White Paper on Natural Resources Management

Practice Questions

01. Consider the following statements regarding Polavaram Project and choose the correct one.
    I. The total expenditure incurred for the project is 15363.79 Cr
    II. The project is expected to be completed by Mid 2019-02-12
    Choose from below
    (A) I only (B) II only
    (C) Both I & II (D) None

02. Under the Patiseema Project, how much TMC of Godavari water is diverted to Krishna River?
    (A) 261 (B) 263
    (C) 266 (D) 269

03. Choose the right match with regards to Interlinking of Rivers in Andhra Pradesh State
    I. Krishna – Godavari
    II. Godavari – Penna
    III. Vamshadara – Nagavali
    IV. Nagavali – Swarnamukhi
    V. Godavari – Champavati
    VI. Vamshadara – Bahuada
    Choose from below
    (A) I,II,III,IV,V,VI
    (B) I,II only
    (C) I,II,V only
    (D) III,V,VI only

04. The aim of the government is to keep the ground water level between
    (A) 2 to 8 m (B) 3 to 8 m
    (C) 4 to 8 m (D) 1 to 8 m

05. The ground water availability of the state has been increased from 646 TMC to
    (A) 708 TMC (B) 711 TMC
    (C) 721 TMC (D) 728 TMC

06. Consider the following statements and choose the right statement with regards to "Mission Haritha Andhra Pradesh Program"
    I. The objective is to create sustainable living places
    II. The target is to increase the state's green cover to 50% by 2029
    III. Vanam-Manam is the campaign started which is part of this scheme

Choose from below

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

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

07. Consider the following

I. Andhra Pradesh ranks 8th in India in terms of geographical area

II. Andhra Pradesh has the second longest coastal line with 974KM

III. Andhra Pradesh ranks 9th in India in terms of forest cover with 36,909.38 sq km

IV. It has 13 sanctuaries , 3 national parks , 2 Zoological Parks , 1 elephant and tiger reserve

Which of the above statement is/are correct?

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

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

08. Which of the following organization has presented the prestigious award for "Optimum and efficient utilization of water resource" in Godavari delta system for saving Rabi crop during 2015-16?

(A) Ministry of Irrigation

(B) Central board of irrigation and power

(C) Prime Minster Office

(D) World Bank

09. Consider the following statements regarding Neeru – Chettu Project and choose the correct one.

I. It was launched on 19-02-2015 at Gummasamudram tank of B. Kothakotamandal of Chittoor district.

II. More than 84.51 TMC of water was additionally stored in the tanks and other water bodies due to de-silting of tanks and construction of water harvesting structures.

III. The total expenditure incurred was 15806.70 Cr

Choose from below

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

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

10. Consider the following statements regarding "Jalasiriki Haarathi" project and choose the correct one.

I. The objective is to create awareness among the farmers, students and general public about the need for conservation of water.

II. Under this programme, haarathi will be given to all water bodies in the state

Choose from below

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

(C) II only (D) None

11. Consider the following statements regarding "AP Integrated Irrigation & Agriculture Transformation" Project and choose the correct one.

I. The Objective is to enhance agricultural productivity, profitability and resilience to climate variability in 1000 selected tanks in 12 districts stabilizing an ayacut of 2,28,056 Acres

II. The total Project cost is Rs 1600 crores and the duration is 6 years (2018-19 to 2023-24).

III. Once successfully implemented it will benefit nearly 2,00,000 farmer families

Choose from Below

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

(C) I only (D) I,III only

12. Pogonda Reservoir project was constructed across which river, near Chintalagudem village of West Godavari District?

(A) Byneru River (B) Godavari River

(C) Penna River (D) Krishna River

13. How many air qualities monitoring station has been put in place throughout the state to assess the air quality and its changes?

(A) 40 (B) 41

(C) 43 (D) 44

14. Consider the following

I. Consent for Operation (CFO) renewal validity period increased from 3/4/5 years (Red/Orange/Green) to 5/10/15 years (Red/Orange/Green).

II. Reduced time frame for processing of consents from 45/21/15 days to 21/15/7 days (Red/Orange/Green category industries).

Which of the below statements is/are correct with regards to Ease of Doing Business in the state?

(A) I only (B) II only

(C) None (D) Both I & II

15. Consider the following statements

I. Mineral revenue for Andhra Pradesh stood at Rs 838 Crores in 2013-14 against the Target of Rs. 1103 Crores

II. Mineral revenue has increased at a CAGR of 26.52% over the last 4 years, from Rs. 838 Crores in FY 2013-14 to Rs. 2,147 Cr. in FY 2017-18. It is heading towards Rs. 2500 Crores during 2018-19

Which of the below statements is/are correct?

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

(C) II only (D) None

16. Consider the following

I. Free Sand Policy was introduced by government of Andhra Pradesh from 02.03.2016

II. Under this policy 24 X 7 Call Centre with Toll free no. 1800 599 4599 has been introduced

III. Public feedback on Sand Prices and Sand Policy Implementation through PRAJA PARISHKARA VEDIKA (PPV)-1100 and weekly reviews are received

Choose the correct statement

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

(C) III only (D) II only

17. Consider the following statements regarding "District Mineral Foundation Trust" Project and choose the correct one.

I. Established in 13 districts, it looks after the Welfare of the mining affected people, families and areas will be looked after by these foundations by utilizing the contribution collected from the mining/ quarry lease holders.

II. This scheme Implementation of virtual class rooms in 9 schools of mining affected Mandals and Villages of Kurnool

Choose from below

(A) I only (B) II only

(C) Both I & II (D) None

Note: Key Sheet available in last page.

White Paper on Natural Resources Management

1. Important achievements since 2014:

1.1 After analyzing the deficiencies in Jalayagnam projects, Government adopted 3 pronged strategy - Water conservation, River Linkage including Completion of pending projects and Water Management including micro irrigation to achieve the vision of making the state drought proof and to provide water security to all its Citizens.

To overcome spreading out of expenditure thinly over large number of projects taken up under Jalayagnam, Government prioritized certain projects which will realize maximum benefits with the available funds to complete them in a time bound manner.

1.2 An Expenditure of Rs.63,657.52 Crore is incurred in Water Resources Sector and irrigation facilities are provided to an extent of 32.02 Lakh acres including stabilization.

1.3 **Polavaram Project:** Government have given highest importance for the completion of the project, which is the lifeline of the state. Total Expenditure incurred is Rs. 15,363.79 Crores, out of which Rs. 10,227.92 Crores is incurred after 1.4.2014. Government of India reimbursed only Rs. 6,727.264 Cr. and Rs. 3500.66 Cr. is yet to be reimbursed. Works are in full swing and it is scheduled to supply water by gravity in next Khariff season. It is programmed to complete the project by 2019.

1.4 To realize early benefits of Polavaram Project, Government completed **Patiseema lift Scheme** and linked two major rivers Godavari and Krishna. During the last 4 crop seasons, 263 TMC of Godavari Water is diverted to Krishna. This facilitated commencement of khariff crop in Krishna delta in June itself, so that crop is completed by November, avoiding damages due to cyclones. This scheme not only saved the crop in Krishna delta but also facilitated supply of Krishna water from Srisailm Reservoir to requirement of drought prone Rayalaseema Region. The value of output in Krishna delta is Rs.44,000 Crs in the last 4 crop seasons against investment of Rs. 1667 Crs. on this Project.

1.5 **Prioritized Projects:** In order to realize early benefits from the ongoing Projects, Government prioritized 62 projects to complete them in a time bound manner. Out of these, 17 Projects are completed and inaugurated, 6 Projects are completed and ready for inauguration, 26 Projects are in progress and are scheduled to be completed

before 2019 monsoon season and 13 New Projects are at various stages of sanction and grounding.

1.6 Interlinking of Rivers: To transfer water from surplus basins to deficit basins, Government have taken the task of interlinking of all major rivers in the state. Godavari – Krishna River link, namely **Pavithra Sangamam** is already completed with the commissioning of Pattiseema Lift scheme. Mega project of Godavari – Penna to transfer 320 TMC of water to the drought prone areas of Guntur, Prakasm and Nellore district and supply water to Somasila reservoir is proposed to be taken up in five Phases. The phase-1 of the Godavari-Pennar link to supplement water to NSP Right Canal is already commenced.

The works of Vamsadhara -Nagavali link, Nagavali – Swarnamukhi, Vegavathi, Champavathi Rivers link are in brisk progress. It is also proposed to link Godavari – Champavathi / Nagavali Rivers under Uttharandhra Sujala Sravanthi. The phase -1 work of this project is already commenced. DPR for Vamsadhara – Bahuda rivers link is prepared and the work will be taken up shortly. All these links will create a grand link of all the major rivers in the name of **"Mahasangamam".**

1.7 Neeru-Chettu / Neeru - Pragathi: Government promoted water conservation measures in a mission mode under primary sector mission by taking up works of de-Silting of Tanks, Cascading of Tanks, Construction of Check dams, percolation Tanks, Farm Ponds etc. and promoting micro irrigation like Drip & sprinkler irrigation. 3348 cascades are developed out of total 3587 cascades existing. 8.356 Lakhs farm ponds are excavated. Due to water conservation measures, 84.51 TMC of water is additionally stored in the tanks and other water bodies and 7.11 Lakh acres of ayacut is stabilized.

1.8 Ground Water: The aim of the Government is to keep the Ground water level between 3 to 8 m. Due to large scale water conservation measures taken up, area with ground water level greater than 8 m reduced from 62% to 58%. Deep water level mandals have come down from 200 to 179. Deep water level villages have come down from 2874 to 2297. There is a saving of about Rs. 440 Cr. in power charges annually in lifting of ground water. The availability of Ground Water is increased from 646 TMC to 708 TMC. This enabled increase in the extent of ayacut

irrigated from ground water sources besides facilitating conjunctive use of ground water & surface water in many Projects.

1.9 Water Management: As a part of better water management practices, it is ensured to release water to Godavari Delta from 1st June onwards. Further, for the first time after last 25 years, water is released to Krishna Delta in the month of June itself which ensured harvesting of crop by November, thus avoiding damages due to likely cyclones that occurs during December. This has become possible because of diversion of Godavari water into Krishna River through Pattiseema Scheme. With the transfer of water from Godavari to Krishna, water could be supplied to the drought prone Rayalaseema region and better yields are realized in Horticulture crops. Micro Irrigation facilitates are created in 11.30 Lakhs Ac., which facilitated optimum utilization of water. Community lift cum drip Irrigation work is taken up in Anantapur Dt., in the command area of PABR and Mid Penna Reservoir & Jeedipalli reservoir. Mobile lifts and rain guns are introduced for dry spell mitigation.

1.10 Water Monitoring System: Established world class monitoring network with **1254 piezometers** with Digital Water Level Recorders and Telemetry, providing real time groundwater levels, 86 **reservoir sensors** and **1850 Automated Weather Stations** providing reservoir levels, rainfall and weather parameters on real time basis. By concluding MOU with ISRO, the Department developed an **integrated Water Resources Information and Management System (APWRIMS),** one stop solution for all water related information and management solutions (Soil moisture, groundwater, surface water, run-off, evapotranspiration, water conservation, water budgeting etc.,). **Geo tagged all the 15-lakh agriculture bore wells** in the state.

1.11 Participatory Irrigation Management: To ensure public participation in the regulation & management of existing irrigation systems, Government have initiated formation of WUAs, DCs & PCs after a gap of 7 years. This facilitated better water regulation in the deficit rainfall years. The O&M of the irrigation systems is also taken care of by these bodies with their active involvement.

1.12 Modernization of Delta Systems & Nagarjuna Sagar Project canal system: Modernization works of Godavari, Krishna & Penna Delta and Nagarjuna Sagar Canal System which are pending for a long time are reviewed and all essential works required for better water management are prioritized and taken up to

complete them in a time bound manner. These works will improve the water use efficiency of the existing canal systems and also ensure supply water to the tail end.

1.13 Lift Irrigation Schemes under APSIDC: During last 4 years, expenditure of Rs.1253.46 Crores is incurred. 123 new LI Schemes are commissioned and 1.80 Lakhs Ac. new ayacut is created. 483 LI Schemes are revived stabilizing 3.03 Lakh Ac. ayacut.

1.14 Green cover: Government launched "**Mission Haritha Andhra Pradesh**" and set an ambitious target of **50% Green cover** for the State by 2029 in a campaign mode under **"Vanam-Manam"** and is working towards achieving this goal as it envisions a Green Andhra Pradesh with abundant forest cover for a thriving biodiversity and at the same time act as a huge carbon sink. The objective is to create a sustainable living space for the citizens of the State while at the same time doing its part in creating a safer and sustainable planet. Intensive soil moisture conservation works were taken up in forest areas under Neeru-Chettu campaign programme.

2. Status at the time of bifurcation of the state:

2.1 Irrigation Projects:In the undivided state, during 2004-14, 86 projects were sanctioned with an outlay of **Rs. 1,90,598crores**. The projects were taken up without giving any proper thought on the likely period of completion and the constraints in meeting such huge outlay. Though huge amount of money was spent, corresponding irrigation facilities were not created. Canals were dug without construction of Head works resulting in infructuous expenditure. Proper attention was not paid in getting clearances, solving bottlenecks in order to complete the already grounded projects.

Polavaram Project, which is of great importance to the State could not be completed as per schedule due to various hindrances. Proper attention is not paid for completion of important projects like Vamshadhara Stage-I&II, Thotapally Reservoir Project, Pulichintala Reservoir Project, Veligonda, Telugu Ganga etc.

Hence, without proper analysis of all the issues involved, projects were taken up on a large scale leaving large number of incomplete projects without realization of contemplated or commensurate benefits.

Interlinking of rivers , which is the need of the hour to prevent drought in Rayalaseema and other back ward regions of the state, was not taken up.

Maintenance of minor irrigation sources was neglected resulting in 40% gap ayacut. Water conservation measures were not thought of resulting in poor water use efficiency.

2.2 Green cover: With a geographical area of 1,62,970 sq km, Andhra Pradesh ranks as the 8th largest state in the country, situated in tropical region. The State has the 2nd longest coastline in the country with a length of 974 km. As per the forest records, the State ranks 9th in India having forest cover area of 36909.38 sq km which accounts to 23.04% of the total geographical area. The green cover outside the forest area is estimated to be 2.30%.

Our State is bestowed with rich bio-diversity. It has about 2351 no.of plant species and 1461 no. of animal species. Out of these 68 floral (Red Sanders – Pride of AP, Cycas beddomei etc.,) and 10 faunal Species are endemic to Andhra Pradesh. 13 Sanctuaries, 3 National Parks, 2 Zoological parks, 1 Tiger Reserve, 1 Elephant reserve are present in our State.

The combined Andhra Pradesh has recorded negative growth (-)273 sq km ((-) 27,300 Ha.) in terms of change of green cover as per India State of Forest Report (ISFR),2013. However, the winds of change are clearly visible in the post bifurcated Andhra Pradesh due to the efforts taken by the Government to make Andhra Pradesh a harbinger of Sustainable Development and to protect and enhance its biodiversity.

3. Challenges faced by the Irrigation sector*:*

3.1 Investment & Returns in Irrigation sector – comparison:

Instead of prioritizing the projects over a medium to a long term time frame concentrating on few projects at a time, large number of projects with huge outlay were taken up simultaneously creating financial burden on the State exchequer for a long time to come.

During period from 1994 to 2004, an investment of Rs 10,394 Crores was made in the combined State of Andhra Pradesh and **an I.P. of 10.60 Lakh acres** was created. **The cost of investment on the projects per acre of I.P created works out Rs 98,057/-. But during the period for 2004 -2014, a huge investment of Rs 95,539 Crores** has been incurred and the I.P. created has been

23.49 Lakh acres only. **The cost of investment on the projects during 2004-2014 per acre of I.P created works out to Rs 4,06,772/-, which is four times higher than the corresponding cost during 1994-2004.**

The expenditure incurred so far on Jalayagnam was Rs.79,357.45 Cr and new irrigation potential created was only 19.53 lakh acres. This shows that the irrigation benefit under Jalayagnam was not commensurate with the huge expenditure incurred.

3.2 Sustainability of big Lift Schemes:

A large number of lift Schemes were taken up without studying properly the operation and maintenance cost involved in running these projects and also without planning required power generation to meet the huge power requirement.

3.3 Sustainability of existing projects:

In most of the existing projects like NagarjunaSagar Project(NSP) , the total irrigation potential created could not be utilized due to deferred maintenance or inadequate O&M measures taken up. The lack of effective participation of water users and poor irrigation and water management practices also resulted in increase in gap ayacut in the commands of existing projects.

Even though schemes like A.P. Economic Restructuring Project (APERP) with financial assistance from World Bank were taken up to improve the existing canal distributory network and drainage facilities under existing projects, the expected results could not be achieved because of non involvement of WUAs and general neglect of O&M practices in a rush to ground new projects.

3.4 Neglecting Participatory Irrigation Management:

Government adopted Participatory Irrigation Management (PIM) in 1997 by involving WUAs for water regulation and to find a lasting answer to systemic deficiencies like undependable water flows, indiscriminate water use by head reach users depriving the same to the tail end users, inequitable distribution and resulting conflicts. According to a study conducted by A C Nielsen ORG MARG Pvt., Ltd., on 214 projects in 2005, the performance of WUAs was positive, as many irrigation systems have realized increased revenue, an increase in irrigated area and enhanced involvement of farmers in the irrigation water management. After 2005, the performance of WUAs was deteriorating in terms of achievement and

participation in irrigation management. Elections to WUAs were not conducted for last 4 years before bifurcation.

3.5 Key issues of investment in Irrigation:(Source CAG Report 2012)

Simultaneous grounding of large number of projects, poor and inadequate planning, hindrance in execution of projects due to delay in acquisition of land and obtaining clearances (like investment clearance from planning Commission, forest clearance, environmental clearance, in principle clearance from CWC), marred the programme of completion of projects. Government should have concentrated its attention on few projects at a time, ensuring that adequate resources are allotted and land acquired for timely completion to get desired benefits from the investment.

Projects were taken up without detailed Project Report and without even feasibility studies and resulted in poor AIBP funding of the projects. This inadequate planning is the main reason for time and cost overrun in these projects which resulted in heavy financial burden on the state budget. As major chunk of the Plan Budget was earmarked for Irrigation sector, non realization of Irrigation potential turned these projects into liabilities than assets thus affecting the growth of all sectors of economy in the state.

3.6 Failure to address the wide gap available between IPC & IPU in the existing projects:

There is about 10.50 lakh acres gap ayacut in the existing irrigation projects between Irrigation potential created and irrigation potential utilized. Hence, the modernisation of the existing irrigation projects should have been completed on priority basis to reap quick benefits from less investment. To avoid deterioration of existing irrigation systems and to reduce gap, Government should have made full allocation of annual operations & maintenance (O&M) costs.

3.7 Neglecting Water Conservation Methods:

The areas like minor irrigation, water conservation measures, rain water harvesting for ground water recharge, conjunctive use of surface and ground water, sprinkler and drip irrigation were totally neglected which resulted in reduction of area under irrigation

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4. State Bifurcation Impact on Irrigation Sector:

The management and operation of projects of Krishna and Godavari basins serving both in Andhra Pradesh and Telangana will be under the control of River management boards constituted under the provisions of Andhra Pradesh Reorganisation Act, 2014 (6 of 2014).This resulted in disputes between the states in water releases.

The regulation from Srisailam and Nagarjuna Sagar reservoirs will become an Inter-State issue and there will be multiple complexities in routing of flood waters through Srisailam, Nagarjunasagar and Prakasam barrage and the planning of available water in the two reservoirs.The integrated operation of Srisailam and Nagarjuna Sagar in lean years will certainly become extremely difficult to regulate and manage with the available quantum of water.

The tenure of the Krishna Water Dispute Tribunal is extended to make project wise specific allocation, and also to determine an operational protocol for project-wise release in the event of deficit flows.

5. Strategy since 2014:

Though huge amount of money were spent, corresponding irrigation facilities were not created prior to 2014. The imbalance in prioritizing and taking up of projects with huge expenditure without realization of immediate additional irrigation area attracted critism at that time.

After analyzing the deficiencies in the earlier policies existed prior to 2014, the government adopted three pronged strategy – water conservation, River linkage including completion of pending projects in phased manner and Water Management including Micro Irrigation to overcome those deficiencies. This strategy facilitates achieving the vision of the Government to make the state drought proof and to provide water security to all its citizens for drinking water, Irrigation and Industrial needs.

As large number of projects with huge outlay were taken up simultaneously prior to 2014 creating financial burdens on the state exchangers; the Government prioritized certain projects which will realize maximum benefits with the available funds and monitored these projects in a focused manner with weekly reviews to complete them in a time bound manner.

The areas like Minor Irrigation, Water conservation measures, rain water harvesting for ground water recharge, conjunctive use of surface and ground water, sprinkler and drip irrigation which were totally neglected in reduction of area under irrigation. Further the lack of effective participation of water users and poor irrigation and water management practices earlier also resulted in increase in gap ayacut in the commands of existing projects.

The following strategies are adopted by the Government since 2014 to overcome the above short comings and constrains.

Water Conservative initiatives:

Govt. promoted **water conservation methods** in a mission mode under **Primary sector mission** by taking up Neeru- Chettu works like desilting of minor irrigation tanks, construction of check dams and percolation tanks etc. and providing micro irrigation like sprinkler or drip irrigation under all the L.I.schemes to ensure optimum utilization of pumped water, at the same time promoting massive plantation activity.

Strong irrigation - agriculture linkage is proposed to achieve collective goal of enhancing agricultural production. Awareness campaigns are taken up under **Neeru-Chettu** and **Jalasiriki Haarathi** to create awareness among the people of the value of water and the need for water conservation and optimum utilisation of water.

Government has set an ambitious target of 50% Green cover for the State by 2029 as it envisions a Green Andhra Pradesh with abundant forest cover for a thriving biodiversity and at the same time act as a huge carbon sink. The objective is to create a sustainable living space for the citizens of the State while at the same time doing its part in creating a safer and sustainable planet.

Vanam-Manam: Government launched "**Mission Haritha Andhra Pradesh**" (MHAP) during 2016 with a goal to achieve tree cover over 50% of the total geographical area of the State by 2029 in a campaign mode under "Vanam-Manam". To achieve this goal, another 25% of the area (outside the notified forest) has to be brought under various types of tree crops by involving people from all walks of life in the State.

Intensive Soil and moisture works on saturation basis have been taken up in forest areas under Neeru-Chettu campaign programme.

River Linking initiatives including completion pending projects in phased manner:

Interlinking of all the rivers in the state is given priority to realize the vision of making the state drought proof and to provide water security to all its citizens.

Govt. has given highest importance for completion of **Polavaram Project** on high priority, which is lifeline for the overall development of the State and which is declared as National Project for realization of intended benefits.

To realize early benefits of Polavaram Project, Govt. has taken up **Pattissema Project** for diversion of waters from Godavari river to Krishna river. **Purushottapatnam lift scheme** is taken up to link Godavari and Yeleru rivers utilizing Polavaram Left Main canal.

Govt. is determined to **complete all important ongoing projects** like Vamshadhara Project, Thotapally Reservoir Scheme, Pulichintala Project, Telugu Ganga, Veligonda, GNSS and HNSS etc. in phased manner so that there will not be any impact from droughts or floods in the State.

Water Management initiatives:

Introduction and implementation of modern management practices like **water audit, Water Resources and Information Management System** are introduced to improve the quality of irrigation service delivery.

Integrated water management is planned with conjunctive use of surface and ground water for optimum utilization of total water resources available to maximize agriculture production. Modern techniques like mobile lifts and Rain guns are introduced for dry spell mitigation.

To ensure public participation in the regulation & management of existing irrigation systems, Government have initiated formation of WUAs, DCs & PCs after a gap of 7 years. This facilitated better water regulation in the deficit rainfall years. The O&M of the irrigation systems is also taken care of by these bodies with their active involvement.

6. Significant achievements despite challenges:

6.1 Expenditure incurred and IP created

An Expenditure of Rs.63,657.52 Crore is incurred in Water Resources Sector and irrigation facilities are provided to an additional extent of 32.02 Lakh acres including stabilization.

6.2 Completion of Polavaram Project:

The progress of the project is being reviewed every Monday making it as Polavaram day. This Government is instrumental in merging of 7 submergence mandals of erstwhile Khammam Dist., into our state. World renowned companies like L&T, Bauer, Keller, Monton Hydraulik, Tensa Engineering are engaged in execution and most modern technologies are being adopted. In Polavaram Head works, Diaphragm wall and jet grouting are completed. The work of spillway, spill channel and fabrication of gates are under progress. 52.15% work is completed in Head works, 90% of work completed in Right main canal and about 66.53% work is completed in Left main canal. Total 62.86% work is completed in the project. First gate is erected on 24-12-2018. Total Expenditure incurred is Rs. 15,363.79 Crores, out of which Rs. 10,227.92 Crores is incurred after 1.4.2014. Government of India reimbursed only Rs. 6,727.264 Cr. and Rs. 3500.66 Cr. is yet to be reimbursed. It is scheduled to supply water by gravity in the next kharif season. Total Project is scheduled to be completed by 2019.

6.3 Completion of other important Projects:

Pattiseema lift scheme:

The long cherished dream of interlinking of rivers Godavari and Krishna became reality with the commissioning of Pattiseema LIS in a record time of one year by March, 2016.In 2015-16, 4.21TMC water was diverted saving Khariff crop in 8 lakh Ac. in Krishna Delta. During 2016-17, 55.62 TMC of water is diverted and khariff crop in 13.08 lakh acres in Krishna Delta could be supplemented with this water. During 2017-18, 105.90 TMC water was diverted facilitating the farmers of Krishna Delta to go for transplantation in June itself. During 2018-19, 96.94 TMC water is diverted. The value of output in Krishna delta is Rs.44,000 Crs in the last 4 crop seasons. The saving in Krishna water allotted to Krishna delta enabled drawl of water from Pothireddypadu and through HNSS and Mutchumarri to meet the drinking water and irrigation requirements of Rayalaseema.

Purushothapatnam Lift Scheme.

This Scheme taken up at a cost of Rs. 1638 Cr. is contemplated for lifting 30 TMC of Godavari Water into Polavaram Left Main Canal and to Yeleru Reservoir for creation of new ayacut of 1,47,386 Acres and stabilisation of 67,614 Acres and also meeting the Drinking water and Industrial needs of Visakhapatnam District.This Scheme facilitates inter linking of Godavari and Yeleru rivers.All 10 pumps in phase –I and all 8 pumps in phase-II are commissioned. During 2017-18, 1.6 TMC of water was lifted. During 2018-19, 13.33 TMC of water is lifted.

BRR Vamsadhara Project (Stage II- Phase II)

Stage I and Phase-I of Stage-II are completed creating an irrigation potential of 2,10,510 Acres. Phase-II of Stage-II works are partially completed and 3.00 TMC of water stored in Hiramandalam Reservoir.

Sardar Gowthu Latchanna Thotapalli Project:

The Project is completed and new ayacut of 1 Lakh Ac. is created and 64,000 Ac. is stabilized.

Kandula Obul Reddy Gundlakamma Project**:**

The project is partially completed and an ayacut of 60,000 Ac. is created. The remaining work of distributory network is programmed to be completed by khariff 2018. The balance ayacut of 20,000 acres will be created by next khariff season.

Mutchumarri LIS.

This scheme is taken up to supply water from Srisailam Reservoir to KC canal and HNSS even the water level in Srisailam is below MDDL. Water released on 02-01-2017 to KC canal and on 08-09-2017 to HNSS Project. During 2016-17, 1.336 TMC of water was lifted and supplied to KC canal ayacut. During 2017-18, 2.95 TMC of water was lifted. During 2018-19, 2.57 TMC of water is lifted so far.

SKD GNSS Phase-I & II.

GNSS Phase-I is substantially completed .For the first time, 8 TMC of water is stored in Gorakallu reservoir and 3.15 TMC water stored in Owk reservoir during 2018-19.Owk bypass Tunnel is completed successfully **and water was supplied to Gandikota Reservoir through Owk Tunnel**. For the first time,12 TMC of water is stored in Gandikota Reservoir during 2018-19. **Gandikota- CBR LI scheme** was inaugurated on 3-01-2018 and 2.685 TMC water is supplied to Chitravathi balancing reservoir and 25,000 Ac. Ayacut is irrigated. In Mylavaram reservoir, 4.82

TMC of water is stored and 30,000 Ac. Ayacut is irrigated. 3.319 TMC water is stored in Paidipalem reservoir and 10,000 Ac. Ayacut is irrigated.

HNSS Phase-I & II:

All the pumps and motors are commissioned and work is completed in main canal in HNSS Phase-1. During 2014-15, 16.83 TMC of water was lifted from Srisailam reservoir. During 2015-16, though it is a drought year, 7.8 TMC of water was lifted. During 2016-17, record quantity of 37.32 TMC of water is lifted. Water was released from Jeedipalli reservoir to Gollapalli reservoir on 02-12-2016 and water was supplied to 33 Minor Irrigation tanks. During 2017-18, 34.78 TMC of water was lifted. Water was supplied to 30,000 Ac direct ayacut and supplementation to 35,000 Ac ayacut, Water was supplemented to 20,000 acres under Minor Irrigation tanks, apart from recharging 36,000 bore wells. An extent of 1,08,000 Acres Horticulture crops were given water. Water was supplied to Dharmavaram, Bukkapatnam and Lepakshi Tanks also. During 2018-19, 29.08 TMC of water is lifted. Water is supplied to Marala Reservoir. Water will be supplied to Cherlopalli reservoir and Madakasira Branch canal in January. Efforts are being made to supply water to Kuppam Branch canal in January.

6.4 Priority Projects

62 Projects spread across the state are prioritized for speedy completion. Out of these,17 projects are already inaugurated and 6 projects are ready for inauguration.

Projects Inaugurated- 17 No.s:

- Gorakallu Balancing Reservoir
- Owk Tunnel
- Gandikota reservoir
- Gandikota-CBR LI Schemes
- SH-31 road work
- Pulakurthy LI Scheme
- Pulikanuma LI scheme
- Siddapuram LI Scheme
- Marala reservoir
- Mutchumarri LI scheme
- Purushottapatnam LI scheme
- Kandaleru left canal LI scheme

- Construction of anicut across Sarada River
- Formation of Pogonda Reservoir
- Modernisation of Yerrakalva
- Kondaveeti Vagu Pumping scheme
- Chinasana LI Scheme

Projects ready for inauguration – 6 No.s:

- Pulichintala Project
- Adavipalli reservoir and lift
- Cherlopally reservoir
- Madakasira Branch canal
- Gundlakamma reservoir.
- Pedapalem LI Scheme.

Ongoing Projects -26 Nos:

- Mallemadugu reservoir
- Balaji reservoir
- Venugopalasagar reservoir
- Kuppam Branch canal
- Water supply to Mulapalli and 4 other tanks
- Widening of HNSS Main canal
- Lifting of water from Jeedipalli to Upper Pennar Project
- Lifting of water from Jeedipalli to Bhairavanitippa Project
- Community Lift cum drip Irrigation Project
- Modernisation of Mid Pennar south canal
- Water supply to western mandals of Kurnool Dt.
- GNSS Phase-II works upto Kodur in Kadapa Dt.
- Somasila Swarnamukhi link canal
- Lifting of water from SSG Canal to Althurupadu reservoir and Althurupadu lift
- .Nellore Barrage
- Sangam Barrage
- Veligonda Project
- Korisapadu lift irrigation scheme
- Chintalapudi lift Irrigation scheme

- Interlinking of Godavari-Penna Phase-1
- Uttarandhra Sujala sravanthi Phase-1
- Vamsadhara Stage-II Phase—II
- Interlinking Vamsadhra-Nagavali rivers
- Offshore reservoir on Mahendratanaya river
- Tarakarama thirtha sagaram Project,
- Modernisation of Thotaplli old canal system works

New Projects - 13No.s:

- Construction of new barrage (10 TMC) across Krishna river near Vykuntapuram (V).
- Construction of new barrage across Krishna River near Chodavaram (V)
- Muktyala lift irrigation scheme
- Extension of Guntur channel
- Varikapudisela Lift Scheme (Macharla lift)
- Vissannapet-Chanubanda lift schemes
- Lifting of water from Somasila Swarnamuki link canal to Mallemadugu Reservoir and Mallemadugu to Balaji Reservoir
- Minor Irrigation works and lift schemes are proposed to be taken up in kuppam Constituency.
- CBR to HNSS Project
- Hagari(Vedavathi) lift irrigation scheme
- RDS Right canal
- Gundrevula reservoir
- Inter linking of Vamsahara-Bahuda Rivers

6.5 Interlinking of rivers – Maha Sangamam:

The Major rivers of Godavari and Krishna are already linked in the name of **Pavitra Sangamam** with the completion of Pattisam lift scheme. Now, it is proposed to link Godavari and Penna on one side and Godavari – Vamsadhara to link through UttarandhraSujalaSravanthi and Vamsadhara – Nagavali and Nagavali – Swarnamukhi, Vegavathi, Champavathi rivers on other side, creating a grand link of all major rivers in the name of **Maha Sangamam.**

Godavari – Penna Link:

Action is initiated for interlinking Godavari and Pennar Rivers to divert 320 TMC of flood waters of Godavari to meet drinking and irrigation needs of drought prone areas of Prakasam, Nellore & Chittoor Districts. The work is divided into 5 phases. Tenders are finalised for Phase-I and work will be grounded soon.

Interlinking Vamsadhara- Nagavali:

Interlinking of Vamsadhara and Nagavali Rivers is taken up to stabilize 37,053 Ac. under Narayanapuram Anicut, in addition to 5,000 Acres of new ayacut in 38 villages of 4 mandals. Work is in progress.

Interlinking of Nagavali river with Suvarnamukhi,Vegavathi and Champavathi rivers:

Linking Nagavali River with Suvarnamukhi, Vegavathi and Champavathi Rivers is proposed to supplement the drinking water needs of Vizianagaram Municipality and stabilization of Gadigedda reservoir ayacut. Work is in progress.

Interlinking of Rivers Mahendratanaya, Bahuda with Vamsadhara:

Interlinking of Mahendratanaya, Bahuda Rivers with Vamsadhara River is proposed by taking off High Level Canal from Hiramandlam Reservoir. DPR is under preparation.

6.6 Modernization of Deltas and Nagarjuna Sagar Canal System

Modernization of Godavari, Krishna and Pennar deltas and also Nagarjuna Sagar Canal System is under progress to improve the water use efficiency of the existing canal systems and to supplying water to the tail end ayacut.

6.7 Water Management

Despite the deficit rainfall of (-) 34%, (-) 5%, (-) 29% and(-)14% in the last four years and deficit of (-) 35% as on date during this water year (2018-19), with better water management, water could be supplied to the ayacut under different Projects for both Khariff and Rabi seasons successfully.

As a part of better water management practices, it is ensured to release water to Godavari Delta from 1st June onwards. Further, for the first time after last 25 years, water is released to Krishna Delta in the month of June itself which ensured harvesting of crop by November, thus avoiding damages due to likely cyclones that occurs during December. This has become possible because of diversion of Godavari water into Krishna River through Pattiseema Scheme. With

the transfer of water from Godavari to Krishna, water could be supplied to the drought prone Rayalaseema region and better yields are realized in Horticulture crops. During the years 2015-16 and 2017-18 by adopting efficient water management techniques, the Rabi crop (8.69 Lakh acres) under Godavari Delta System was successfully harvested by coordinating with regulated releases from Sileru reservoir complex. The Central board of Irrigation and Power (CBIP), a GOI organization as presented prestigious award for "Optimum and efficient Utilization of Water Resources" in Godavari Delta System for saving the Rabi crop during the year 2015-16.

Micro Irrigation facilitates are created in 11.30 Lakhs Ac., which facilitated optimum utilization of water. Community lift cum drip Irrigation work is taken up in Anantapur Dt., in the command area of PABR and Mid Penna Reservoir & Jeedipalli reservoir. Mobile lifts and rain guns are introduced for dry spell mitigation.

Despite deficit rainfall during the last four years, growth rate in agriculture sector is increased from 3.55% to 17.76% due to better water management in the state.

S. No	Year	Growth Rate in Agriculture Sector (%)	Rainfall deviation(%)
1	2014-15	3.55	(-)34
2	2015-16	7.78	(-)5
3	2016-17	14.91	(-)29
4	2017-18	17.76	(-)14

6.8 NEERU – CHETTU :

The Neeruchettu programme was launched on **19-02-2015** at Gummasamudram tank of B. Kothakotamandal of Chittoor district **.**

Achievements:

- De-silting of tanks : 89.73Crore Cum
- Tank Bund Strengthening : 674.72 Lakh Cum
- Concrete for Sluices and Weirs : 33.33 Lakh Cum
- Repairs and Replacement of shutters : 15,699Nos
- No of **Cascades** developed : 3348

- No of **Check dams** constructed : 93308
- No of **farm ponds** excavated : 8.356 Lakhs
- No of **Percolation Tanks** constructed : 27866
- No of **Other Harvesting Structures** constructed : 8.134 Lakhs
- No of **Soil Moisture Conservation Works** taken up : 91323
- No of Staggered Contour Trenches : 15.00 Lakh
- No of Rock Fill Dams : 1908
- Elephant Proof Trenches/Water Absorption Trenches : 7291.63 KMs

Impact established due to Neeru - Chettu works :

✓ About **84.51 TMC** of water was additionally stored in the tanks and other water bodies due to de-silting of tanks and construction of water harvesting structures.

✓ Ayacut Stabilised is **7.11Lakh Acres**

➢ **Expenditure incurred on NeeruChettu works :**

- By Minor Irrigation Department : Rs**4136.21**Crores.
- By Rural Development Department : Rs**11490.06**Crores.
- By Forest Department : Rs**180.43**Crores.

Total :Rs.15806.70Crores.

6.9 Jalasiriki Haarathi :

To create awareness among the farmers, students and general public about the need for conservation of water, Government started the programme of Jalasirikihaarathi in 2017 and it will be conducted on 6th, 7th and 8th of September every year. Under this programme, haarathi will be given to all water bodies in the state during those 3 days and seminars and exhibitions will be conducted all over the state to create awareness on the water sources in the state, availability of water , water demands in the state and the need for optimum utilisation of water and the need for taking up water conservation.

6.10 Works taken up under Various schemes :

AP Integrated Irrigation & Agriculture Transformation Project (APIIATP)

The Objective is to enhance agricultural productivity, profitability and resilience to climate variability in 1000 selected tanks in 12 districts stabilizing an ayacut of 2,28,056 Acres. The total Project cost is Rs 1600 crores .The Project duration is 6 years (2018-19 to 2023-24). The project will benefit 2,00,000 families

which will include small and marginal farmers, W.U.A, Farmer producer organizations and other agro entrepreneurs.

AP Irrigation & Livelihood Improvement Project –II (APILIP-II) with JICA assistance

Government accorded Administrative Approval to Andhra Pradesh Irrigation and Livelihood Improvement Project Phase-II (APILIP-II) with JICA assistance for Rs. 2000 Crores vide G.O.MS.No.81, Dt.21.12.2017, out of which JICA share is Rs. 1683.30 Crores and Govt. of A.P share is Rs. 316.70 Crores. The Project proposal mainly consists of modernization of Irrigation Systems (Rs. 942.43 Cr) and Agriculture, Horticulture, Animal Husbandry, fisheries, Agribusiness and marketing support services component, Participatory Irrigation Management and other components. An amount of Rs. 254.13 Crores was earmarked for Minor Irrigation schemes. Modernization of 445 Nos of minor irrigation tanks were proposed to take up under APILIP-II. Administrative approval is accorded for 242 tanks in all13 Districts for an amount of Rs. 160.28 Crores in 1st Spell. Works will be commenced in Last week of December-2018.

NABARD assisted RIDF:

National Agricultural Bank for Rural Development (NABARD) is assisting the state government in construction of new Minor Irrigation Schemes, Restoration of Water Bodies under Rural Infrastructure Development Fund (RIDF). Under Tranche XX, 20 projects are completed stabilizing an ayacut of 1932 Ha with expenditure of Rs 16.82 crores and 29 projects are in progress with an ayacut of 7431 Ha.Under Tranche XXI, 20 projects are completed stabilizing an ayacut of 2325 Ha with expenditure of Rs 9.32 crores and 21 projects are in progress with an ayacut of 4517 Ha.

Schedule Tribe Component (STC)

Pogonda Reservoir project was constructed across Byneru River near Chintalagudem(V) of Buttaigudem(M) of West Godavari District. The Cost of Project is Rs.129.48 Crores to create an Irrigation potential of 4000 Acres of Tribal and Non-Tribal families of 14 Villages under Buttaigudemmandal and ayacut stabilization of 3652 acres under Bandhakattuanicut . The Construction of Reservoir along with Right and Left Main Canals were completed and the Project was inaugurated by Hon’ble Chief Minister on 19.02.2018.

Schedule Caste Component (SCC)

327 No of works were approved by the Nodel agency under SCC Programme costing Rs 42.27 crores, 50 No of works costing Rs 3.63 crores were completed, 277 works costing Rs38.64 crores are in progress.

6.11 Achievements of APSIDC

123 LI schemes were commissioned and 1.80 lakh acres of new IP is created.483 LI schemes are revived in last four years stabilizing 3.03 Lakh acres. Expenditure of Rs.1253.46 Cr. is incurred.

6.12 GROUND WATER

Major emphasis of the Government is on improving the groundwater recharge and keep the groundwater levels above 8m. during pre-monsoon and below 3 meters in post monsoon. To make the dream reality, in the last 4 years, the Govt. have taken up many innovative activities on mission mode directly aimed at to achieve the targets.

Technology intervention:

Established world class groundwater monitoring network with **1254 piezometers** with Digital Water Level Recorders and Telemetry, providing real time groundwater levels and analysing water levels with rainfall, disseminating the information to the stake holders for better and accurate planning, prioritizing areas for water conservation. This practice is first of its kind in the country. **Geo tagged all the 15-lakh agriculture bore wells** in the state, first time in India. By concluding MOU with ISRO, the Department developed an **integrated Water Resources Information and Management System (APWRIMS),** one stop solution for all water related information and management solutions (Soil moisture, groundwater, surface water, run-off, evapotranspiration, water conservation, water budgeting etc.,). This solution is unique not only in India and also across the globe. Preparing **village wise/mandal wise/ micro basin wise water budget** leveraging the water conservation and management activityat micro level in more scientific manner.

Creating new potential and conjunctive use of Groundwater and surface water:

The conjunctive use of groundwater and surface water is encouraged in command areas. NTR Jalasiri programme is implemented to promote conjunctive use in the state, 21,000 bore wells are drilled for small and marginal farmers so far.

In the last 4 years, the department has investigated in about 7622 sites for SC beneficiaries and 5670 sites for ST beneficiaries which have created an

additional potential of 5930 hectares and 5442 hectares, benefitted 6878 families and 5270 families respectively for SCs and STs. In the last 4 years, the department has constructed 871 bore wells for SCs and 488 bore wells for ST beneficiaries under SCP and TSP programmes respectively.

Improvement in Groundwater Levels:

Despite the rainfall deficit of -34%, -5%, -29%, -14% in the last four year and deficit of -35% as on date during this water year (2018-19), the groundwater levels are sustained in the state. The ground water irrigation is sustained due to the impact of large scale water conservation activity being taken up in the state. Deep water level mandals (> 20M) have come down from 200 to 179. The groundwater stress villages have come down from 2874 to 2297 Villages. The deep water level areas in the state have come down from 62% to 54%. During the last water year about Rs 440 Crores (890 Million Units) saved because of the improved groundwater levels. Due to focused and mission mode activity in water conservation and management, dynamic annual replenishable groundwater availability in the state has increased from 646 TMC to 708 TMC, an improvement of about 62 TMC despite deficit rainfall. The Over Exploited mandals have come down from 61 to 45 and Over Exploited villages have come down from 1227 to 1094 villages. The gross additional ayacut under groundwater has increased by about 5.0 lakh acres with water conservation and management practices. Because of HNSS releases to tanks and check dams, about 75,000 bore wells are recharged, an average of more than 10.0 meters water level raised and about 2.0 lakh acres of indirect ayacut benefitted. Because of the desiltation and restoration of water bodies in conjunction with good rainfall, a remarkable rise of more than 20m. is observed in Chittoor district.

6.13 Green cover:

Since 2014, massive afforestation activities were taken up with a total of 90.84 crore seedlings distributed to public and planted in village poramboke lands, revenue waste lands, Avenue plantations along the state and national highways, institutional lands, school, college and university compounds office complexes etc., contributing to the increase in green cover.

In reserve forest areas, 28,821 ha of block plantations have been successfully raised in an intensive manner under various state and plan schemes. Greening hillocks over an area of 3210 ha and 26,633 km of Avenue plantations

were raised by involving all departments. 2,627 km of Avenue plantations, Barren hill afforestation were raised over an area of 2794 ha.

Outside Reserve Forest, in convergence with MGNREGS and by involving all departments 1,65,890 Ha horticulture plantation, Home stead plantation in 11,35,945 no. households, Institutional plantation in 4,242 no Institutes,1,777 ha block plantations,23,920 ha bund plantations,416 Village parks have been taken up since the formation of “Navya Andhra”.

On an average, 12 crore fruit, fodder and shade bearing seedlings per annum have been kept ready for distribution and planting during Vanam-Manam under MGNREGS.

An innovative practice of “Seed balls” has been initiated through which a total of 3597 Metric Tons of seed of various forestry and social forest species have been dibbled successfully in forest and revenue lands duly involving the women self-help groups and school children. Lot of efforts were made to increase the green cover in coastal areas with mangroves and shelterbelts given priority in planting programmes. The plantations done earlier post Tsunami period also enriched and helped in increasing the green cover cumulatively.

People’s involvement :As part of “Prakruti Pilustondi” awareness programme, forest department has been successfully conducting events like green runs, cycle rallies, trekking, visits to natural forest areas, debates, group discussions, elocutions, seminars, essay writing, quiz and painting competitions etc., on nature and environment and value of forests to the humanity and conservation of biodiversity and in mitigating climate change impacts.During this year, 6,381 events have been conducted and these activities have created awareness among **8,41,784** students and public.Women Self-help groups were actively involved in these programmes in large numbers for tree planting and monitoring the survival of plants and awareness creation etc., More than 1.30 crore seedlings were planted in these prakruthi pilisthondi programmes.

Due to the well planned and concerted efforts, Andhra Pradesh stood 1st State in the country in terms of increase of forest cover by 2,141 sq km (2,14,100 ha) and 37 Sq km (3,700 ha) of Mangrove cover has been increased as per Forest Survey of India biennial status report published in 2017 for the period post bifurcation.

Soil and Moisture Conservation works:

Soil moisture conservation is vital for reforestation of degraded forest, improving ground water table and arresting soil degradation. Forest Department has taken up massive soil and moisture conservation works. A total of 5051 Km of Peripheral trenching and elephant proof trenching has been done since 2014-15 onwards adding an additional volume of 310.44 lakh cum water harvesting. In addition, Continuous Contour Trenches /Staggered Contour Trenches (1,500 Km - 28.81 lakh cum), Mini Percolation Tanks (7.06 lakh cum), De-siltation works (1.66 lakh cum), 537 no Check Dams, 1585 no Rockfill dams were constructed. Thus, a total of 348.02 lakh cum additional earth work has been done from 2014 onwards.

As a result, the water bodies within forest areas have been increased and the ground water table has increased significantly in the forest fringe areas helping the farmers and wildlife. **An increase of 317 sq.km has been observed in the water body coverage within forest as compared to 2005 as per India status of Forest report, ISFR, 2017.**

Responsible tourism :

- **Eco-tourism:** A big boost to ecotourism has been given in the last 3 years to provide recreation and promote awareness about nature and wildlife conservation along with income generation and enhancing employment opportunities to local tribal youth and priority to bio-diversity conservation, eco-system functions and socio-economic development. The facilities in 24 Eco-Tourism centres have been upgraded and the public are enjoying the facilities available. 5 new Eco-Tourism centres are being developed and 8 locations have been taken up for upgradation and 11 Temple Eco-parks are being developed during 2018-19 under **Vanavihari** with financial outlay of Rs.10.00 cr.
- **Nagara vanams:** To provide wholesome living environment and contributing to Smart, Clean, Green and Healthy Cities to Urbanites, Nagaravanams (City Forests) are envisaged. They act as green lungs of the cities by augmenting Ecological Rejuvenation and helps in improvement of cities by pollution-mitigation, cleaner air, noise reduction, water-harvesting and reduction of heat islands effect and making cities climate resilient. It also helps in creating awareness on plants and Bio-Diversity.
- 9 Nagaravanams at Pushkaravanam, Diwancheruvu in East Godavari Dt., Perecherla in Guntur Dt., Darshi in Prakasham Dt, Gargeyapuram in Kurnool Dt., Divyaramam (Tirupati) in Chittoor Dt., Pampanur in Ananthapur dt, and at Kadapa, Nellore and

Vijayawada have been developed in the State after the formation of “NAYANDHRA” and opened for the benefit of urbanites and the works in 8 Nagaravanams are under progress.During 2018-19, financial outlay of Rs.25.00 cr is allocated for development of Nagaravanams. All these are expected to be completed by March 2019.

- **Climate change Mitigation:** with all these afforestation and eco restoration efforts, the climate change ill effects are being reduced substantially. Major damages to people and property averted in the recent cyclone Phethai in East Godavari because of the existence of Koringa mangrove forest sanctuary and it is further planned to cover the entire coastal area in the state with mangroves and shelterbelts as per feasibility to increase the climate resilience of the coastal areas.

Realizing the Vision 2029 and Haritha Andhra Pradesh:

Government is committed to realize vision 2029 by involving people from all walks of life and by planting minimum 25 crores seedlings every year in the next 10 years and achieve Haritha Andhra Pradesh.

7.Status on Key Performance indicators and sustainable development goals:

Water Department Department: Key Performance Indicators 2014 to 11/2018

Sl. no.	Item of work	Unit	2014-15	2015-16	2016-17	2017-18	2018-19 upto 11/2018	TOTAL New	Total Stabilized
			Achievements	Ach.	Ach.	Ach.	Ach.	Ach.	
1	Ayacut Stabilised under Major & Medium Irrigation	Lakh Acres	-	13.08	-	4.45	0.28		17.80
2	New Ayacut created under Major & Medium Irrigation	Lakh Acres	0.19	1.06	0.26	0.82	0.26	2.58	
3	Minor Irrigation Gap Ayacut	Lakh Acres	-	1.40	2.22	2.12	1.38		7.12
4	APSIDC New Ayacut	Lakh Acres	0.41	0.33	0.47	0.30	0.25	1.76	
5	APSIDC Stabilised Ayacut	Lakh Acres	0.00	1.30	0.96	0.71	0.06		3.022
6	Area with in 3-8 m range in ground water position before Monsoon (May) (%)	%	-	-	-	26.71	33.36		
7	Area with in 3-8 m range in ground water for the current month(%)	%	-	-	-	34.78	33.10		
8	Average Ground Water level for the current month (Meter below Ground level (MBGL)	Mts	-	-	-	9.15	12.65		
9	Cascading Tanks (No.)	Nos	-	-	860	1595	899	3354	
10	Quantity Desilted (Lakh Cum)	Lakh Cum	-	1820	2907	3160	1100	8987	

Forest Department : Key Performance Indicators 2014 to 11/2018								
Sl. no.	**Item of work**	**Unit**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**TOTAL**
			Ach.	**Ach.**	**Ach.**	**Ach.**	**Ach.**	**Ach.**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
I	**Soil and Moisutre Conservation**							
1	Continuous Contour Trenches /Stageered Contour Trenches	lakh cum	0.89	0.00	15.02	7.50	5.41	**28.81**
2	Mini Percolation Tanks	lakh cum	0.10	0.64	1.38	2.53	2.41	**7.06**
3	Check Dams	no.		165	22	180	170	**537**
4	Peripheral Trench / Elephant Proof Trench / Water Absorption Trench	lakh cum		95.03		107.38	108.09	**310.49**
5	Rockfill dams	no.				854	731	**1585**
6	Di-silting of Percolation tanks and Check Dams(no)	lakh cum				0.68	0.98	**1.66**
II	**Afforestation**							**0**
7	Block plantation	ha.	7570	6641	7657	4984	4763	**31615**
8	Avenue plantation	km.	598	140	225	560	1104	**2627**
9	Utiliasation of seedlings	no. in crore	14.28	14.27	11.21	23.66	27.42	**90.84**
10	Seed dibbling	MT	0	0	2290	660.75	646.05	**3596.8**

8. Awards received:

Total 24 awards are received since 2014

S.No	Name of the AWARD	Awarded by (Agency)	Date of Award	Award given for excellance (Pl give details)
1	Global Water Conservation Platinum Award, awarded in World Water Summit-2018	Energy and Envirnomental foundation of India	23-8-2018	Excellent Water Coservation initiatives in the state
2	National Significant Award: Platinum AWARD: State of the Year in Irrigation	Skoch Group, New Delhi	23-6-2018	Excellance in Irrigation among the states

3	Platinum Award for Overall Water Resource Department	Skoch Group, New Delhi	23-6-2018	Overall performance of the Water Resources Department
4	Platinum Award: Real Time monitoring of Groundwater levels -Ground Water and Water Audit Department	Skoch Group, New Delhi	23-6-2018	Best Practice
5	Platinum Award: Pattiseema LI Scheme	Skoch Group, New Delhi	23-6-2018	Best Practice
6	Platinum Award: Neeru -Chettu	Skoch Group, New Delhi	23-6-2018	Best Practice
7	Gold Award : Andhra Pradesh Water Resources Information System (AP WRIMS) - Ground Water and Water Audit Department	Skoch Group, New Delhi	23-6-2018	Best Practice
8	Gold Award:Purushottaptnam LI Scheme	Skoch Group, New Delhi	23-6-2018	Best Practice
9	Gold Award: Gandikota LI Scheme	Skoch Group, New Delhi	23-6-2018	Best Practice
10	Gold Award: Muchumurri LI Schemenum	Skoch Group, New Delhi	23-6-2018	Best Practice
11	Gold Award: Revival of defunct LI schemes – APSIDC	Skoch Group, New Delhi	23-6-2018	Best Practice
12	Gold: Real Time monitoring of Groundwater levels	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
13	Gold: Pattiseema LI Scheme	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
14	Gold:Neeru-Chettu	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
15	Gold: Andhra Pradesh Water Resources Information System (APWRIMS)	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
16	Gold:Purushottaptnam LI Scheme	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
17	Gold: Gandikota LI Scheme	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
18	Gold: Muchumurri LI Scheme	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
19	Gold: Revival of defunct LI schemes – APSIDC	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
20	Bronze Award:Web based monitoring of LI schemes- APSIDC	Skoch Group, New Delhi	23-6-2018	Order of Merit Award
21	CBIP AWARD 2017:	CBIP, GoI, New Delhi	2017	for “optimum and efficient utilization of water resources” in Godavari Delta

22	Limca Book of Awards: for Pattiseema Lift Irrigation Scheme is the fastest completed project in the country.	Limca Book of Awards	2016	Best performance award
23	CBIP AWARD:2018	CBIP, GoI, New Delhi	2019	Best implementation of Water Resources project in the country for Polavaram Irrigation Project.
24	Niti-Aayog: In composite Water Management Index report AP ranked 3 after Gujarat and Madhya Pradesh	Niti Aayog - GoI	2017	Performance Index in Water Sector Management

9. Way Forward:

Water conservation measures are to be taken up in permanent manner to utilise water in best possible way and to prevent wastage of water. Efforts to be made to maintain ground water level between 3 to 8 m.

Efforts are to be made for completion of all the ongoing Projects to create irrigation facilities to the entire culturable command area of 199.04 Lakh Ac. Interlinking of all the rivers in the state is to be completed to make the state droght proof and to provide water security to all citizens.

The aim of creating micro irrigation facilities to 1 Crore Ac. is to be achieved for optimum utilisation of water to meet the requirements of irrigation, drinking water and industrial needs. Operation and maintenance works are to be taken up every year to prevent gap ayacut and to maintain the irrigation systems safe and secure to protect from floods and other disasters. Participatory irrigation management is to be given importance to make the water users associations responsible for water management. Integrated water management is to be promoted with conjunctive use of surface and ground water and the farmers are to be educated on these aspects for optimum utilisation of water.

Sustained efforts are to be made to bring 50% green cover in the state to realise the vision of making Green Andhra Pradesh.People from all walks of life are to be involved by planting minimum 25 crores seedlings every year in the next 10 years. People friendly seedlings are to be raised under MGNREGS for distribution and Planting during Vanam-Manam. Intensive Plantation is to be taken up in saturation mode in all vacant lands (Government, Private, Institutions, waste lands etc) by using MGNREGS funds. Horticultural crops are to be raised by involving Farmers to increase the greenery. Large scale awareness programmes are to be taken up to create awareness among the public on environmental issues and promote environmental ethics.

White Paper on Environment, Air and Water Pollution

Summary

- AP Pollution Control Board (APPCB) is mandated to plan a comprehensive programme for prevention, control and abatement of air pollution. It collects and disseminates information related to air pollution and issues advisories to the Government and other related agencies. A network with 43 ambient air quality monitoring station including 6 CAAQM stations has been put in place throughout the state to assess the air quality and its changes. APPCB is also in the process of procurement and installation of CAAQM Stations in the other 14 major towns including all the district headquarters.
- APPCB measures Air Quality Index which is a tool for effective communication of air quality status to people. AQI is uploaded in the CM Dashboard for the benefit of general public.
- APPCB is now proposing to collect real time data of the environment at mandal level. The atmospheric concentrations of air pollutants in the state show satisfactory level.
- APPCB is monitoring the water quality of rivers, lakes, canals, ground water, STP outlets, etc. under National Water Quality Monitoring Programme. Water quality monitored at these stations at regular interval has found to be satisfactory.
- The state took various investor-friendly initiatives under Ease of Doing Business. APPCB brought many reforms during the last four years which are as follows:

✓ *Consent for Operation (CFO) renewal validity period increased/Reduced time frame for processing of consents*

✓ *Auto Renewal system (Green Channel) to renew CFO orders.*

✓ *Introduced Randomized computer allocation of inspections.*

✓ *Third party Environmental Compliance monitoring.*

- APPCB implemented Online Consent Management and Monitoring System for more transparent, speedy and time targeted processing of consent renewal applications. With these initiatives and continuous monitoring under Ease of Doing Business, the Board implemented all the environmental parameters and secured 100% score and overall the AP state stood first in the country.

Introduction

Post 2014, Andhra Pradesh government has come out with the Vision 2029 Sustainable Development Goals and targets to direct and drive the social and economic development policies and programmes in the state. It covers a broad range of interconnected issues dividing the objectives into Samaja Vikasam and Kutumb Vikasam providing a comprehensive framework that will take the state forward on a sustainable and faster and inclusive growth taking care of the environment concerns.

Air Pollution- Monitoring and its abatement

Air pollution is one of the most pressing environmental concerns. Air pollution damages our environment and it also leads to a variety of health issues and even death. AP Pollution Control Boards (APPCB) is mandated to plan a comprehensive programme for prevention, control and abatement of air pollution and to secure the execution thereof. It also collects and disseminates information related to air pollution and issues advisories to the Government and other related agencies.APPCB has been monitoring the ambient air quality regularly at various locations in the state measuring sulphur dioxide, oxides of nitrogen, particulates and other air pollutants.

A network with 43 ambient air quality monitoring station has been put in place throughout the state to assess the air quality and its changes. Based on the monitoring results and trends, Government of Andhra Pradesh is in position to take preventive measures to control air pollution from different sources. The 43 ambient air quality monitoring stations can broadly be divided into the following groups.

S. No.	Programme / Project	No. of stations
01	National Ambient Air Quality Monitoring Programme (NAMP)(Manual)	25
02	State Ambient Air Quality Monitoring Programme (SAAQM) (Manual)	4
03	Continuous Ambient Air Quality Monitoring Stations (CAAQMS)	6
04	Real Time Noise Monitoring Stations (RTNMS)	4
05	Ozone & CO analyzer	4

The standards specify the maximum limit to which major air pollutants are permitted in various zones which could be industrial, residential and sensitive zones. The information collected on Air pollution is send to Transport department, Police department, Municipal authorities and District Collectors for taking corrective actions at their level.

Earlier ambient air quality monitoring was conducted manually. Now, APPCB has installed Continuous Ambient Air Quality Monitoring stations (CAAQMS) at Secretariat, Velagapudi, Visakhapatnam, Rajahmundry, Vijayawada, Tirupathi & Tirumala for continuous monitoring of Air Quality in the towns. The APPCB is in the process of procurement and installation of CAAQM Stations in the other 14 major towns including all the district headquarters.

APPCB measures Air Quality Index which is a tool for effective communication of air quality status to people in terms which are easy to understand. It transforms complex air quality data of various pollutants into a single number (Index Value), nomenclature and colour. There are six AQI categories, namely Good, Satisfactory, Moderately Polluted, Poor, Very Poor and Severe. Each of these categories is decided based on ambient concentration values of air pollutants and their likely health impacts (Known as health break points). AQI gets prepared on a regular basis and is uploaded in the APPCB website as well as CM Dashboard for the benefit of general public.

As per the directions of Honorable Chief Minister of Andhra Pradesh, APPCB is now proposing to collect real time data of the environment at mandal level. APPCB is in the process of establishing compact air monitoring stations at all mandal headquarters to collect data of PM_{10}, $PM_{2.5}$, NOx, SO_2, CO, Temperature, Ozone & Noise. A pilot project on this is about to start shortly.

Earlier monitoring of industries for air pollution was conducted manually. Now, the APPCB has taken initiative for installation of online emission and effluent monitoring system in 17 category industries & common facilities (about 200 industries) and the data is connected to APPCB & CPCB. The atmospheric concentrations of air pollutants in the state show satisfactory level.

Noise Pollution – Monitoring

APPCB is monitoring ambient noise levels in the State of Andhra Pradesh at four locations continuously by installing Real Time Noise Monitoring Stations (RTNMS) at Visakhapatnam, Vijayawada and Tirumala. At present Noise levels are not exceeding the standards stipulated for commercial, residential and sensitive zones at all the locations in day and night time. APPCB is also monitoring ambient air quality during Diwali festival every year as per the directions of MoEF. During Diwali the noise levels are little higher than the normal day values.

Water Pollution – Prevention, Monitoring and its abatement

Water is second essential commodity after air for the survival of living beings including mankind on earth. Apart from drinking purpose, water is being consumed in large quantities in the activities like, irrigation / agricultural, industrial sector, hydroelectric generation, etc. For management of water quality of a water body, one has to define the water quality requirements or water quality objectives for that water body.APPCB is monitoring the water quality of rivers, lakes, canals, drains, ground water, coastal waters, etc. throughout the state under the following programmes/projects.

S. No.	Programme / Project
01	Water quality monitoring of rivers, lakes, canals, ground water, STP outlets, etc. under National Water Quality Monitoring Programme (NWMP)
02	Water quality monitoring of Kolleru lake
03	Water quality monitoring of rivers, canals, lakes, etc. during Ganesh idol immersion in various cities and towns.
04	Monitoring of sea water quality all along the coast of Bay of Bengal under Coastal Ocean Monitoring and Prediction System (COMAPS)

Water quality monitoring under National Water Quality Monitoring Programme and National River Conservation Programme is done at 51 stations on monthly or half yearly basis. The following parameters are to be analysed for all the stations for assessment of water quality for surface and ground water monitoring stations:

1	Field observations	:	Weather, Approx. depth of main stream / depth of water table, colour & intensity, odour, visible effluent discharge, human activities around station, station detail
2	Core parameters for surface waters / ground waters	:	Temperature, pH, Conductivity, DO, BOD, Nitrate, Nitrite, Total Coliform, Fecal Coliform, Turbidity, Phen. Alkalinity, Total Alkalinity, Chloride, COD, TKN, Ammonical Nitrogen, Hardness, Calcium, Magnesium, Sulphate, Sodium, TDS, TFS, TSS, Phosphate, Boron, Potassium, Fluoride, %Sodium, Sodium Absorption Ratio
3	Bio-monitoring	:	Saprobity index, diversity index, P/R ratio
4	Micro pollutants	:	Toxic metals and pesticide residues.

Water quality monitored at these stations at regular interval has found to be of 'C class' i.e. the water is fit for drinking with conventional treatment and the BOD < 3 mg/lit which is satisfactory.

Ease Of Doing Business – Facilitating investment in the state

Investments are critical to economic growth. Focused efforts are an imperative to drive growth in chosen sectors of the economy and create livelihood opportunities to the citizens. After bifurcation in 2014, Andhra Pradesh faced innumerable challenges in attracting the investment. The state took various investor-friendly initiatives under Ease of Doing Business. APPCB brought many reforms during the last four years which are as follows:

Consent for Operation (CFO) renewal validity period increased from 3/4/5 years (Red/Orange/Green) to 5/10/15 years (Red/Orange/Green).

Reduced time frame for processing of consents from 45/21/15 days to 21/15/7 days (Red/Orange/Green category industries).

Auto Renewal system (Green Channel) to renew CFO orders. No inspection is required for renewing the consent order.

Introduced Randomized computer allocation of inspections for monitoring the 17 Category industries (high risk industries) once in every 6 months.

Third party Environmental Compliance monitoring of medium risk category industries through Universities.

Exempted environmental compliance verification to the Green category industries.

Earlier consent applications were processed physically which was a time consuming process and tracking of files were also difficult. The Board implemented Online Consent Management and Monitoring System (OCMMS) from 31.12.2015 onwards for more transparent, speedy and time targeted processing of consent renewal applications. With these initiatives and continuous monitoring under Ease of Doing Business, the Board implemented all the environmental parameters and secured 100% score and overall the AP state stood first in the country.

White Paper on Renewable Energy

(under Energy, I&I & CRDA Department)

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 in line with GoI's Policy.

ii) Solar Parks

Under the Solar Park initiatives taken by MNRE, the Govt. of A.P. is the first state 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 Pump sets

NREDCAP has formulated an innovative scheme for large scale promotion of solar pump sets to benefit the farmers and to minimise 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

Under Swachh Bharat Abhiyan, it is conceptualized 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 Hybrid Project

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

vii) 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.

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 MWare 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).

WHITE PAPER ON DEPARTMENT OF MINES AND GEOLOGY

Mining sector is one among the Seven Growth Engines identified for Ease of Doing Business (EoDB) in the State of Andhra Pradesh

Scenario of combined Andhra Pradesh at the end of FY2013-14

- Mineral revenue for Andhra Pradesh stood at Rs 838 Crores in 2013-14 against the Target of Rs. 1103 Crores.
- No usage of technology.
- Sand, which is a key input for construction purpose for general public as well as industries, was being sold at high cost owing to adoption of inconsistent and improper policies.
- Services to Mineral Entrepreneurs such as Dealer Licenses, Dispatch permits for mining and transportation of minerals, payment of statutory fee, lease applications were being applied, processed and issued manually till FY 2013-14.

1. **Progress made during the last 4 years and success stories after bifurcation of the State.**

   a. Revenue and GVA

- Mineral revenue has increased at a CAGR of **26.52% over the last 4 years**, from Rs. 838 Crores in FY 2013-14 to Rs. 2,147 Cr. in FY 2017-18. It is heading towards Rs. 2500 Crores during F.Y. 2018-19.
- Gross Value Addition (GVA) in mining sector is considerably increased from -2.73% in FY 2013-14 to 8.9% in FY 2017-18. Target fixed for F.Y. 2018-19 is 14.8%.

   b. Leases:

- Due to several initiatives taken by the Department, number of existing leases granted increased from 6,200 in 2014-15 to 7,400 in 2018-19.
- About 500 Letter of Intents (LoIs) have been issued intimating the decision of grant of leases in principle and around 600 fresh leases have been granted.
- About 1.30 Lakhs dispatch permits have been issued for mineral transportation

2. **Free Sand Policy:**

   Sand for free of cost has significantly brought down the cost of the construction for general public and industries and helped in infrastructure development. The public satisfaction on this policy is consistently remained above 90% and for the month

November 2018, it is 92%. Free Sand Policy was introduced from 02.03.2016. As per the Policy, the sand in Andhra Pradesh is available free of cost for all people.

- Further, the following steps have been taken to promote optimal implementation of the Free Sand Policy
    - Established 24 X 7 Call Centre (Toll free no. 1800 599 4599)
    - Development of Mana Sand Mobile App
    - Monitoring of sand excavation and transportation
    - Appointment of VROs/Panchayat Secretaries as Reach Level Officers.
    - Deployment of Technical Assistants to support the reach level officers and monitor sand activities on real time basis. Tabs were provided to them to upload details of the sand excavation, loading and transportation vehicle details in the sand app.
    - Tagging of GPS instruments: Instructions issued to Collectors to see that all sand carrying vehicles should be GPS tagged.
    - Verification about sand price from consumers by ADMGs.
    - Public feedback on Sand Prices and Sand Policy Implementation through PRAJA PARISHKARA VEDIKA (PPV)-1100 and weekly reviews on feedback received
- For effective implementation of Free Sand Policy, a 5 member District Level Committee headed by the District Collector has been constituted vide G.O.Ms.No.104, dt. 26.07.2017.

3. Other Policy Issues:

1. Amendments to Andhra Pradesh Minor Mineral Concession Rules, 1966 including - Increase in Seigniorage Fee for 17 Minor Minerals and Revision of Dead Rents for Minor Minerals to discourage blocking of mineral bearing areas
2. To expedite grant of new leases, G.O.Ms.No. 163, dt: 16.11.2017 issued for issue of area-wise NOCs at Tahsildars level and SLAs fixed for Tahsildars (20 days) and JCs (30 days) to dispose applications.
    - To discourage speculation in mining sector transfer of leases is restricted for captive consumption only (G.O.Ms.No.183, dt. 27.12.2017) with a view to attain value addition to the industry within the State.
    - For private buildings and apartments, collection of Green fee @ Rs 3/ Sq. ft has been introduced making the procedural clearances cut short.
    - AP Mineral Dealer Rule, 2017 has been promulgated to keep surveillance on procurement and movement of mineral.

3. Mineral block auctions:
    - Auction of Mineral Blocks – Successfully completed auction of 4 limestone blocks and 1 gold block in Ananthapur, Kurnool and Chittoor districts. This is expected to provide a bid revenue receipt of Rs. 1597 Crores to the State.
4. Strengthening of District Level Administration:
    - To make the Department more public friendly, Deputy Director Level Officer has been made as District Head, who was, hither to, the in-charge of 3 Districts.
5. **Technological initiatives:**
    - GPS Tracking of Mineral Carrying Vehicles
    - Installation of GPS based vehicle tracking devices has been made mandatory to all mineral carrying vehicles.
    - This will help in real time monitoring and tracking of mineral carrying vehicles, navigate and trace their routes to deter illegal transport and mining movement, and to establish better control on mining activities and its transportation, making the whole system more transparent.

- DGPS Survey
    - DGPS Survey has been made mandatory for all existing leases to accurately earmark lease boundaries.
    - This will help to detect and prevent illegal mining outside lease boundaries.
- Drone Survey
    - Department is planning to conduct drone survey of mining lease areas in the state, with the help of Andhra Pradesh Drone Corporation to collect field evidences to counter illegal mining/quarrying, transportation of minerals, random inspections of the mining leases across the state
    - Implementation of Drone surveys for 3D Mine Mapping to monitor mines production and mineral stock in the subsequent phase
- Mining Surveillance System (MSS) for Minor Minerals
    - Post completion of DGPS survey, MSS will be introduced for minor minerals, in line with the system prevailing for major minerals. Geo Referencing of the leases - Mines Surveillance System (MSS) has been implemented for all major minerals leases.

- This will help to identify encroachments and mining outside the lease areas, thereby curb illegal mining activity, which causes revenue loss to the state government as well as significant environmental impact on the mining areas
- CCTV Cameras were installed at check-posts for live monitoring of Mineral Transportation.

- Single Desk System for Grant of Leases
  - Development of Single Desk Portal for mining lease application and processing is under development
  - Post implementation end to end processing of lease application will be done online with specific timeline at every stage
- Mineral E-Permit system:
  - Automated e-permit system is being extended for leases of all minerals having clearance of AMP, EC and CFO. This will enable issue of permits without intervention of the department officers, improving Ease of Doing Business for all the leaseholders in the State.

6. **Other IT initiatives:**
   - All payments related to application fee, royalty/ Seigniorage fee, deposit amount, and other payment required has been made online
   - E-office, Aadhar based biometric attendance system has been implemented in all offices of the department.
   - All orders related to grant of LoI, lease grant order, and order on appeals have been send through SMS and Email based Updates
   - Golden Master Database for all existing leases in the state has been prepared and put it on department website. New Departmental Website launched, providing up-to-date details of revenue, lease area details, permits, court cases etc. to bring in transparency and improve Ease of Doing Business.
   - Mobile application for randomized inspection of mines and quarries has been developed to keep watch on extraction of minerals
   - All 4,782 Mineral Dealer Licenses have been computerized end-to-end and linked to e-Permit system.
   - Currently, there are 33 performance indicators being monitored against the set target on the A.P. Real Time Outcome Monitoring System portal.

7. Value addition:

- Department is actively coordinating with investors & other departments for expediting the process of the grounding of the MoUs through organizing various partnership summits, industry workshops and other stakeholder conferences periodically.
- Allocation of leases on priority basis for value addition in the State

8. Social welfare measures

Establishment of District Mineral Foundation Trust (DMFT)

- DMFTs have been established in all the 13 districts of the State.
- Welfare of the mining affected people, families and areas will be looked after by these foundations by utilizing the contribution collected from the mining/ quarry lease holders.
- Till November 2018, a total of Rs. 613 Crores has been collected under the District Mineral Foundation (DMF) from various districts in the state. So far, Rs. 430 Crores worth of works have been sanctioned under this program and over 8450 number of projects/schemes have been taken up, which have benefited over 12.5 Lakhs individuals in mining affected areas.
- Key projects which have been implemented are as follows:
- Ambulances provided to four Government Health centers in the Mining affected areas of East Godavari district with an estimated cost of Rs 41.40 lakhs which has benefitted up to 2,58,857 people in the district.
- 6 additional class Rooms (upstairs) are constructed in Z.P High School Lampakalova village, Prathipadu Mandal of East Godavari district with an estimated cost of Rs 39 lakhs which has benefited up to 240 pupils.
- Implementation of virtual class rooms in 9 schools of mining affected Mandals and Villages of Kurnool with an estimated cost of Rs 43.18 lakhs which has benefitted up to 6,024 students in the district.
- Augmentation of PWS Scheme in Chinapalakalur Village, Guntur Rural Mandal of Guntur District with an estimated cost of Rs 30 Lakhs which has benefited up to 1,200 people living in the village.
- Construction of Hostel building and Compound wall for Deaf and Dumb Junior College, RIMS road of Kadapa with an estimated cost of Rs 4.85 Lakhs which has provided better infrastructure, living facility to about 50 disabled students.

- Providing two nos of 15KWP solar systems for AP social welfare residential school and colleges of Chilukuru and Kota mandals of SPS Nellore District with an estimated cost of Rs 42.35 Lakhs which has benefited up to 300 students of district.

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White Paper on Natural Resources Management

Key Sheet

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