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DEPARTMENT OF CHEMISTRY

LIST OF FIELD WORKS

Sl. No	Academic Year	Date	Class & Program	Field area	No.of students attended	Name of the Faculty
1.	2022-23	15-07-23	II B.Sc.,	Solid wealth Processing Center, Seethanagaram, E.G.Dt.	10	Dr.E.S.R.S.Sarma
2.	2021-22	29-08-22	III B.Sc.	Aparna Enterprises Limited, (Ceramic Tiles) Peddapuram, E.G.Dt.	17	Dr.E.S.R.S.Sarma
3.	2021-22	21-06-22	III B.Sc.	Central Instrument laboratory, Government College (A), Rajamahendravaram,E.G.Dt (Hands on Experience).	18	Dr.E.S.R.S.Sarma
4.	2021-22	10-12-21	III B.Sc.	Central Tobacco Research Institute (CTRI) Rajamahendravaram,E.G.D.	18	Dr.E.S.R.S.Sarma
5.	2021-22	23-11-21	III B.Sc.	Ratna Plastic Limited, Vemagiri, Rajamahendravaram,E.G.D.	18	Dr.E.S.R.S.Sarma
6.	2018-19	08-02-19	II & III B.Sc.,	Polavaram Dam, Polavaram, W.G.Dt.,	22	J.Bhogeswara Rao

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DEPARTMENT OF CHEMISTRY

A REPORT ON

FIELD VISIT

SOLID WEALTH PROCESSING CENTER

SEETHANAGARAM, E.G.DT.

‘Waste to Wealth’

15th JULY, 2023

AIM & PROGRAM:

On 15th July, 2022 II B.Sc., (B.Z.C) students along with Faculty Dr.E.S.R.S. Sarma, Lecturer in Chemistry went to SOLID WEALTH PROCESSING CENTER, Seethanagaram visited with an aim to provide convert waste material into healthy fertilizers.

Dr.D. Chitti Babu, Principal initiated the Field Visit.

ABOUT SOLID WEALTH PROCESSING:

Solid Wealth Processing Centers (SWPC) are the sheds constructed for this purpose where the segregated compostable and non-compostable waste from households are collected and transported through Green Ambassadors (GAs) engaged by the Gram Panchayat.

With an ever increasing population and rapid pace of urbanization, the country is facing a huge challenge of waste management. The volume of waste is projected to rise from the present 62 million tonnes to about 150 million tonnes by 2030. Indiscriminate dumping of garbage at the current rate without appropriate scientific treatment, would impose huge requirement of landfill area per year. This necessitates the importance of scientific solid waste management in today's context.

Solid Waste treatment and disposal utilizing plasma arc gasification process is an option for eco-friendly solid waste management in which large volume reduction of waste up to 95% is possible. The plasma gasification process uses electricity to generate high temperature plasma arc (above 3000°C) inside the plasma reactor which converts the waste into syngas. The produced syngas when passed through a series of gas purification system comprising of catalytic converter, redox reactor, cyclone separator, scrubber and condenser is ready for use in gas engines for generation of electricity.The residual ash can bemixed with cement for preparation of recycled bricks for usage in construction. Thus, Science helps in the creation of 'Wealth from Waste'.

OBJECTIVES:

- To improve basic research support to the students.
- To train Graduate students for operation and maintenance of compost.

INFRASTRUCTURE USED:

- Vermi compost
- Incinerator

OUT COMES:

- Students understand Vermi compost process
- Students can able to working with Incinerator instrument
- Students explains to village peoples for using of plastic materiel and on environmental effects.

List of students attended to Field Visit

CLASS : II B.Sc., (BZC) Date : 15th July, 2023

Sl. No.	Regd.No.	Name of the Candidate
1	Lecturer in Chemistry	Dr.E.S.R.S.Sarma
2	Lecturer in Botany	Ch. Raja Shekhar
1	211107110011	A.Navya sri
2	211107110012	E.Sandhya
3	211107110013	K. Lokeswari Naga Sai
4	211107110015	M.Mounika
5	211107110016	M.Vijaya Kalyani
6	211107110017	M.D.R.M.Kumari
7	211107110018	M.Prasanthi
8	211107110019	P.Sailaja
9	211107110020	R.Anusha
10	211107110021	Y.Bhulakshmi

PHOTO GALLARY

Demonstration of Dry waste and wet waste

Students observed the Vermi Compost Processes

Incinerator functioning explained to students

Group Image at Entrance gate

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DEPARTMENT OF CHEMISTRY

A REPORT ON

FIELD WORK

APARNA ENTERPRISES LIMITED

(CERAMIC TILES) Peddapuram, E.G.Dist.

29th AUGUST 2022

About Field Trip:

"A visit (Industry) made (as by students and a teacher) for purposes of first-hand observation".

It gives young people the chance to experience cultures, respect differences, and develop new friendships with their peers and thus broaden their horizons and knowledge. Tours are a strong way to consolidate learning, the experience from a trip can be directly related to the real world.

Introduction:

On 29th August, 2022, seventeen II B.Sc., (M.P.C) students with two lecturers went for a trip to Aparna enterprises limited, Peddapuram with an aim to visit to improve skills in analytical analysis and manufacturing process.

Objectives:

The objective of the trip was to get to know the analysis in more details in terms of the employees operation to get exposure on products and also to learn about making of ceramic tiles.

Observations:

We were guided by tour by Sri. Madusudhanrao, HR Manager who explained in details about the product. During the tour, our students noted down some notes and interviewed the host about how the product could be manufactured. There was an interactive session between HR Manager and students, as they clarified their doubts. Our students learned various things about the company and visited the plant and observed the machinery they used to make tiles. The conduciveness of the environment of the company helped our students learn more on product brandy which could help students to apply in future. Especially for the students who are interested in industries.

Conclusion:

It can be concluded that trip was successful and we believed that our objective was achieved. Our students learned something new and beneficial.

BRIEF HISTORY OF APARNA ENTERPRISES LIMITED:

Aparna Enterprises Limited (AEL) is a part of the highly successful Aparna Group. Founded in the year 1990, AEL prides in having the largest market share in South India through a range of businesses in building-material products, such as RMC (ready-mix concrete), uPVC Window and Door Systems, uPVC Profiles, Tiles, Sanitary Ware & Kitchens, Aluminium Window & Door Systems and Facades & Exteriors. Associated with several landmark projects for over 3 decades, AEL is globally renowned for setting benchmarks in technology, research, design, and quality.

What initially started as a business in ceramic tile distribution today stands tall as a pioneer in multiple business ventures. Over the past 30 years, AEL has established a reputation as one of India's most innovative and respected building materials producer.

Brands:

- **Vitero Tiles**
- **Aparna RMC**
- **Aparna Craft**
- **Aparna Venster**
- **Okotech**
- **Aparna Unispace**
- **Aparna Crusher**
- **Alteza**
- **Aparna Rollform**

Products:

- **Tiles**
- **Aluminium Windows & Doors**
- **Ready-Mix Concrete**
- **uPVC Doors & Windows**
- **uPVC Profiles**
- **Bathroom Fittings**
- **Crusher**

PHOTO GALLERY

Dr.D.Chittibabu, Principal, G.D.C., SNM, given permission to field trip startup with green flag

Interaction with Dr. Madusudhanrao, HR & Manager, AEL, Peddapuram.

Dr.E.S.R.S.Sarma, HOD, Dept. of Chemistry explains about safety rules in industry visit.

Dr.E.S.R.S.Sarma, HOD, Dept. of Chemistry Demonstration the different instruments.

Students observed the mixing of raw material for the tiles Machine

Students having Lunch along with plant employees

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DEPARTMENT OF CHEMISTRY

A REPORT ON

FIELD VISIT

(THROUGH HANDS ON EXPERIENCE)

CENTRAL INSTRUMENTATION LABORATORY

GOVERNMENT COLLEGE, (A), RAJAMUNDRY

21ST JUNE, 2022

Central Instrumentation Laboratory (CIL)

Aim & Program:

On 21ST June, 2022 Final B.Sc., students along with Faculty ie. Dr.E.S.R.S.Sarma, Lecturer in Chemistry went to Central Instrument Laboratory, (DST-FIST) Government College (A), Rajamahendravaram. Central Instrumentation lab visited with an aim to provide characterization techniques for futuristic advanced research in various fields. CIL aims at the optimized utilization of the instrumentation facility with quality assurance of analytical and subsequent research outcomes.

About CIL:

Mission:

CIL aims for the "optimum utilization of the instrumentation facility providing quality data for analytical and research outcome."

Objective:

- To improve basic research support to the students.
- To train Graduate students for operation and maintenance of Hi-end sophisticated instruments.

Facilities in the Laboratory:

- Fluorescence Microscope
- Clinical Chemistry Analyzer
- Fourier Transformed Infrared Spectroscopy (FTIR)
- UV-Vis Spectroscopy
- IR Spectroscopy
- Oven
- Microscope

GOVERNMENT DEGREE COLLEGE

SEETHANAGARAM, E.G.DIST.,

List of students attended to Field Visit

CLASS : III B.Sc., (MPC) Students

Date : 21st June, 2022

Sl. No.	Regd.No.	Name of the Candidate	Program
1	191107101002	D.Ganesh	M.P.C.
2	191107101003	G.Naga Bharathi	M.P.C.
3	191107101004	I.S.N.Varma	M.P.C.
4	191107101005	J.Deena Sai Satya	M.P.C.
5	191107101006	K.Durga Prasad	M.P.C.
6	191107101008	K.Simhadri	M.P.C.
7	191107101010	P.Pushpa Lakshmi	M.P.C.
8	191107101011	P.Satya Devi	M.P.C.
9	191107101013	T.Neeraja	M.P.C.
10	191107101014	T.Satyanarayana	M.P.C.
11	191107101015	V.Bhagya Sri	M.P.C.
12	191107101016	V.Siva Satya Sai	M.P.C.
13	191107110017	Ch.Pravallika	B.Z.C.
14	191107110019	K.Ramya Sri	B.Z.C.
15	191107110022	N.Satya Vani	B.Z.C.
16	191107110023	P.Ajay Kumar	B.Z.C.
17	191107110024	P.Mohini Sai	B.Z.C.
18	191107110025	Sk. Neeraja	B.Z.C.

PHOTO GALLARY

Demonstration of UV Visible Spectroscopy

Students observed the various types of minerals

Viscometer experiment done by Students and noted the observations.

Students received appreciation certificate from Prof. B. Jagan Mohan Reddy, AKNU, Rjy.

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DEPARTMENT OF CHEMISTRY

A REPORT ON

FIELD WORK

CENTRAL TOBACCO RESEARCH INSTITUTE

Rajamahendravaram, E.G.Dist.,

Observed the plantation of Tobacco (Crop)

10th DECEMBER 2021

BRIEF HISTORY OF CTRI:

Government of India constituted Indian Central Tobacco Committee (ICTC) in 1945 keeping in view the important role played by tobacco in national economy and employment generation. The Central Tobacco Research Institute was established in 1947 at Rajahmundry under the aegis of ICTC, Madras. The function of CTRI was taken over by the Indian Council of Agricultural Research (ICAR) in 1965.

CTRI has six regional Research Stations located at Guntur, Kandukur, Jeelugumilli, Hunsur, Vedasandur and Dinhata and a research centre at Kalavacharla. All-India network project on tobacco was sanctioned in 1971 has 3 main centres, 7 sub centres and 4 voluntary centres to carry out the multi-locational trials on various types of tobacco.

Tobacco is one of the important high value commercial crops grown in an area of 0.45 million hectares over 15 states in India. Presently, India stands third in production of tobacco (804 million kg) in the world after China and Brazil. It provides employment directly and indirectly to 45.7 million people and contributed as much as Rs.22, 737 crore as excise duty and Rs.6,000 crore in terms of foreign exchange to the national exchequer.

FCV, bidi, hookah, chewing, cigar-wrapper, cheroot, burley, Oriental, HDBRG, Lanka, Pikka, Natu etc. are the main types of tobacco grown in the country, with FCV and Burley tobacco being the main exportable types.

Botanically, tobacco belongs to the genus *Nicotiana*, which is one of the five major genera of the family Solanaceae. *Nicotiana tabacum L* and *Nicotiana rustica L.* are the two commercially cultivated species in the world. The tobacco is a unique crop and can easily come up even on infertile soils unsuitable for other crops, and withstands vagaries of weather to a larger extent. Further, the crop is less prone to pest and disease attack. It is a model plant for biological research and a valuable source of many phyto-chemicals useful to mankind.

Today, tobacco cultivation is a family business in many countries, providing livelihood security to millions of people world over. Some of the positive features of Indian tobacco are the lower levels of heavy metals, TSNAs and pesticide residues compared to other tobacco producing countries. Thus, the situation presents a significant opportunity for the Indian tobacco industry to expand and consolidate its position in the world market.

LIST OF EQUIPMENTS OBSERVED IN CTRI:

1) **Cigarette Smoking Machine**: Smoking machines are mechanical devices for the standardized smoking of cigarettes, facilitating the determina- tion of nicotine and condensate yields of cigarettes ac- cording to strictly controlled parameters such as puff duration, puff volume, number of puffs and butt length.

2) **Briquette making Machine**: A briquette machine compresses a raw material such as wood savings into a small log shaped fuel source of different sizes and dimensions.

3) **Bio-Analyser**: Commonly used in science labs and medical settings, this device helps doctors to diagnose the problem and identify critical issues (cell related issues and diseases). Scientists also use this device to identify the structure as well as function of bio-molecules, such as nucleic acids, lipids, enzymes, etc

4) **Total carbon analyser:** This highly advanced on-line Total Organic Carbon (TOC) analyzer excels in a wide range of water analysis applications, from continuous monitoring of plant/boiler water and management of wastewater treatment plant influent and effluent to management of the water in manufacturing processes.

5) **GCMS- for measuring tobacco flavours:**

6) **PCR Machines:** PCR-machines are used for replication of DNA, detecting DNA sequences, carrying out DNA fingerprinting, forensic analysis, and molecular cloning, diagnosing genetic diseases, and detecting pathogens such as Hepatitis B and C viruses, Chlamydia trachomatis, HIV-1 causing AIDS, Neisseria gonorrhoeae, human papillomavirus ...

7) **High speed refrigerated centrifuge:** Computer Controlled High Speed Refrigerated Centrifuge are useful for centrifugation of temperature sensitive material and find applications in routine and research work in auxiliary laboratories in industry, Educational & Research institutions, Bio Technology, Medical Laboratories, Hospitals, Blood Banks

8) **High performance liquid chromatography unit:** HPLC separates compounds dissolved in a liquid sample and allows qualitative and quantitative analysis of what components and how much of each component are contained in the sample.

9) **Gas chromatography unit**: Gas chromatography (GC) is a common type of chromatography used in analytical chemistry for separating and analyzing compounds that can be vaporized without decomposition. Typical uses of GC include testing the purity of a particular substance, or separating the different components of a mixture.

10) **UV spectro photo meter:** Spectrophotometry is a standard and inexpensive technique to measure light absorption or the amount of chemicals in a solution. It uses a light beam which passes through the sample, and each compound in the solution absorbs or transmits light over a certain wavelength

ANALYTICAL ANALYSIS IN CTRI:

1. Smoke constituent's viz., Tar, Nicotine and Carbon monoxide
2. Estimation of Solanesol
3. Estimation of Nicotine, Reducing sugars and Chlorides in tobacco leaf
4. Estimation of Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Sulphur in leaf and soil
5. Estimation of Micronutrients viz., Zinc, Copper, Iron, & Manganese in leaf and soil by AAS
6. Estimation of Soil physico-chemical and fertility parameters:

   pH, Electrical Conductivity, Chlorides, Organic carbon, Available P & K
7. Estimation of Water quality parameters -- pH, Electrical conductivity and Chlorides
8. Pesticide residue analysis

OUT COMES OF THE FIELD WORK:

- Enhances the Curriculum: One of the biggest advantages to field trips is that they allow students to have a real-world experience.
- New Learning Environment: This Field work also allows the students to learn outside of the classroom.
- Team Building. ...
- Students can able to planning the organisation of events.
- To stimulate interest and motivation in agriculture side.

WILLING NESS FROM STUDENTS & PARENTS

Name of the faculty organised: Dr.ERANKI.S.R.S.Sarma, Department of Chemistry

Sl.No.	Name of the student	Mobile number	Signature of the student	Signature of the parent
1	I. S.N. Varma	9885056507		
2	K. Durga Prasad	8688092975		
3	P. Ajay Kumar	6303027497		
4	D. Ganesh	7799047893		
5	K. Simhadri	9133567662		
6	V.S. S. Sai	9391689949		
7	T. Satyanarayana	9948275164		
8	Sk. Nageena	9346439617		
9	Ch. Pravalika	6301241124		
10	P. Mohini sai	8074591010		
11	T. Neeraja	9014490061		
12	J. Deena	8688095648		
13	N. Satya veni	8790154563		
14	K. Ramyasri	9490515913		
15	V. Bhagyasri	9951681330		
16	P. Puspha lakshmi	9391861315		

PHOTO GALLERY

Entrance Gate, C.T.R.I, RJY

Interaction with Dr. Subbayya, Principle Scientist, C.T.R.I, RJY

Power point presentation on Functioning, Research & Analysis in C.T.R.I, RJY

Dr. Samuel, Senior Scientist Demonstration on extraction of nicotine from tobacco.

Students observed the Cigarette Smoking Machine

Students observed the Gel chromatography & Spectrophotometer

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DEPARTMENT OF CHEMISTRY

A REPORT ON

FIELD WORK

RATNA PLASTICS LIMITED

Vemagiri, Rajamahendravaram, E.G.DIST.,

Dr.D.Chitti Babu, Principal, G.D.C., Seethanagaram
Evoked the students to Field work

23rd NOVEMBER 2021

BRIEF HISTORY OF CTRI:

Ratna Plastics Limited is a Public incorporated on 23 October 1992. It is classified as Non-govt Company and is registered at Registrar of Companies, Vijayawada. Its authorized share capital is Rs. 7,500,000 and its paid up capital is Rs. 6,885,000. It is involved in Manufacture of plastic products

Directors of Ratna Plastics Limited are Satyanarayana Akula, Venkateswara Rao Akula and Veerraghava Rao Akula.

MANUFACTURING OF PLASTIC:

Plastics are made from raw materials like natural gas, oil or plants, which are refined into ethane and propane. Ethane and propane are then treated with heat in a process called "cracking" which turns them into ethylene and propylene. These materials are combined together to create different polymers.

RAW MATERIAL FOR RIGID PVC PIPES:

- PP Plastic Raw Material Polypropylene Homopolymer Low Retention Raw Material PP
- PVC Resin is the most widely raw material used in plastic production. It has good chemical stability, corrosion resistance and wate.
- Product Introduction Silver Ion antibacterial material has the incomparable advantage of broad-spectrum, long-acting,

DIFFERENT TYPES OF PLASTIC:

- Below is 7 of the most popular and commonly used plastics:
- Acrylic or Polymethyl Methacrylate (PMMA)
- Polycarbonate (PC)
- Polyethylene (PE)
- Polypropylene (PP)
- Polyethylene Terephthalate (PETE or PET)
- Polyvinyl Chloride (PVC)
- Acrylonitrile-Butadiene-Styrene (ABS)

PRODUCTS OF RATNA PLASTICS LIMITED:

- Rigid PVC Pipes
- Blue threaded pipes
- Electrical conducts
- Blue casing
- Soft PVC tubing's

APPLICATIONS RATNA RIGID PVC PIPES:

- Rural & urban supply schemes
- Agricultural & Lift irrigation schemes
- Telecommunications
- Drainage & Sewerage
- In buildings as rain water pipes
- Industries
- Bore wells & irrigation etc.

PHYSICAL PROPERTIES:

- Specific Gravity: 140 to 1.46 gm/cm
- Impact strength @20^0C 3Kg /cm^2
- Modules of elasticity 2600 to 3000 N/mm
- Tensile strength: 45 to 55 N/mm^2
- Flexual & compressive strength not less than 80^0C

CHEMICAL PROPERTIES:

- Ratna Rigid PVC Pipes have got an excellent resistance to salt, acids, alkalis organic chemicals & fats.
- They are capable of handling water with pH value ranging from 2 to 12.
- PVC being a thermoplastic, it withstands any deformation in shape due to excess heat on earth movements.
- PVC pipes are totally immune to galvanic and electrolytic.

OUT COMES OF THE FIELD WORK:

- Students can able to explain the manufacture process and different raw materials of the plastics.
- Students gain knowledge about properties and applications of plastic materials.

- Students can able to planning the forming the small scale industries.

PHOTO GALLERY

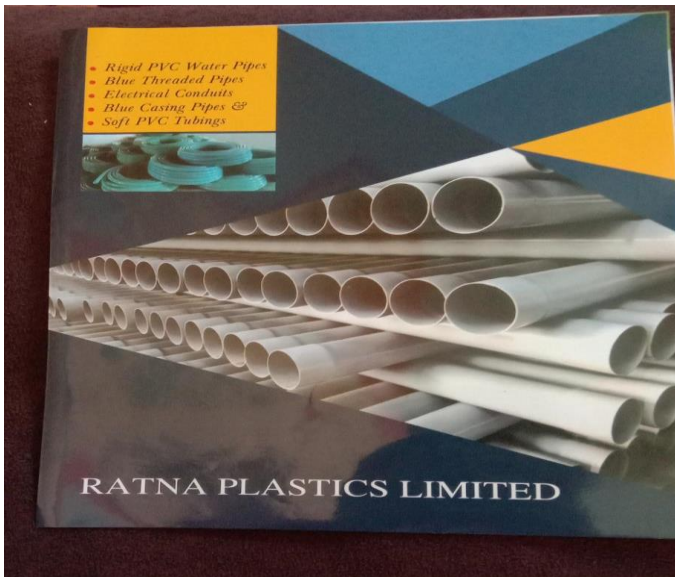
Main gate of Ratna plastics Ltd.,

Observed the rolling of PVC pipes

Manufacturing process PVC tubes

Raw material mixer

Soft PVC tubing's (water pipe lines)



Rigid PVC Pipes

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DEPARTMENT OF CHEMISTRY

A REPORT ON

FIELD VISIT

POLAVARAM DAM

POLAVARAM, W.G.DT.

08 FEBRUARY, 2019

Program:

On 8th February, 2019, III B.Sc., (M.P.C & B.Z.C) students with two lecturers went for a visit to Polavaram Dam, Polavaram, W.G.Dist.

ABOUT POLAVARAM DAM:

The Polavaram Irrigation Project is a Multipurpose one conferring Irrigation benefits in the upland areas of Visakhapatnam, East Godavari, West Godavari and Krishna Districts. It also envisages drinking water supply to Visakhapatnam Township and other towns and villages enroute and Industrial water supply to the Visakhapatnam coast based Steel Plant and other industries in the vicinity, generation of Hydal Power, affording Navigation facilities, development of pisciculture and providing recreation and other benefits, besides urbanisation.

The Project also provides diversion of 2, 27 T. M.Cum (80 TMC ft.) of Godavari Waters to Krishna Basin.

The Project is located in Andhra Pradesh near Polavaram village about 34 KMs. (21 Miles) upstream of Kovvur - Rajahmundry Road and 42 KM. (26 Miles) upstream of Sir Arthur Cotton Barrage, at Longitude 81°-39' 46" E and Latitude 17°-16' 53" N.

The Polavaram Project is essentially a diversion scheme and estimated for Rs. 2,665/- Crores (with 1985-86 rates). The revised estimated cost is Rs. 16010.45 Crores (with 2010-11 price level).

HISTORY OF THE PROJECT:

A pronounced interest for Multipurpose Project on the River Godavari was felt during the early forties and the Ramapadasagar Project Report prepared in 1951 was an outcome of that.

For some reason or the other no investigations for a reservoir across the Godavari was made previously, till 1941. In the year 1870 Lt-Col. Haig, Superintending Engineer, sent a report for the formation of reservoir across the River Sokileru (a tributary of the Sabari) to irrigate an area of about 7,300 Hectares (18,000 acres). Mr. Walch, in the year 1896 in his book "The Engineering Works of the Godavari Delta" wrote that there are sites on some of the large affluents of the Godavari where storage can be affected at a cost not prohibitory, but did not contemplate a dam across the main Godavari River.

Early in 1941, Shri L. Venkatakrishna Iyer, the then Cheif Engineer for Irrigation, put up definite proposal for a storage Reservoir on the main Godavari River itself near Polavaram. After detailed investigation, the Ramapadasagar Project Report was finalised.

The Ramapada Sagar Project as contemplated consists of

i) A dam 130.0 m (428 ft.) high at the deepest portion,

ii) A canal 209 K.M. (130 Miles) long on the left side emptying into the Vizag Port.

iii) A canal of 200 K,M< (124 Miles) long on the right side upto the Krishna River and (after crossing it by an aqueduct) another 143 K. M. (89 miles) long upto the Gundlakamma river.

iv A hydro-electric power station to develop 150 Mega-watts of Firm power.

The total cost of the Project was then estimated for Rs. 129/- Crores.

Because of great depths of alluvium on one flank, sands on the other and with acceptable rock available at great depths, the, scheme worked out to be very costly and therefore did not fructify due to financial constraints and construction difficulties.

The extra-ordinary floods in the Godavari River during August 1953 and the urgent needs of Visakhapatnam Steel Plant stressed the need for a barrage on the main river.

Various agreements have also been reached between the neighbouring states for sharing Godavari Waters and for construction of the Polavaram Project with a FRL 45.72 M (150.00 ft,).

Accordingly detailed investigation of the Polavaram Irrigation Project was taken-up in 1976 and Project Report was first presented in 1978. With further investigations and also based on the Comments of Central Water Commission on 1978 and 1982 Project; Reports, the Project report was finalized, in 1986 for estimated cost of Rs. 2665 Crores (with 1985-86 rates). Investigation clearance was accorded by the Planning Commission, for revised cost of Rs. 16010.45 Crores (with 2010-11 price level).

THE RIVER GODAVARI:

The river Godavari is one of the largest Rivers in India, being the second largest in the Indian Union. It runs across from the Western Ghats to Eastern Ghats and owes its greatness for its sanctity, picturesque scenery and utility to man. Starting from a trickle from the lips of a cow at Triambak, the width of the river grows till it is nearly 6.5 KM (4 miles) wide at Dowlaiswaram. It is always spoken of as Southern Ganga and Vriddha Ganga, The last name is really befitting as Godavari is more ancient than the Ganga as the former as nearly reached its base level of erosion while the latter is still in its youthful stage of development.

For scenic beauty, Godavari offers some of; the best scenes. There are a number of pretty places dotted all along. Anybody who has visited Pravary Valley cannot but feel the enchantment. But it is after the confluence with Sabari that some of the most picturesque scenes of the World are seen. The Godavari begins to wind amongst the spurs of the Eastern Ghats, which

gradually close on it, till it is forced to go through a picturesque gorge at Papikonda which for three Kilo Metres is as narrow as 200 or 300 metres. The depths of the river in the gorge is between 30 to 80 m at flood time. The hills rise with steep sides to heights upto 700 to 1000 m and are clothed from the water's edge to the summit with luxurious vegetations. When Dr. Karl Terzaghi, the great soil Scientist, visited this place, he was in complete ecstasy and remarked that such sights are almost unique and unparalleled.

The Godavari, rises in the Western Ghats at Triambak near Nasik about 113 km.(70 Miles) North-East of Bombay and only 80 K,M. (50 miles) from the Arabian sea. After descending the Western Ghats, it takes a South-Easterly course across the Southern part of Indian Peninsula and flows through 1230 KM. (766 Miles) and falls into the Bay of Bengal about 80 K.M. (50 Miles) East of Rajahmundry. The total catchment area drained by the river is 3,12,812 Sq, K.M. (1,20,777 Sq. Miles) or nearly one tenth of India.

The distribution of the catchment and length of the river in the States through which it flows is as under.

Sl.No.	State	Catchment area	Length
1.	Maharastra	1,52,199(Sq. Km)	640 Km.
		58,764 (Sq. Miles)	(398 Miles)
2.	Andhra Pradesh	73,201 (Sq. Km)	592 K.
		28,263 (Sq. Miles)	(368 Miles)
3.	Madhya Pradesh	65,255 (Sq. Km)	Tributaries
		25,195 (Sq. Miles)	"
4.	Orrisa	17,752 (Sq. Km)	"
		6,854 (Sq. Miles)	
5.	Karnataka	4,405 (Sq. Km)	"
		1,701 (Sq. Miles)	
6.	Total	3,12,812 (Sq. Km)	
		1,20,777 (Sq. Miles)	

The main tributaries of the river are the Manjira, the Pranhita, the Indravati and the Sabari. The Pranhita is in its turn formed by the confluence of the Wardha, the Penganga and the Wainganga. Out of the total average annual flow of the river, nearly 40% is contributed by the Pranhita, 20% by the Indravati, 10% by the Sabari and the rest by the other Tributaries and the Godavari itself.

The Godavari rising as it does in the heavy rainfall region of the Western Ghats comes under the influence of South-Western monsoon. The region has clearly marked zones with rainfall

ranging from 889 mm (35 inches) to 1016 mm. (40 inches). The greater portion of the area drained by the Godavari River receives much more rain during the South-West Monsoon (June to September) than in the North-East Monsoon and consequently the river bring down most of its waters between June and September. The water level begins to raise at Dowlaiswaram some ten days after the South-East Monsoon sets at Bombay usually about the middle of June and it remains almost continuously high till the end of September. High floods during October are rare. The flood season ends by October, but during next two months there are occasional floods caused by the North-East Monsoon over that part of the catchment which comes under its influence.

The maximum flood so far estimated at Dowlaiswaram occurred on the 15th August, 1986 is 0.94 Lakhs cumecs (33 Lakhs cusecs.). The computed maximum flood for 500 year return period works out to 1.02 Lakhs cumecs (36 Lakhs cusecs.).

After the North-East Monsoons have ceased, the river gradually goes down and by the end of May the discharges may be as low as 42.50 cumecs (1500 cusecs.)

As per Bachawat Commission's Report 1979 the dependable annual flow in the river is 71.0 T.M. Cum (2,500 TM. Cft) and the utilisation for the existing and on going Projects as on 1970, is hardly 16.83 T.M. Cum (595 T.M.Cft.).

BENEFITS:

1) **Irrigation** : 2.914 Lakh Hectares (7.20 Lakh Acres)

2) **Power generation** : 3,100 Million units Annually (Tentative)

3) **Water Supply** :

23.44 TMC of assured water supply to the fast growing major harbor eity of Visakhapatnam, other Towns and Villages enroute and the Visakhapatnam Steel Plant and also for the various industries viz: Outer Harbour, Ship building yard, Port trust, Eastern Naval Command, Bharat Heavy Plates & Vessels, Cattex Oil Refinery, Coramandal Fertilisers, Zinc Smelter Plant in and around Visakhapatnam city.

4) **Diversion:** Diversion of 80 TMC of Godavari waters to Krishna river at Vijayawada.

5) **Navigation:** Facilitates Navigation in the fore-shore to transport mineral and forest produce and food grains to marketing centres. Also provides Navigation from Polavaram to Visakhapatnam.

6) **Other Benefits:** Development of Tourism and Pisciculture and creation of Recreational facilities besides urbanization.

PHOTO GALLERY