthi (Private airport). Another public Airport in Kadapa was non-operational. Visakhapatnam Airport was the only airport handling international flights from AP. The traffic handled in AP Airports during FY 13-14 was approximately 1.1 Million, which constituted less than 1% of the total passenger traffic in India.

Airports in Andhra Pradesh, did not have adequate infrastructure to handle wide-body aircraft such as Boeing 747, 777, Airbus A330 etc. The terminal capacity was limited to cater limited number of departing and arriving passengers. Some of the key statistics of aviation sector as on June 2014was as follows:

a. AP Airports traffic: Passenger traffic handled in AP Airports during FY13-14 was **1.1 Million** as compared to **170 Million** passengers recorded in India.

b. Air traffic movements during 2013: **28,500**

c. Number of cities connected across India: **7**

d. Type of aircraft being operated : Only code “C” aircraft including Airbus A320 and ATR – 42/ 72

e. Cargo handled : 890 MT

C. Scheme and Policies adopted:

In view of the challenges faced by the civil aviation sector and community at large and to support the airlines to increase frequency of operations in AP, the state

government has reduced the tax on Aviation Turbine Fuel (ATF) from 16% to 1%, a first of its kind in the country. Further, the state government brought out a model Civil Aviation Policy to spur robust growth of aviation sector in the state. Some of the key features of the AP Civil Aviation Policy include

a. Assistance with land acquisition and pooling for Airport development
b. Incentives / reimbursements to encourage development of airports and airlines to connect the cities of Andhra Pradesh
c. Viability Gap Funding for underwriting seats in airlines for underserved sectors
d. Stamp duty and property tax reimbursements for aircraft MRO, air cargo infrastructure, aviation education training

The State Government has provided land for the existing airports expansion, free of cost to AAI for all airports i.e. for Vijayawada – about 700 acres at a cost of about Rs.1,000 crore, Rajahmundry – about 857 acres at a cost of about Rs.300 crore, Tirupati – 725 acres at a cost of about Rs.200 crore, Kadapa – 50 acres at a cost of about Rs.40 crore. A new terminal building has been completed at a cost of Rs.130 crores at Vijayawada Airport and an integrated terminal building has been sanctioned at an estimated cost of Rs.660 crore. Similarly runway expansion and a new terminal building have been completed at Tirupati airport. Expansion of runway has been almost completed at Rajahmundry airport and is under progress in Kadapa airport.

Even before the Regional Connectivity Scheme was envisaged by the Government of India, GOAP has created the AP Regional Airport Development Fund (APRADF) through the AP civil Aviation Policy. The fund was utilized for providing regional connectivity and starting operations in Kadapa Airport. Further, GOAP has provided funds for International flight connectivity as Govt of India didn't deliver promised International connectivity to Tirupati and Vijayawada Airport except naming them as International Airports.

D. Achievements:

a. State capital Amaravati got connected to first International sector i.e. Singapore.
b. Airport capacity and size increased i.e. Runway length and terminals were expanded to accommodate larger aircraft of code D and E e.g. Boeing 787, A 321 etc.
c. Passenger movement at AP Airports enhanced to **5.5 MPPA (FY18-19)** from

initial 1.1 MPPA (FY13-14)

d. Connectivity to other cities in India increased from **7 Nos** to **15 Nos.**

e. Growth rate achieved over the last four years is **38% (CAGR)** in comparison to national growth rate of **12% (CAGR)**.The State currently handles 1.7% of the total passenger traffic in India and **stands at No.2** in terms of largest number of operational airports in the country.

f. Air traffic movements recorded during FY17-18: **51,300**, air traffic movements for Apr'18- Nov'18: **47,050**

g. Employment generation: nearly 4000 number generated across the Airports in AP.

h. Contribution to State GDP: Approximately 1.2%

E. Road map:

Besides expansion of existing airports, state government has taken action to develop 3 new airports at Bhogapuram near Visakhapatnam, Orvakal near Kurnool and Dagadarthi in Nellore districts. State government has also taken up with AAI for development of new airports at Donakonda in Prakasam District. It is also developing an airstrip at Kuppam in Chittoor district. Following is the status of the new airports taken by the state government.

a.Greenfield International Airport at Bhogapuram, VizianagaramDist.

(i) Project size: 2700 acres, Estimated cost: Rs.2302 Cr

(ii) Capacity (Phase – I): 6 Million(Phase II): 12 Million

(iii) Currently under tendering stage.

(iv) Scheduled commercial operation date: mid 2022

b. Greenfield Airport at Dagadarthi, Nellore district

(i) Project size: 1399 acres, Estimated cost: Rs.224 Cr

(ii) Capacity (Ultimate phase): 1.9 Million

(iii) Project awarded M/s SCL-Turbo consortium. Project under construction.

(iv) Planned Scheduled commercial operation date: mid 2020

c. No-frillsAirport at Orvakallu, Kurnool district

(i) Project size: 1010 Acres

(ii) Estimated cost: Rs.110 Cr

(iii) Inauguration planned: January 2019

d. Airstrip at Kuppam, Chittoor district

(i) Project size: 700 Acres

(ii) Estimated cost: Rs.60 Cr

(iii) Currently under tendering stage

(iv) Scheduled commissioning by end of 2019

e. Development of Helipads:

Development of Helipads envisaged at district and mandal headquarters, land identification / acquisition is under progress.

Passenger traffic (in millions) and growth rate at AP Airports:

Year	FY13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	CAGR %
Total	1.1	1.3	2.8	3.8	4.1	5.5	38%

3. Maritime Sector

1. Brief Background:

Andhra Pradesh has a coastline of about 974 Kms with one Major Port at Visakhapatnam under the administrative control of Government of India and 14 notified Ports under the control of Government of Andhra Pradesh, out of which 5 are functional Ports. Port facilitates imports and exports. Ports offer tremendous potential for development and growth of a wide spectrum of maritime activities such as international shipping, coastal shipping, ship repairs, fishing, captive ports for specific industries, all weather ports, tourism and sports.

Growth in port sector will help in enabling efficient logistics, development of the nearby region, growth of local industries, generate employment and massive urbanization. The vibrancy of Visakhapatnam, Kakinada and Nellore are directly attributed to the respective ports in the nearby area.

2. Status of AP Ports at the time of bifurcation:

Andhra Pradesh cargo capacity of Non Major ports were 90 MMT and Major Port of Visakhapatnam had 90 MMT in FY 2013-14. The total cargo handled was 116.9 MMT (including Visakhapatnam) during FY 2013-14 and ranked third position in the country after the States of Gujarat and Maharashtra.

Government of India has proposed the development of Second Major Port at Durgarajapatnam in Nellore District as per State Bifurcation Act, 2014 which was supposed to be operational by the year 2018.

3. Schemes and Policies since 2014:

Andhra Pradesh Port Policy, 2015

The Government Andhra Pradesh has formulated AP Port Policy-2015 to integrate various incentives available for Infrastructure Projects under one umbrella to make Andhra Pradesh a lucrative destination for the investments. Further the vision of the Policy is to develop Andhra Pradesh as the epicenter for the entire East bound cargo, to and from India under the “Act East Policy”. In order to achieve these objectives there is an integration of Ports with Industries and Multimodal Logistics in the AP Port Policy along with a provision for creation of Port Area Development Authority under AP Urban Area Development Act 1975.

Scheme to improve the Port Sector in the State

Reduction of VAT to zero per cent for bunkering in Andhra Pradesh Ports, Facilitated

Cabotage law relaxation to promote transshipment, import of Cars, Apples and Metallic Scrap, Formulation of AP Inland Vessels Rules, 2017 and Creation of Water Transport Authority under Department of Ports.

4. Achievement/Impact:

Due to the robust Port Policy of Government of Andhra Pradesh could award 2 new ports under PPP (viz. Bhavanapadu Port in Srikakulum District and Kakinada SEZ Port in East Godavari). Though a second Major Port was proposed to be developed by the GoI at Duggirajapatnam in Nellore District by end of 2018 as part of AP Reorganization Act 2014, but the GOI has not taken up the project citing non-feasibility. Therefore GOAP as an alternative took up the development of Ramayapatnam Port through an SPV of Government of Andhra Pradesh.

The cargo handling capacity of Andhra Pradesh Ports has increased from 180 MMT in 2013-14 to 315 MMT in 2018-19 which is 75 per cent growth in capacity addition.

The Andhra Pradesh has moved from Third position in 2013-14 with 116.9 MMT to Second position in 2018-19 with 173 MMT in terms of cargo traffic in India.

The **CAGR** for cargo traffic from 2013-14 to 2018-19 is **9%** which is the highest in the country.

Other achievements

Development of National Waterway 4 between Jaggiahpeta and Vijayawada (92 kms), Operation of Ro-Ro from Vijayawada to Amravati, Formulation of Boat Safety Manual for Inland Water Transport, Developments of 3 MMLPs (Multi-Modal Logistics Parks) by CONCOR in Visakhapatnam, Kakinada and Krishnapatnam and Issued Certificate of Competency to 40 candidates under AP IV Rules,2017.

The state government has taken up various road and rail connectivity projects to the Ports under Sagarmala.

5. Recognition/Awards:

List of Awards for Andhra Pradesh Ports:

- Container Handling Terminal of the Year – 10th South East Conclave & Awards 2018
- **"5 Star"**&**"4 Star"** Rating Award for excellence in EHS practices by CII – SR EHS Excellence Awards in 2017 & 2016 respectively
- **"First Place"** in Construction/Infrastructure/Power sector by CII – SR Excellence Awards in EHS – 2017

- **"First Place"** in Infrastructure sector by CII – SR Excellence Awards in EHS – 2015 -16
- **"Golden Peacock Environment Management"** Award 2015 by Instituted by the Institute of Directors
- Award for India's Best Port at the **2nd Markenomy** Award 2015
- **Gateway Award 2015** for India's Best Private Port

6. Future Vision:

Government of Andhra Pradesh desires to achieve the following by the year 2025:-

Increasing the Cargo Handling capacity to 750 MMT, Cargo traffic of 500 MMT, 5 million TEUs, Fully operational additional 4 Non Major Ports (viz. Bhavanapadu in Srikakulam District, Kakinada SEZ in East Godavari District, Machilipatnam in Krishna District &Ramayapatnam in Prakasham District), Operation of 6 Major River port, 15 MMLPs (Multi-Modal Logistics Parks), 5 CEZ (Coastal Employment Zones) and Dedicated Road and Rail connectivity to all the ports.

The ultimate goal of the development of maritime sector is to develop an ecosystem which will integrate hinterland, logistics (Multimodal Logistics Park) and industries to make Andhra Pradesh as the largest East Bound Cargo Handling State.

4. Gas Infrastructure Sector

1. Brief Background:

Natural Gas, with its low carbon emission rate, is one of the cleanest primary energy resource used across world by all developed / developing countries. Globally, contribution of Natural Gas in primary energy consumption currently stands at around 22% whereas the same in India is around a mere 5% with highly polluting Coal & Oil contributing over 80% of India's primary energy consumption.

Government of Andhra Pradesh accorded priority to development of Gas Infrastructure across State over the last four and half years and has taken few unprecedented policy decisions in pursuit of the objective which are first of its kind in India to expedite the expansion of Gas infrastructure in Andhra Pradesh.

2. Issues / Challenges at the time of State Bifurcation in 2014:

Gas Infrastructure existing in the State of Andhra Pradesh in Jun'14 is as under:

Trunk Steel Pipeline Network	Approximately 1100 Km
Steel Pipeline Network for City Gas Distribution	49 Km
MDPE Pipeline Network for City Gas Distribution	65 Km
Domestic Piped Natural Gas Connections	1882
Compressed Natural Gas Stations	10

The existing Gas Infrastructure in Jun'14 was limited to East & West Godavari Districts and some part of Krishna District. Active participation of State Government, thus, was essential for expeditiously expanding the Gas Infrastructure across entire State.

3. Schemes / Policies adopted by State Government to expedite development of Gas Infrastructure:

- Active participation in bidding rounds of PNGRB for authorization of Natural Gas Pipelines and CGD Projects through its Joint Venture Andhra Pradesh Gas Distribution Corporation Ltd. based on which authorization for Kakinada – Srikakulam Natural Gas Pipeline and City Gas Distribution in East Godavari & West Godavari Districts were received from PNGRB.
- For the first time in Indian CGD Project context, Government of Andhra Pradesh accorded Blanket Permission to lay CGD Pipelines in all Cities / Towns of East

& West Godavari Districts free of cost.

- Allotment of Government Lands at nine Cities / Towns of Godavari Districts for developing CNG Stations.
- Process for issue of No Objection Certificates by District Magistrates to establish CNG Stations, was rationalized and DM NoCs are now being issued in 1-2 weeks time as against 2-3 months time taken in other States.
- Providing Domestic PNG Connection in East & West Godavari Districts without any upfront Security Deposit (which is Rs.5000 per connection).

4. Achievements since 2014:

Due to the aggressive government support / promotion and highly supporting policy framework, rapid growth in Gas Infrastructure is achieved as under:

(Status on cumulative basis)

Infrastructure Description	As on Jun'14	As on Nov'18	Targeted by Mar'19
Steel Pipeline Network for City Gas Distribution	49 Km	79 Km	145 Km
MDPE Pipeline Network for City Gas Distribution	65 Km	895 Km	1250 Km
Domestic Piped Natural Gas Connections	1882Houses	29450 Houses	55000Houses
Compressed Natural Gas Stations	10Stations	26Stations	41Stations

5. Growth / Benefit / Impact:

Capital investment of over Rs.330 Cr. made in the Gas Infrastructure Projects during last 4 years which has directly contributed in GDP Growth of the State. Further, cheaper, cleaner and safer fuel is being supplied to Industrial, Commercial, Domestic and Transportation Segment Customers through which the Customers are realizing significant fuel cost benefits (ranging from 5% to 50% depending on the segment / fuel that was being used earlier).

Further to the above, the Gas Infrastructure development Projects generated direct / indirect employment of over 1700 Persons.

6. Road Map for next five Years:

Completing Kakinada – Srikakulam Pipeline Project with an estimated investment of over Rs.1000 Cr. and providing another 2.5 Lakh Domestic PNG Connections &establishing 32 CNG Stations East & West Godavari Districts and Vijayawada City with an estimated investment of over Rs.800 Cr. The Government of AP have planned to establish gas grid across the state covering all the districts.

Completing the proposed FSRU based LNG Terminal at Kakinada with an estimated investment of Rs.1200 Cr. and annual Operational expenditure of Rs.600 Cr.

Actively participating for authorization of all new Natural Gas Pipelines & CGD Geographical Areas pertaining to Andhra Pradesh State bided by PNGRB.

5. Fiber Grid Sector

1. Background:

Developed nations around the world have added internet broadband access to their citizens as a utility and strive to ensure that everyonehas access to the benefits of high-speed network. Innovations in this century are largely fuelled by the revolutionary power of Broadband that helps in the socio-economic growth of societies. In this regard, Government of Andhra Pradesh envisages that every household in the state has access to internet and every family reaps the benefit of it. Hence, Fiber Grid is identified as one of the 5 Grids of Government of Andhra Pradesh to accelerate socio-economic growth of the State. Fiber Grid is established primarily aimed at harnessing the power of information resource and enabling provision of qualitative and cost-effective IT, Communication and other related services to all the citizens.

Andhra Pradesh State Fibernet Limited (APSFL) formed by GoAP during 2015 aims to promote Digital inclusiveness and bridge urban-rural divide by providing affordable, high-speed broadband connectivity to households, deepening the reach of internet in the rural areas. APSFL started providing triple play services (IPTV, Internet & VoIP) to domestic customers as well as public and private enterprises. This endeavour can truly turn the State of AP as Digital AP.

2. Issues & Challenges at the time of Bifurcation:

At the time of bifurcation in June 2014, wired broadband penetration is less than 9% and wired landline penetration is very low in the newly formed state. Especially, the condition of wired internet penetration in rural, remote areas and gram panchayats was very low. Also, quality and accessibility of useful content in Telugu language was very low. Apart from internet, AP state-owned surveillance cameras in working condition were less than 1000. In terms of internet speed, India was ranked 114 globally with an average internet speed of 2.5 Mbps in 2015.

3. Schemes & Policies initiated by GoAP:

Government of Andhra Pradesh have**incorporated AP State FiberNet Limited (APSFL)** during October 2015 to provide 15 Mbps of high-speed internet, landline telephony and 300 channels on IP based Television (IPTV) along with value added services to each citizen and Government offices of Andhra Pradesh.

Similarly, state government has incorporated **Andhra Pradesh Towers Limited (APTL)** with an aim to create robust telecom tower infrastructure for enhancing the existing

mobile connectivity in rural and remote areas of the state using AP Fiberinfrastructure.Due to the increasing role and importance of various support services offered by APSFL, the AP Government has decided to form three new corporations under APSFL

- **AP Content Corporation –** Aims to provide and curate rich content and make it accessible to all cross sections of citizens
- **AP Drones Corporation –** Aims to be a regulator and single-stop solution provider using drones to enhance the efficiency of various government departments and provide better governance to citizens
- **AP Virtual Classrooms Corporation –** Envisages to provide quality and uniform education in all government and municipal schools

4. Key Achievements:

- First state government entity in India to become licensed Internet Service Provider, Telecom Service Provider and IPTV provider
- First state government entity in India to adopt and roll out one of the most advanced technology in communication
- First of its kind in the world to provide triple play services at an affordable price of Rs.149 per month
- 24 Core ADSS Optical fiber cable has been laid across the 13 districts of the state leveraging electrical network for a length of around 24,000 KM in a record duration of 9 months by July 2016. The fiber runs through 3,70,000 electricity poles with 1188 33KV feeders
- State-of-the-Art Network Operations Center (NOC) was setup within 6 months
- Back end electronics has been set up at Points of Presence (PoPs) at 2445 identified locations, mainly electrical sub-stations and made operational within 18 months
- Above infrastructure was laid out at a total cost of Rs.328 Crores which is 10 times less than the cost that would be incurred for an underground network
- Around 15,000 LCO’s and MSO’s have already been registered with APSFL as business partners to provide last mile services to all households and institutions/offices which allows rapid penetration of APSFL’s triple play services leveraging their innate market experience and capabilities

- APSFL has introduced Free Space Optic Communication (FSOC) to provide connectivity to the remote and agency areas in the difficult terrains of Andhra Pradesh. Using this technology, APSFL has demonstrated for first time in the world connecting a remote tribal village on video conference to an international forum at Davos.
- FSOC technology is being utilized to provide quality education to the students of tribal villages in Araku, Rampachodavarametc through virtual classroom project
- Connected 5.8 Lakh households & enterprises across 13 districts of AP as on date.
- Connected 4000+ villages across 620+ Mandals thus far
- Connected 2300+ ZillaParishad and Municipal schools for Virtual Classrooms. On way forward to connect 4000 schools by end of March 2019 impacting 8 Lakh secondary school students.
- Connected 1000+ Gram Panchayat offices. On way forward to connect all gram panchayats by end of June 2019
- Connected 2635 Existing and 8000+ New Surveillance Cameras in APSFL Network
- Government of India validated AP Fiber Grid Model and advised other State Governments to study the aerial fiber model of AP
- Pilot project completed in association with Google for providing Public Wi-Fi services across AP

5. Impact on Citizens:

APSFL, through its products and services, had considerable impact on citizens in different aspects such as citizen happiness, employment, economic growth and effective governance. APSFL has designed its offerings to provide entertainment riding over internet and enabling the remote and rural citizens utilize the internet facility for their information and e-commerce needs.

APSFL has indirectly contributed to the economic growth of the state through internet penetration which has direct correlation to GDP growth. World Bank report concludes that “A 10 percentage point increase in fixed broadband penetration would increase GDP growth by 1.38% in developing economies”. APSFL in the last 4.5 years has contributed to increase of 5.7% of internet penetration in the state

thereby contributing to an increase of 0.08% of GDP of the state as per the correlation.

APSFL also generated direct and indirect employment of around 25000. APSFL has also provided skill enhancement training to more than 10,000 youth for their employment. APSFL has also increased the earning opportunities of existing Local Cable Operators through multiple revenue sources.

APSFL has contributed significantly in effective Governance through providing necessary infrastructure for delivering Real Time Governance, utilization of drones, provisioning of bandwidth services to different smart cities and coordinating with district administration and telecom service providers during natural calamities for quick restoration of communication services.

6. Vision for next 5 Years:

- Targeting to provide triple play connectivity to every household in the state by connecting gram panchayats
- Targeting to provide high speed internet to every government and private enterprise
- Providing and connecting surveillance cameras at all strategic locations across the state
- Providing analytics-based alerts to various department viz., Alerts like crowding, accidents, traffic rule violation to police department, Alerts related to cleanliness and greenery to municipal administration department, Alerts related to road conditions, potholes to Roads & Buildings and Panchayati Raj department
- Providing free public Wi-Fi access points at 30,000 locations in urban and rural areas of the state
- Integrating existing and new community cameras for better security and monitoring
- Connecting additional 6000 schools through virtual classrooms
- Constructing world-class state datacenter and providing services through AP Government cloud
- Providing affordable health related technological solutions at the primary health center by connecting to nearest government/private hospitals

- Providing video-conferencing-on-demand service to all govt. departments and public
- Providing around 10,000 new telecom tower infrastructure and providing fiber infrastructure to all existing and new telecom service providers
- AP Drones Corporation targets to provide services to all government departments like Mines, Agriculture, Law & Order, Disaster management and also for effective monitoring of the progress of major projects.
- APSFL also aims to provide connectivity to 2000 remote locations and telecom towers through FSOC technology.

6. Roads and Buildings

Achievements 2014-18

1. National Highways:

- **Amaravati – Anantapur Greenfield Expressway**

  - On the submission of Feasibility Report, alignment proposals and Draft DPR by the State Government, the Ministry of Road, Transport & Highways (MoRTH), Government of India has approved the Amaravati ¬– Anantapur Greenfield expressway for a length of 384.00 km with an approximate cost of Rs.20,000 Crores, to be executed **by the NHAI**. This helps in reducing the travel distance as well as time, which leads to better logistic corridor connecting the Rayalaseema backward region with the Capital and the ports and ultimately leading to Socio Economic development of this region.

  - Land Acquisition cost will be shared 50:50 between GoI and State Government and the process of acquisition for 100m Right of Way (RoW) is already initiated. The Detailed Project Report (DPR) is in advance stage and is to be submitted to NHAI by December end, 2018.

- **2164 Km of R&B roads have been upgraded as National Highways since June 2014**

  - Total length of National Highways in the state is increased from 4294 Km to **6458Km**. Thereby, incrementof**50.39%** National Highways network has been achieved in the state.

- **Declared & Proposed In-Principle National Highways**

  - 11 roads having total length of 717 km are declared as In-Principle National Highways. Action is underway for Gazette notification of these roads also as National Highways.

  - Further, additionally, 1612 Km length of roads is proposed to GOI for In Principle National Highways approval.

- **Up-gradation of National Highways to Two lane with paved shoulders / 4 Lane**

  - **Completed works:** It is envisaged to make all the National Highways under

control of MoRTH and being executed and maintained by R&B(NH Wing)and NHAI minimum Two lane with paved shoulders by 2020. To achieve this goal, **2400 Km** have been upgraded to 2 lane paved shoulders / 4 lane with a cost of **Rs.12,729 Crores** in the state since June 2014 by NHAI, PIU & R&B (NH).

- **Under Implementation:** 47 works for a length of **2329 Km** for up-gradation to 2 lane paved shoulders / 4 lane with a cost of **Rs.25,675 Cr** are under implementation.

➢ **Projects under Sagarmala by NHAI**

- DPRs for **330 Km** length of National Highways under Sagarmala scheme are being taken up in the State for improving road connectivity to ports and improve logistics in the state.

➢ **Railway Safety Works - Replacing all Level Crossings with ROBs on National Highways**

- To achieve this **goal**, **30 Nos** of ROBs are identified on National Highways with a target to complete all by 2020.

➢ **Expansion of National Highways to develop backward, remote and tourism areas under BharatmalaPariyojana Scheme**

- **Ongole – Bestavaripeta road (via Gotlagattu)** (110 km) in Prakasam district and **Malkangiri – Sabbavaram road** (280 km) in Visakhapatnam district connecting with Odisha are identified for up-gradation as National Highways to develop under BharatmalaPariyojana Scheme and targeted to improve by 2020.

➢ **Best Practices**

- Consent was given to CRRI proposal regarding laying of trial section of **Cement Grouted Bituminous Mix** (CGBM) in the ongoing 6-lane project of Kanchikacherla and Nandigama Bypasses on **NH-65** in Andhra Pradesh.
- Conducted programs on Eye testing / providing opticals for drivers on Highways.
- **Electronic Toll Collection** (ETC) implemented.
- **Fastags** are implemented to avoid queues at Toll Plazas.

- Introduced **Highway Nest** (Village) (2 Ha to 5 Ha) &**Highway Nest** (Mini) (upto 2 Ha) at Toll Plazas.
- Introduced **1033 Helpline** and **SukhadYatra App** for public to know their Highways and Amenities available at the nearest places.
- Construction of **toilets** at Toll Plazas.

2. State Roads:

➢ **Increase in State Road Network**

- State Road network **increased to 46342 Km** from 41956 Km in 2014-15.

➢ **Improvement of road toensure safe and through traffic**

- **10691Km** length of roadsand **133 bridges** were sanctioned and is under execution with an outlay of **Rs.10,732Cr** since June 2014 under variousschemes.
- Further, 1930 Km length of roads are **being sanctioned** for strengthening and widening during the year 2018-19 for an amount of **Rs.2122 Cr**.

➢ **Conversion of Non-BT roads to BT standards**

- **All Non-BT roads (1810 Km)** will be converted into **BT standards** with a cost of **Rs.1,580 Cr** by 2020 under NABARD loan assistance & Rural Roads (Capital) schemes.
- Out of 1810 Km, **991 Km** length of Non-BT roads with a cost of **Rs.848 Cr** has been **sanctioned** in this year and is under execution.

➢ **Making all State Highways & Major District Roads to Double lane (>2000PCUs)**

- It is proposed to widen all single lane State Highways having traffic intensity of more than 2000 PCUs to double lane standards .As part of the above, a road length of 586 Km with a cost of Rs.733 Cr have been proposed this year.
- It is proposed to widen all single lane Major District roads having traffic intensity of more than 2000 PCUs to double lane standards. As part of the above, a road length of 417 Km with a cost of Rs.518 Cr has been proposed this year.

- It is also proposed to make all highways with more than PCU>15000 as 4-Lane Roads, under PPP, CRF and EAP.

➢ **Best Practices**

- Online **road cutting permissions** are being accorded as part of the **Ease of Doing Business** (EoDB).
- Introduction of Road Numbering and Road Management system **(RMS)** for all Roads (SH, MDR, ODR) in R&B Department for scientific approach for strategic development and maintenance of roads.
- Allthe R&B road network has been surveyed through **Automated Network Survey Vehicle**. Computerized Road Management System has been established for prioritization of improvements & maintenance of state roads and work sanctions are being done based on the outcome of the studies.
- **Special Administrative Sanction powers are delegated** to Superintending Engineer & Chief Engineers to take up temporary restoration works on war footing in case traffic interruptions during **natural calamities**.
- Establishing **IT- Command Control Centre (IT-CCC)** for R&B Department where **RMS, MIS and Works Management System** are integrated on GIS system as decision support system, to monitor daily departmental activities and for data dissemination.

➢ **Maintenance of Roads in Pothole Free (PHF) condition**

- Introduction of **Long term performance-based maintenance contracts (LTPBMC)** for better road maintenance of high traffic State Highways of length 4700 Km. It is intended to bring all the State Highways into long term maintenance contracts to keep roads 100% Pot-Hole Free **(PHF)** and specified service standards at all times.
- Systemic improvements in execution of works to MoRTH Standards and inbuilt maintenance contract of 5 years in all new capital works taken up for execution has been introduced.
- The total length of StateRoads is being maintained in pothole free condition through **Annual Maintenance** / Urgent Repairs.

3. Special Schemes for Improvement of Road Connectivity:

➢ **Externally Funded Projects**

- **Asian Development Bank (ADB) –** As part of Vizag - Chennai industrial Corridor Development program **(VCIC-DP)**, 66.30 Km of road projects are taken up with a cost of Rs.938.00 Cr.

- **World Bank aided AP Road Sector Project (APRSP) –** Under Up-gradation component of the project, 8 works for a length of 231 km costing Rs.724 Cr have been sanctioned for widening & strengthening of identified State Highways and are nearing completion.

- **World Bank aided National Cyclone Risk Mitigation Project (NCRMP) –** 35 works costing Rs.365 Cr have been sanctioned inCyclone damaged coastal districts for reconstruction of 53 Km length of roads and 30 bridges and all works are nearing completion.

- **World Bank aided AP Disaster Recovery project (APDRP) –** 20 works costing Rs.259.40 Cr have been sanctioned forHudHud Cyclone damaged districts (Srikakulam, Vizianagaram, Visakhapatnam& East Godavari). All works have been grounded and are under brisk progress.

- **New Development Bank (NDB) –**Two projects AP Mandal Connectivity and Rural Connectivity Improvement Project **(APMCRCIP)**&AP Roads and Bridges Reconstruction Project **(APRBRP)** for a length of **3011Km** costing **Rs.3200 Cr each**(Total Rs.6400 Cr) were proposed and is under consideration of the New Development Bank (NDB) for improving the Two lane road connectivity, Construction of Bridges at Un-bridged crossings **(132 Nos)**& Reconstruction of Weak, Narrow & Dilapidated Bridges **(300 Nos)**. The projects are likely to be sanctioned and grounded in 2019-20.

➢ **Centrally Sponsored Schemes**

- **CRF (Central Road Fund) –** 112 works for a length of **1661 Km** with a cost of **Rs.1162 Cr** have been **improved** since June 2014.

- **Road Connectivity Project for Left Wing Extremism Affected Areas (RCPLWEA) –** 39 number of works for **Rs.329 Cr** have been sanctioned in 4 districts (Srikakulam, Vizianagaram, Visakhapatnam & East Godavari District) having

interstate border with Odisha. Works are being grounded.

- **Railway Safety works – Replacing Level crossings with ROBs/RUBs -** 20 ROBs have been completed since June 2014 under Railway Safety works.

➢ **Works sanctioned under NABARD Loan Assistance**

- An amount of Rs.1017 Cr was sanctioned for improvement of 1248 km length of rural roads including construction of 30 bridges since June 2014.

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7. Economic Cities

Focus on Employment Generation and Economic Development

1. Background:

India is part of global trend towards increasing urbanization and the urban share of GDP has increased from 29% in 1950-51 to 60% in 2001 and is expected to contribute to 75% of GDP by 2021. Economic Cities development is a key initiative undertaken by Govt. in 2016-17 to make urbanisation and industrialisation as key pillars of Economic Growth.

These futuristic cities with self-sustaining ecosystem and a walk-to-work environment will generate construction led economic growth, enhance tax to GSDP contribution, increase income of local governments and boost the local economy of construction materials; create incremental jobs; provide housing to all sections of the society and caters to their social, recreational and other needs, thereby increasing the happiness index of the citizens of Andhra Pradesh.

2. Economic Cities planned across Andhra Pradesh:

In line with the vision for Economic Cities and for the first time in the country, 100+ Economic Cities has been planned across all major ULB's in the State:

- Srikakulam: Cold Chain, Warehousing & Logistics, MSME
- Vizianagaram: Plastic City, Warehouse & Logistics, MSME
- Visakhapatnam: Construction City, Light Engineering
- East Godavari: Food processing, Knowledge Hub
- West Godavari: Retail Park, Logistics
- Krishna: MSME, Light Engineering, Electricals, Knowledge, R&D, Packaging
- Guntur: Constr. City, Logistics, Assembly, IT, Light Ind., Textile, Furnishing
- Prakasam: Manufacturing Hub, Warehousing & Logistics, Bio City
- Kurnool: Pharma City, Construction City, Plastic City, MSME, Diary, Printing
- Ananthapur: Defence City, Korean City (leveraging KIA), Logistics

- Kadappa: Sarees, Textile, Aromatic Medical Products
- Nellore: Stainless Steel, Utensils
- Chitoor: Construction City, Timber City, Cotton Knitwear, Logisitcs

The core strategy has been to identify townships, which have potential to develop ancillary industries space with focus on utilising the local resources, skilled labour and thus providing for requirements of large industries in the region. The advantage of this approach is better assurance of raw materials supply, greater employment potential and decentralized growth of industries.

Nodal Agency

Andhra Pradesh Economic Cities Promotion and Development Corporation (APEDCO) has been established as the Nodal Agency to spearhead the Economic Cities initiatives and implement projects across the State.

3. Projects and Initiatives in Advanced Stages:

Since the formulation of the Economic Cities, in less than a year, significant progress has been made by the State demonstrating commitment and value:

- **JET City:** First phase of the project has been grounded in Jakkampudi, Vijayawada in 8.55 acres land; land levelling completed and building works in progress for 6.45 lac sft industrial space; two phases of allotment completed for over 50% of the space and remaining in the process of allotment; banking tie-ups in place; target completion Aug 2019; additional land in process of alienation for future development
- **Private Economic Cities:** Private developers have been encouraged to develop economic cities on private land with external infra and policy support by Govt. Various developers have evinced interest, 14 MOU's signed and after detailed evaluation by UIPC and UIPB, six were selected and Letter of Intent issued for development in Visakhapatnam, Vijayawada, Rajahmundry and Kurnool. Of this, five developers have already submitted DPR's, in progress
- **APCON City Amaravati:** Construction City is being developed with APCRDA in Amaravati; 145 acres land identified; project development activities commenced and expression of interest received from major national and international players in the building material sector; focus also on skill development and knowledge;

three more cities proposed in Visakhapaatnam, Krishnapatnam and Kurnool and manufacturing to be based in Donakonda

- **Pharma City:** Being developed in Orvakal, Kurnool; interest received from industries; land to be transferred to initiate project development; policy support from Government of India awaited
- **Bio City:** in Singarayakonda and Aromatic Medical Products in Kadapa
- **MOU's:** State has signed 23 MOU's, 5 under implementation, 9 in progress

Potential Impact of above Projects in next 2-3 years

- Jobs: ~200,000
- Potential Development: Over 100 Mnsft (6.45 lac sft under development)
- Targeted Investments:~Rs.25,000 Cr
- Housing: Over100,000
- Timeline: Phase 1 implementation 18-24 months (JET City by Aug 2019)

8. Amaravati Capital City

1. Brief Background:

The successor state of Andhra Pradesh ended without a capital of its own due to the unscientific bifurcation of combined state of Andhra Pradesh in 2014. The common capital of Hyderabad in terms of the AP Reorganisation Act 2014 is outside the geographical boundaries of state of Andhra Pradesh and has caused lot of administrative inconveniences to the people of Andhra Pradesh.

The state of Andhra Pradesh was at substantial disadvantage due to bifurcation in terms of inequitable distribution of assets and liabilities The impact of losing Hyderabad are highlighted:

- The State was at huge disadvantage in terms of urbanisation with meagre 27% urbanisation in the state which was lower than the national average.
- Andhra Pradesh was slated to be created without a Capital losing the economic powerhouse and capital Hyderabad
- All the major assets are in and around Hyderabad city, like large scale industrial base,central institutions
- facing a severe resource crunch as Hyderabad and its hinterland has been, for decades, the centre for industries, educational, research & defence institutions.
- Hyderabad city had a population of nearly 10million i.e. 12% of the population of combined A.P. state and 30% of state revenue is generated from capital region.
- Its impact on the morale of the population, administration and economy has been cataclysmic.
- Capital is an economic growth engine. Sizable revenue to the State Government comes from the capital. Since Andhra Pradesh economy is predominantly agrarian, it is essential to build and develop a capital metropolis so that there is substantial revenue from service sector besides creating sizable employment. In fact the Govt. of India is benefitted financially as they would increase their tax revenues once Amaravati is constructed.
- Impact of Common Capital :

- Hyderabad is outside the geographical boundaries of Andhra Pradesh causing greater hardship for the people of Andhra Pradesh in terms of administrative inconvenience, access to services of the Government.

2. Issues and challenges at the time of bifurcation:

The challenges at the time of bifurcation:

- lack of capital city for shifting the Government machinery,
- non availability of office space for even Hon'ble CM, Hon'ble Ministers and Officials.
- People of Andhra Pradesh had to travel outside the boundaries of the State to reach Common Capital to access services of the government
- Enormous task of triggering economic development in the new state and achieve a sustained growth
- Finalising the location for new Capital City :
  - At the time of bifurcation, the location for new capital city was not identified. Government of India had constituted an expert committee (Sivarama Krishnan Committee) for study and to suggest the location for new capital. The Committee raised regional expectations and confusion but did not provide a conclusive indication on the preferred location for the capital city. However, in the surveys conducted by the Committee, the region around Vijayawada and Guntur. stood as preferable location with 52% favouring it amongst who participated in the survey
  - The Committee had in its report made an indicative cost estimate for AP Capital Zone Buildings, Infrastructure etc. of Rs.27,097 crore (2014 prices). The said Committee had indicated an amount of Rs.4,49,505 crores is required for the overall economic development of Andhra Pradesh.

3. Schemes, policies and vision adopted by the Government of Andhra Pradesh:

The newly elected Government in 2014, was determined to convert the crisis into an opportunity to build a sustainable capital city for the State. It has decided to locate the Capital City in a central place of the State, around Vijayawada, and to go for

decentralized development of the State with 3 Mega Cities and 14 Smart Cities. They Government also decided to undertaken an innovative Land Pooling System (LPS) to be worked out by a Cabinet Sub Committee.

Multiple reasons that were considered in finalising the location for new capital city:

- extensive consultations with experts and public organizations
- geographically central location providing equal access to all,
- rail, road & airways connectivity,
- away from natural calamities
- proximity to ports like Kakinada, Machilipatnam,
- river Krishna, and availability of perennial water,
- proximity to urban areas like Vijayawada and Guntur with existing infrastructure to kick start the development
- its cultural and political history of more than 2000 years.

The GOAP has enacted The Andhra Pradesh Capital Region Development Authority Act 2014 and has constituted APCRDA as the nodal agency responsible for the purpose of

- Planning, Co-ordination, Execution, Supervision, Financing, Funding and for Promoting and Securing the Planned Development of the Capital Region and Capital City Area for the State of Andhra Pradesh and
- for managing and supervising urban services in the New Capital Area and for the matters ancillary thereto.

The capital region consisting of 7317 sq.km was notified, which has subsequently been expanded to 8603.sq. km.The Capital City was notified to be having 217 Sq Km of area. And the Capital was named as “Amaravati”.

3.1 Support of Government of Singapore

- With an aim to develop the new capital city with global standards and to attract globalinvestments, GoAP had entered into an MOU with the Government of Singapore for support in areas like the master planning for Capital Region,

Capital City and Seed capital, knowledge sharing in areas like urban governance, city development through Government of Singapore institutions like Center for Livable Cities IE Singapore, economic development as well as institutional support.

- As part of the MOU, three master plans: Perspective master plan for Capital Region, Master plan for Capital city and seed capital were then submitted by Singapore based company SurbanaJurong in record time, by July 2015

3.2 Land Pooling Scheme

- After identification of the location for new Capital at Amaravati, GOAP formulated an innovative, voluntary, participatory land-pooling scheme. through the APCRDA Act 2014. LPS is a partnership between the farmers and the CRDA. Farmers will reap the economic benefits out of the development.
- The process of allotting returnable plots to the farmers has been completed in 22 revenue villages and 65,235 returnable plots of which 37,531 residential, 26,038 commercial plots and 1666 villas allotted to its land owners.
- Under the Land Pooling scheme, the land owners are provided 25-30% of the land pooled to the CRDA as a completely developed plot with all utilities in an urban neighbourhood. The plots would have accessibility by road, access to water, power, sewerage, gas, ICT and other such utilities, to be developed in a period of 3 years from the date of re-allotment of the plots.
- Till date, 28,074 land owners have provided 34,010 acres towards the Land Pooling Scheme
- This mode of engagement with the land owners through the Land Pooling Scheme (LPS) ensured that the farmers are made partners in the development. Apart from the land that is returned to them, various social benefits were provided to the land owners to support their requirements to transition from their current livelihoods to the urban economy. Annuities, debt-waiver, free education, health camps, subsidized canteens and other benefits are also being provided to the land owners for a period of 10 years.
- The habitations of the land owners were kept intact, and hence there was no displacement in the process of development of the city. Additionally, the labourers, artisans and other persons without land affected by the project are

also provided with pensions.

- Amaravati Capital City development is by far the largest ever socially inclusive development anywhere and anytime in the history across the globe.
- This un-paralleled success got possible only through the extensive support by the landowners, consultative and partner approach by government and aspiration of people of Andhra Pradesh for developing people's capital.

4. Master planning:

4.1 Urban Planning

- The vision is to develop Amaravati as the global economic hub and emerge as global destination of people, investments, jobs endowed with world's best infrastructure.
  - *"Amaravati is envisioned to be one of the Happiest cities encompassing the highest standards of livability, infrastructure with a thriving economic environment"*
    - 'Salient features of the master plan :
      - over 30% blue green footprint, with ample public spaces such as parks, riverfront and canal front.
      - to host a population of approx. **3.5 million in 35 years** and **2 million jobs in 25-35 years**.
      - Importance to Non Motorised transport- **Pedestrian & cycling tracks totaling 3200kms**.
      - Smart infrastructure is planned for the city incorporating principles of sustainability and environment friendliness. Uninterrupted power supply will be provided 24/7 with 35% of power being generated from renewables High quality public transport infrastructure is being planned with an Electric Bus rapid transit system to be rolled out in a few months
      - The Masterplans have been prepared with extensive support from international organizations and foreign government collaboration. Notable Government entities supporting the project include JICA,

Government of UK and the Government of Australia.

4.2 Socio-economic planning

1. To make Amaravati the global investment destination, 9 economic thematic cities are identified to be developed. They are Financial city, Government city, Justice city, Knowledge city, Media city, Sports city, Health city, Electronics city and Tourism city.
2. Currently, over 60,000 jobs have been committed through land allotments to various organizations, and 2.5 lakh jobs from Start-up area development with impetus on local population.
3. In order to match the demand of growing demand for skilled and semi-skilled workforce within the capital region, Government of AP in association with CRDA has undertaken massive skilling programmes which includes establishing skill development and training institutes in association with L&T, employment drives and job melas, association with universities like UC Berkeley and IIM Ahmedabad in order to explore and promote entrepreneurial opportunities to the local youth.

5. Status of project:

5.1 Construction progress

- The overall cost of construction of Amaravati is Rs.51,687 Cr in Phase I and Rs.1,09,023 Cr. in total
- Out of the Rs.51,687 Cr construction works to be undertaken, Rs.39,875 Crores of works are under execution on ground.
- Only works worth Rs.7,599 Crores are remaining, which is 15% of the overall, and the same will be tendered by Jan 2019.

Category	Under Execution	Tendering phase	Planning Phase	Grand Total
Trunk Infrastructure	15,865	1,806	2,098	19,768
LPS Infrastructure	13,175	2,408	2,327	17,910
Govt. Complex and others*	10,835	0	3,174	14,009
Grand Total	**39,875**	**4,214**	**7,599**	**51,687**
	77%	8%	15%	

5.2 Tier I Infrastructure

1. A total of 320km of arterial and sub-arterial roads are planned as per the masterplan. Out of the total, 285km are currently under execution.
    a. 238km of 320km roads are under construction
    b. 100% of 45km Water supply network under construction
    c. 100% of 123km of Sewerage network under construction
    d. 100% of 90km Power & ICT network under construction
    e. 90% of 640km Storm water network under construction
2. Works are expected to complete by early 2019.

5.3 Government Complex

5.3.1 Masterplan:

- Spread over about 1375 Acres, the Amaravati Government Complex will house iconic Legislature, High Court, Secretariat, Raj Bhavan and their related eco system, housing for various Government functionaries–Chief Minister, Ministers, Members of Legislature, Judges, AIS Officers and other Govt employees
- It will be developed no just as administrative core but will have economic activity, entertainment spaces and other public engagement infrastructure. like the Riverfront development, the Central Park, and the Capital Square

5.3.2 Legislature:

- The seat of the Government, the Legislature is being designed by architects Foster + Partners. After consultations and discussions with various stakeholders, a spike design with an overall height of 250m has been finalized. There is a viewing deck at 150m and the overall design is designed keeping in mind accessibility for the public into the assembly and its proceedings.
- The built up area (super structure) of about 12.16 lakh sq.ft, consists of the Assembly hall (300 members capacity), Council hall (100 members) and a Central hall (for joint sessions, multi-purpose).
- The detailed design is under preparation and will be tendered out shortly. Completion timeline of 36 months is expected

5.3.3 High Court Complex:

- The seat of justice, the High Court, designed by architects Foster + Partners is inspired by a 'Hisstorical Buddhist Stupa' architecture. It has a built up area of 12.5 lakh sft, with 36 court halls in the First Phase (with provision for additional 24 Court halls in future expansion) apart from the Apex Chief Justice Court.
- Apart from the court hall, the building will also host the administrative facilities of the High Court, Library, Offices of Advocate General & public prosecutors, BAR Association & Advocate Chamber and an Alternate Dispute Resolution Centre (Arbitration, Mediation).
- The structure and foundation works for the project has commenced. The project is expected to be completed in a 24-month timeline, by Oct 2020.

5.3.4 The Integrated Secretariat & HOD building:

- First time Government is co-locating Heads of Departments and Secretariat in an integrated manner to bring efficiency of working. The building is being designed by architects Foster + Partners and is being built with the highest sustainability standards as per IGBC.
- The Office complex consists of 4 towers with 40 floors and the CM tower with GAD sector as the tallest on the southwest with 50 floors. The tallest tower would be 225m in height.
- The structural design uses "diagrid" technology – first time in India. This translates to column-free space within the building interior area, providing efficiency in working spaces.
- The total built-up area is around 55 lakh sq. ft and 14 lakh sq. ft for parking.
- The construction for the project have commenced with the structural and foundation works. The project is expected to be completed by October 2020.

5.3.5 The City Civil courts (Judiciary complex):

- Within an area of 4 acres in the Justice city of Amaravati, a 2.53 lakh sq.ft. building is being constructed to hold 23 court halls. These will temporarily seat the High Court of Andhra Pradesh, and will continue as the city court building. The Project will be completed by Dec 2018

5.3.6 Government Multi-storied apartment housing:

- 3,840 units of apartment housing for MLA, AIS, NGO, GO and Class IV employees have commenced construction using advanced technology like Mivan shuttering. A total of 92 lakh sq.ft. is under construction currently.
- The multi-storied apartment housing project are proposed to be completed by Feb. 2019. Out of 3,840 flats, a total of 1,086 flat have been completed till date

5.3.7 Government senior officials housing:

- Bungalows for 186 senior officials have commenced construction.
- The designs for the Rajbhawan, CM bungalow are in the final stages of designing.
- Total of 21 million sq.ft. of built up area is being constructed by the Government including the office and residential spaces.

5.4 Tier II Infrastructure:

- Works are undertaken in a total of 17 packages, of which:
- 11 packages under execution (LPS Zone1, 2, 3, 4, 6, 7, 9, 9A, 10, 12, 12A)
- 4 packages Zone 5 in tendering phase (LPS Zone 5A,5B, 5C, 5D)
- Remaining 2 packages are under land acquisition (LPS Zone 8, 11)
- A total of 1310 km of LPS road and integrated utility infrastructure are planned as per across the 13 zones. This includes 1310 km roads, 2308 km of water supply lines, 966km of sewerage network, 2427 km of storm water, 11,184 km of power & ICT network and 2680 km of Reuse water.
- The projects will be completed in a 3 year timeline, by Dec 2021.

6. Impact on economic development and job creation:

- Premier universities, such as VIT-AP, SRM University have begun operations in Amaravati with 3500 students. Amrita University & NID (National Institute of Design) are in advanced stages of construction. Reputed management school XLRI has also commenced execution works to set up a facility in Amaravati.
- Eight schools of national & international repute have been allotted lands including RYAN International, PODAR School, GLENDALE Academy, GIIS –

Global Indian International School (Singapore) &Chinmaya Mission. Operations expected to begin in next academic year. Additionally, reputed brands like DAV School, Garden High School, St. Mathew's school are in progress of being allotted land

- Multi-speciality hospitals including Indo-UK hospitals, AIIMS, B.R Shetty Hospitals have been allotted lands. Additionally, speciality medical institutions like Basavataraka Memorial Cancer Hospital and Hyderabad Eye Institute are also setting up facilities in Amaravati.
- Land have been allotted out to Eight Hotels (4-star & 5-star) including all major hospitality brands – Hilton, Crowne Plaza, Novotel, Holiday Inn, GRT, Green Park, Daspalla. Land allotment in progress for Hotel brands like Marriott Group, TAJ Group and ITC Group
- Amaravati Marina project – India's largest Marina has been awarded on Public-Private Partnership (PPP) mode – will be a key Tourism destination – will be operational by JUNE-2019
- Convention Centre of 2500 pax capacity awarded on PPP mode – under construction and will be operational by Dec-2019
- Riverfront Resort by ITC Group on PPP mode has been awarded – will be completed in 6 months (JUNE-2019)
- Multiple additional projects such as MICE Hub - an international convention centre of 10,000 pax capacity; a Sports Arena, a 300 acre Multi-product Industrial Park, a Commercial Mall cum Multiplex, a Construction City and a Riverfront Drive-in cum Fitness Arena All these projects have generated huge interest from Indian & Foreign investors

6.1 Start-up area:

- Start up area of 6.84 Sq Km is being developed by Amaravati Development Partner a Joint Venture formed by the Singapore consortium Ascendas-Singbridge and Sembcorp with Government of AP.After due process, necessary agreements have been signed consisting of Concession and Development Agreement (CADA) and Shareholders Agreement (SHA) and the ADP has been formed. The initial phase of work is expected to be commenced from January 2019

- The development will occur in 3 phases, in 656 acres, 514 acres and 520 acres each. The project is expected to create a growth of 1,25,000 families, 2,5,000 jobs and an increase of 1.15 lakh crores GSDP.

7. AP Reorganisation Act 2014- support to Amaravati:

- Provisions of the Andhra Pradesh Reorganisation Act, 2014 relating to assistance for the new Capital are extracted below:
- "Section 94 (3). The Central Government shall provide special financial support for the creation of essential facilities in the new capital of the successor State of Andhra Pradesh including the Raj Bhawan, High Court, Government Secretariat, Legislative Assembly, Legislative Council, and such other essential infrastructure.
- (4). The Central Government shall facilitate the creation of a new capital for the successor State of Andhra Pradesh, if*considered necessary, by denotifying degraded forest land.*"
- Government of India have released only an amount of Rs.1500 Crores for development of new capita. The State government have submitted utilization certificate for the same. Though Nitiayog have recommended to GoI for the release of further Rs.666 Crores, no funds have been released by GoI so far.
- State Government have furnished detailed report for Rs.62,623Crores to Nitiayog.
- As regards the de-notifying the forest land, no approval has been given by the GOI yet .

8. Achievements, awards and recognition:

- Amaravati city was certified "Platinum" rating under the Indian Green Building Council (IGBC) with IGBC Green Cities Rating System.
- 2 awards received under "Skoch order of merit" for "Mana Amaravati app and implementation of "blockchain technology" for securing land records
- Successfully raised Amaravati bonds worth 2,000 crores on Bombay Stock Exchange through private placement from institutional investors

- Ministry of Housing and Urban Affairs, Government of India provided incentive of Rs.26 Crores for issuing bonds on Bombay Stock Exchange
- Prepared winning Smart city proposal in Round 3 of the National Smart Cities Mission. Place 4th by merit and the only Greenfield smart city proposal to be selected under the scheme. Funds worth Rs.500 Cr from Central Government committed, and matching grant from State Government and other schemes and investors to implement projects worth Rs.1800 Cr.
- Happy Cities summit has been conducted in the month of April 2018 to promote Amaravati as a livable vibrant city. Dignitaries around 120 from 15+ countries viz Bhutan, U.K., Costa Rica, Canada, USA, Hongkong, Bangladesh, Singapore, Spain, UAE and Finland etc., have attended the summit and shared their Best Practices in making the People more Happy.

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White Paper on Energy and Trunk Infrastructure

Key Sheet

01. (A)	**02. (D)**	**03. (B)**	**04. (A)**	**05. (B)**	**06. (C)**	**07. (B)**	**08. (A)**
09. (C)	**10. (B)**	**11. (D)**	**12. (C)**	**13. (A)**	**14. (C)**	**15. (A)**	**16. (A)**
17. (B)	**18. (C)**	**19. (A)**	**20. (D)**	**21. (A)**	**22. (C)**		