

**PLUGGING INTO THE FUTURE :**  
***AN EXPLORATION OF ELECTRICITY***  
***CONSUMPTION PATTERNS***

## **1.INTRODUCTION**

India is the world's third-largest energy consuming country, thanks to rising incomes and improving standards of living. Energy use has doubled since 2000, with 80% of demand still being met by coal, oil and solid biomass. On a per capita basis, India's energy use and emissions are less than half the world average, as are other key indicators such as vehicle ownership, steel and cement output. As India recovers from a Covid-induced slump in 2020, it is re-entering a very dynamic period in its energy development. Over the coming years, millions of Indian households are set to buy new appliances, air conditioning units and vehicles. India will soon become the world's most populous country, adding the equivalent of a city the size of Los Angeles to its urban population each year. To meet growth in electricity demand over the next twenty years, India will need to add a power system the size of the European Union to what it has now.



## 1.1 OVERVIEW

Electricity consumption is an essential component of the modern life. Electricity consumption in India has grown very rapidly since the early 1950s and has been mainly constrained by the ability of the growing state electricity grids to meet rising demands for peak capacity and energy needed for the modernization and growth of the industrial and agricultural sectors. The industrial sector has been the major consumer of electricity, its share marginally decreasing from about 72% in 1951-52 to 64% in 1978-79. The project **PLUGGING INTO THE FUTURE : AN EXPLORATION OF ELECTRICITY CONSUMPTION PATTERNS** gives an overview analysis of electricity consumption pattern in India .



## 1.1 PURPOSE

Management of energy consumption in domestic environment is very important due to high electrical energy prices and impact of electricity production on the environment. Current records of power consumption provides an overall idea about the power consumption of electrical devices. The customers don't get a clear idea on how the power consumption was carried out. And also there are no data analysis methods to provide customers a forecasting of power consumption . This project is an initiative for the analysis of electricity consumption pattern in India . It wraps state wise , region wise , top n pattern , bottom n pattern , consumption before and during lockdown of both the years 2019 and 2020.

## **2.Problem definition & design thinking**

### 2.1 Empathy Map

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## Empathy map

Use this framework to develop a deep, shared understanding and empathy for other people. An empathy map helps describe the aspects of a user's experience, needs and pain points, to quickly understand your users' experience and mindset.

**Says**  
What have we heard them say?  
What can we imagine them saying?

**Thinks**  
What are their wants, needs, hopes, and dreams? What other thoughts might influence their behavior?

**Does**  
What behavior have we observed?  
What can we imagine them doing?

**Feels**  
What are their fears, frustrations, and anxieties? What other feelings might influence their behavior?

**Plugging Into The Future : An Exploration of Electricity Consumption Patterns**

- ECONOMICAL ELECTRICITY TARIFF
- TO REDUCE ELECTRICITY WASTAGE IN STREET LIGHTS BY USING AUTOMATIC SENSOR SYSTEMS
- CREATING AWARENESS ON RENEWABLE SOURCES AND ELECTRICITY CONSUMPTION
- LACK OF ELECTRICITY ACCESS IN SOME RURAL AREAS
- HAVING ALTERNATIVE IDEAS FOR ELECTRICITY CONSUMPTION ACCORDING TO POPULATION DENSITY
- TO GIVE NEW SCHEMES REGARDING CONCESSION ON ELECTRIC BILLS WHILE USING RENEWABLE SOURCES
- TO SET MORE NUMBER OF SOLAR PLANTS
- USAGE OF RENEWABLE SOURCES

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**Plugging Into The Future : An Exploration of Electricity Consumption Patterns**

- REPLACING USUAL ELECTRIC APPLIANCES INTO LESS ELECTRICITY CONSUMING ONE
- RESETTING METER RATES ON ADDITIONAL LAMPS
- ADDING CONCEPT OF ELECTRICITY CONSUMPTION IN SCHOOL PORTIONS
- SETTING UP OF SOLAR CELLS AT DOMESTIC LEVEL
- HIGH ELECTRICITY TARIFF
- TO GIVE MORE IMPORTANCE FOR DEVELOPING AGRICULTURAL SECTIONS
- CONTINUOUS AVAILABILITY OF ELECTRICITY IN FUTURE
- POWER SHORTAGE

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## 2.2 Ideation & Brainstorming Map

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### Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

**TIP**  
You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

**Group ideas**  
Take turns sharing your ideas: sticky notes have been grouped bigger than six sticky notes.

20 minutes

**Participants:**

- DHIVYADHARSHINI N**
  - STATE WISE / REGION WISE ANALYSIS
  - DISPLAY USING MAP
- RAMYA B**
  - CONSUMPTION RECOMMENDATION
  - RENEWABLE / NON RENEWABLE SOURCES
- PUSHPALATHA GV**
  - POPULATION DENSITY IN RURAL AREAS
  - URBAN AND RURAL MAPPING
- OVIYA P**
  - POPULATION DENSITY IN RURAL AREAS
  - DISPLAY USING BAR DIAGRAM

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**TIP**  
Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

**Importance**  
If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

**Participants:**

- STATE WISE / REGION WISE ANALYSIS**
- RENEWABLE / NON RENEWABLE SOURCES**
- CONSUMPTION RECOMMENDATION**
- POPULATION DENSITY IN RURAL AREAS**
- URBAN AND RURAL MAPPING**
- DISPLAY USING MAP**
- DISPLAY USING BAR DIAGRAM**

**TIP**  
Participants can use their cursor to point at where sticky notes should go on the grid. The facilitator can confirm this spot by using the laser pointer holding the H key on the keyboard.

**Share the mural**  
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.

**Export the mural**  
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

**Keep moving forward**

- Strategy blueprint**  
Define the components of a new idea or strategy.  
[Open the template](#)
- Customer experience journey map**  
Understand customer needs, motivations, and obstacles for an experience.  
[Open the template](#)
- Strengths, weaknesses, opportunities & threats**  
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.  
[Open the template](#)

[Share template feedback](#)

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## 3.RESULT

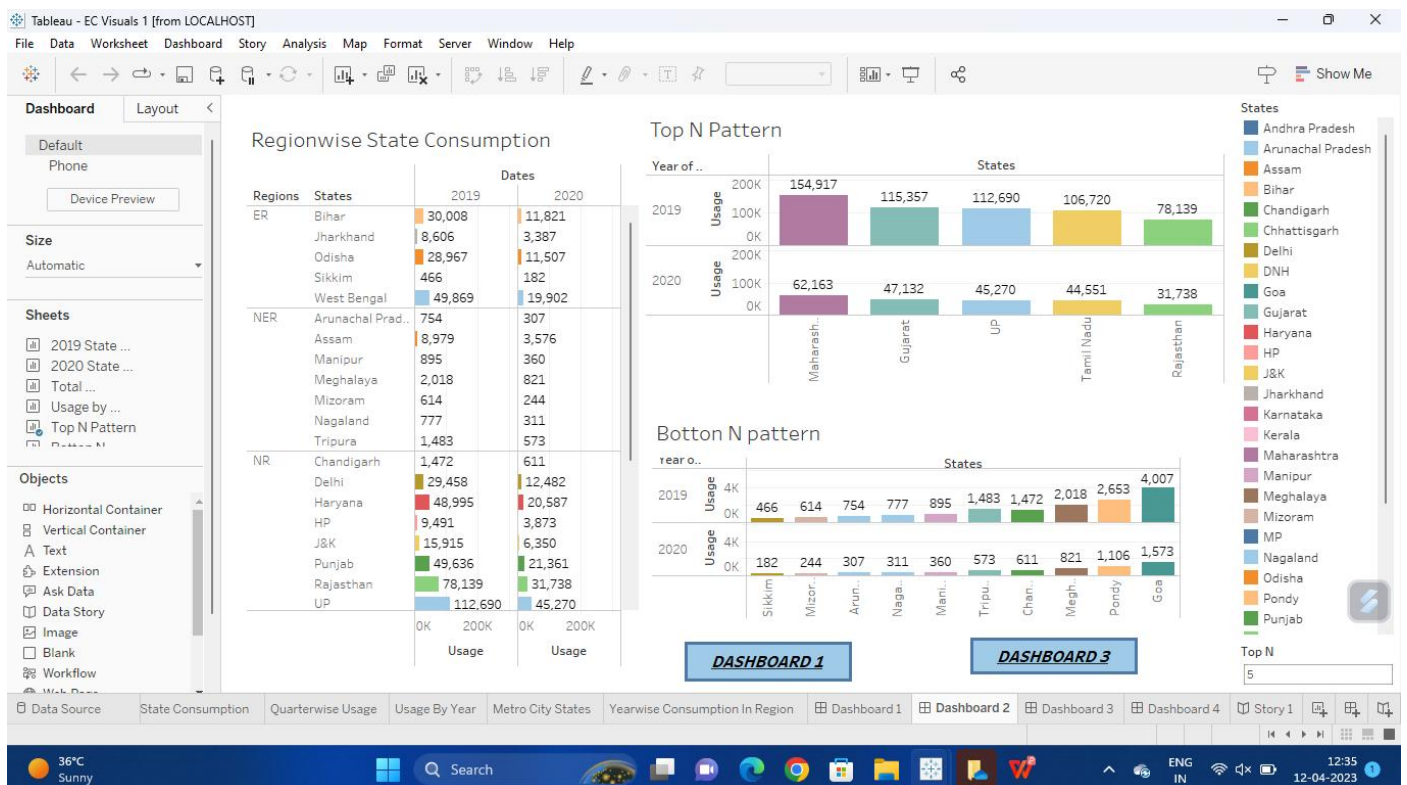
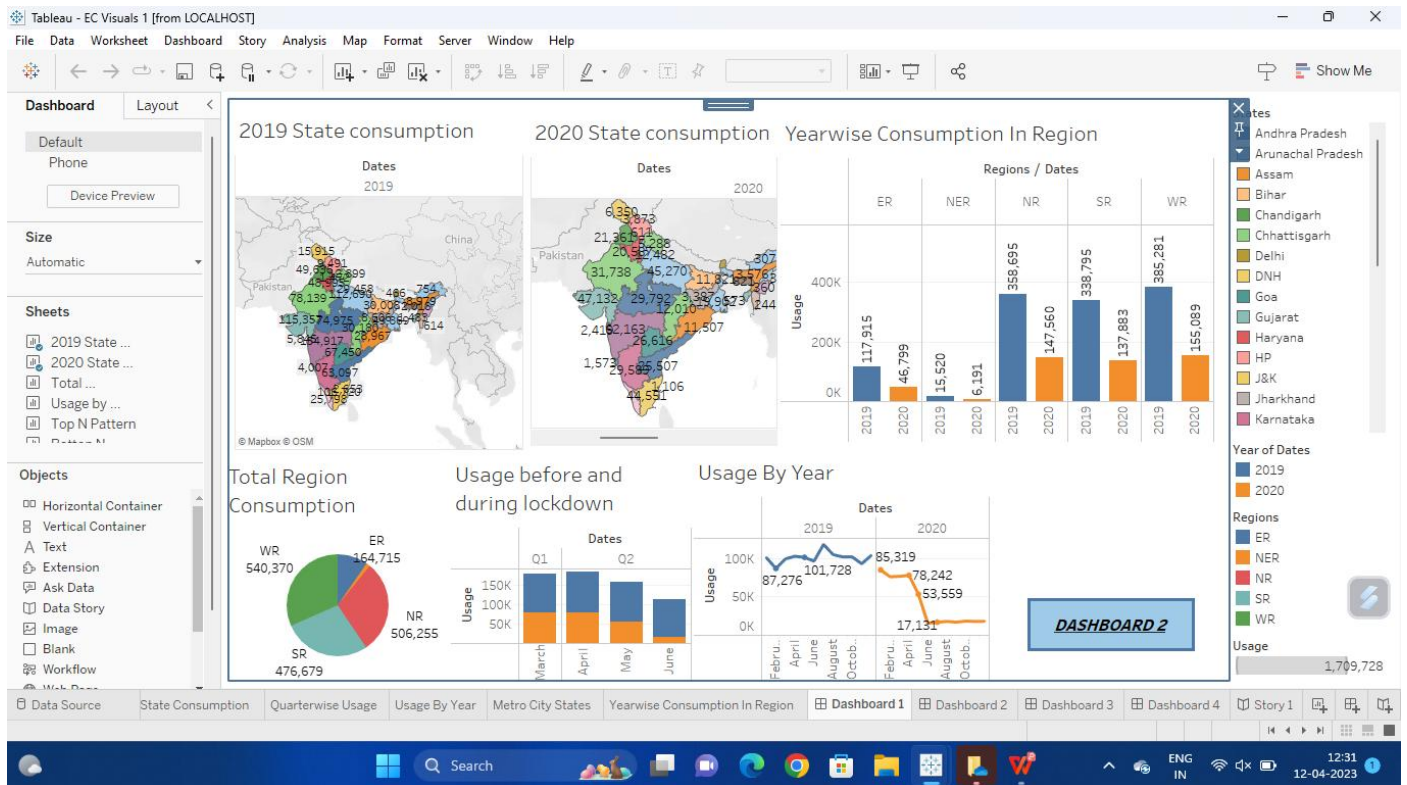
### 3.1 Data Collection & Extraction from Database

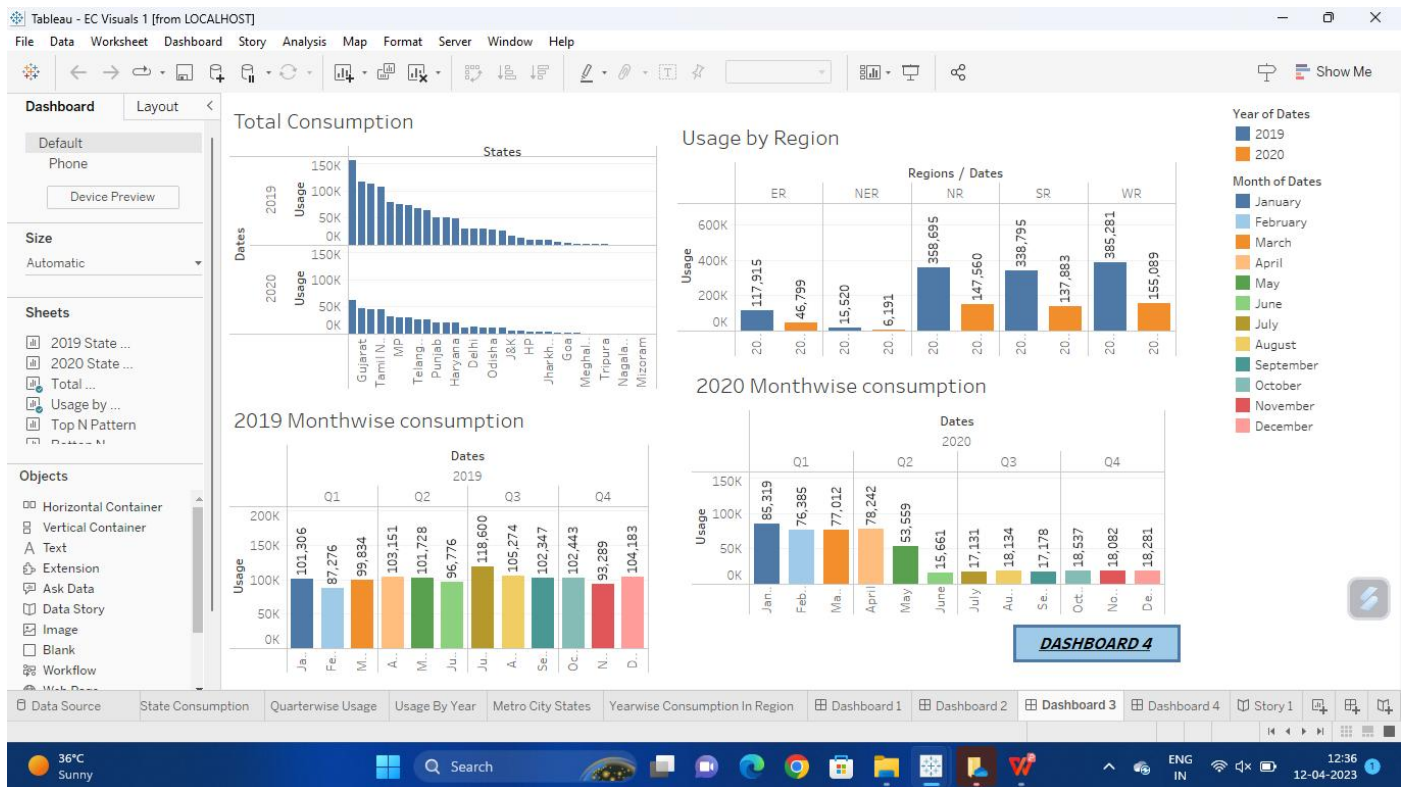
Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes and generate insights from the data.

### 3.2 Dashboard

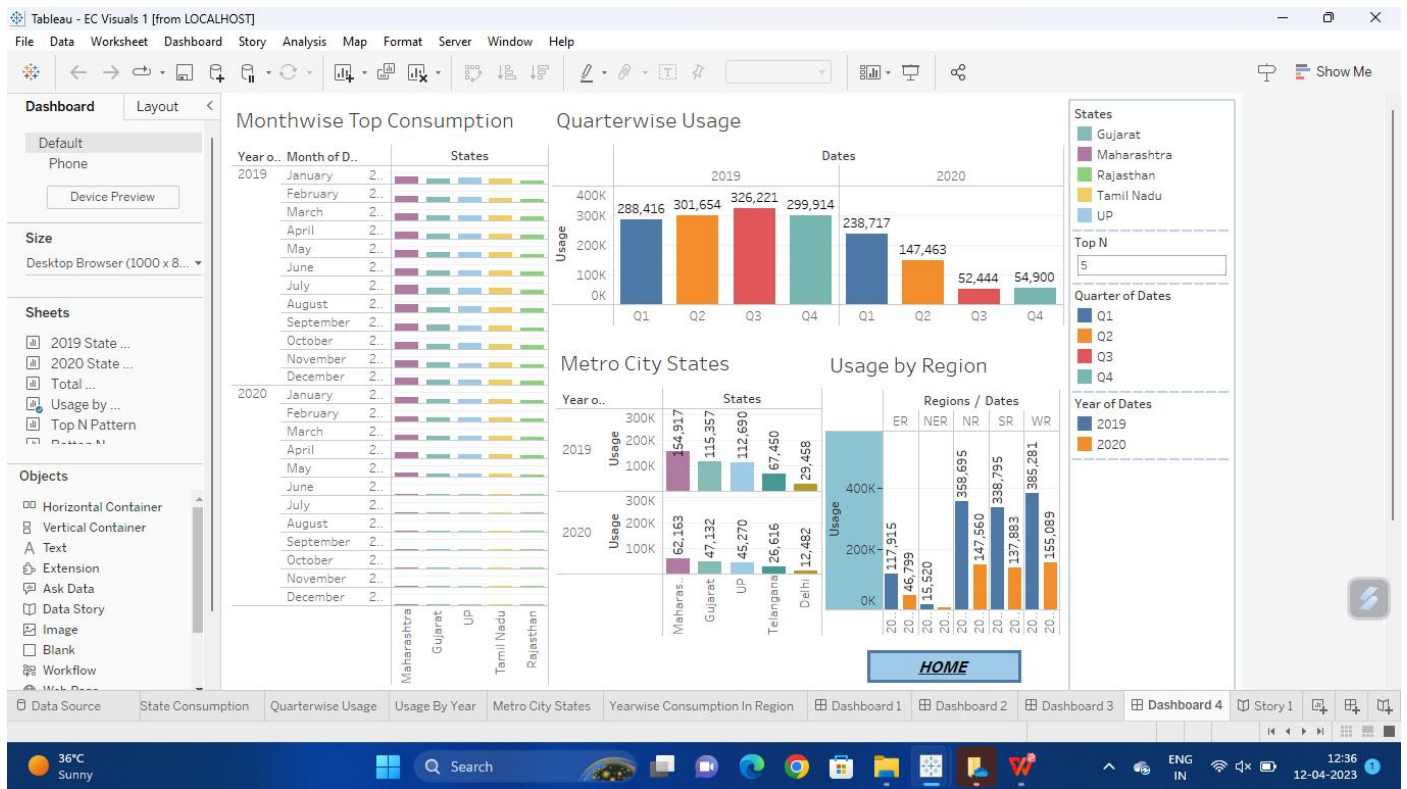
A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data, and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables





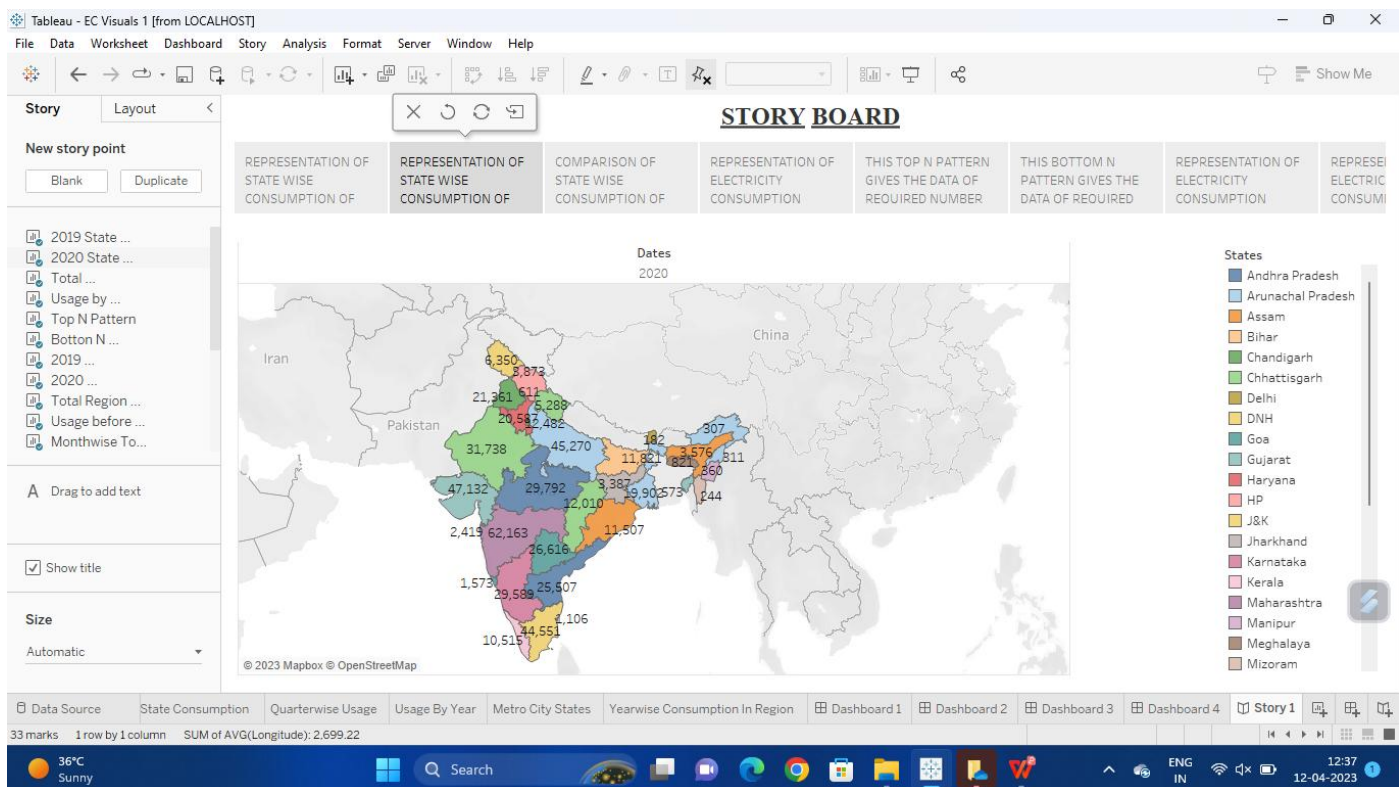
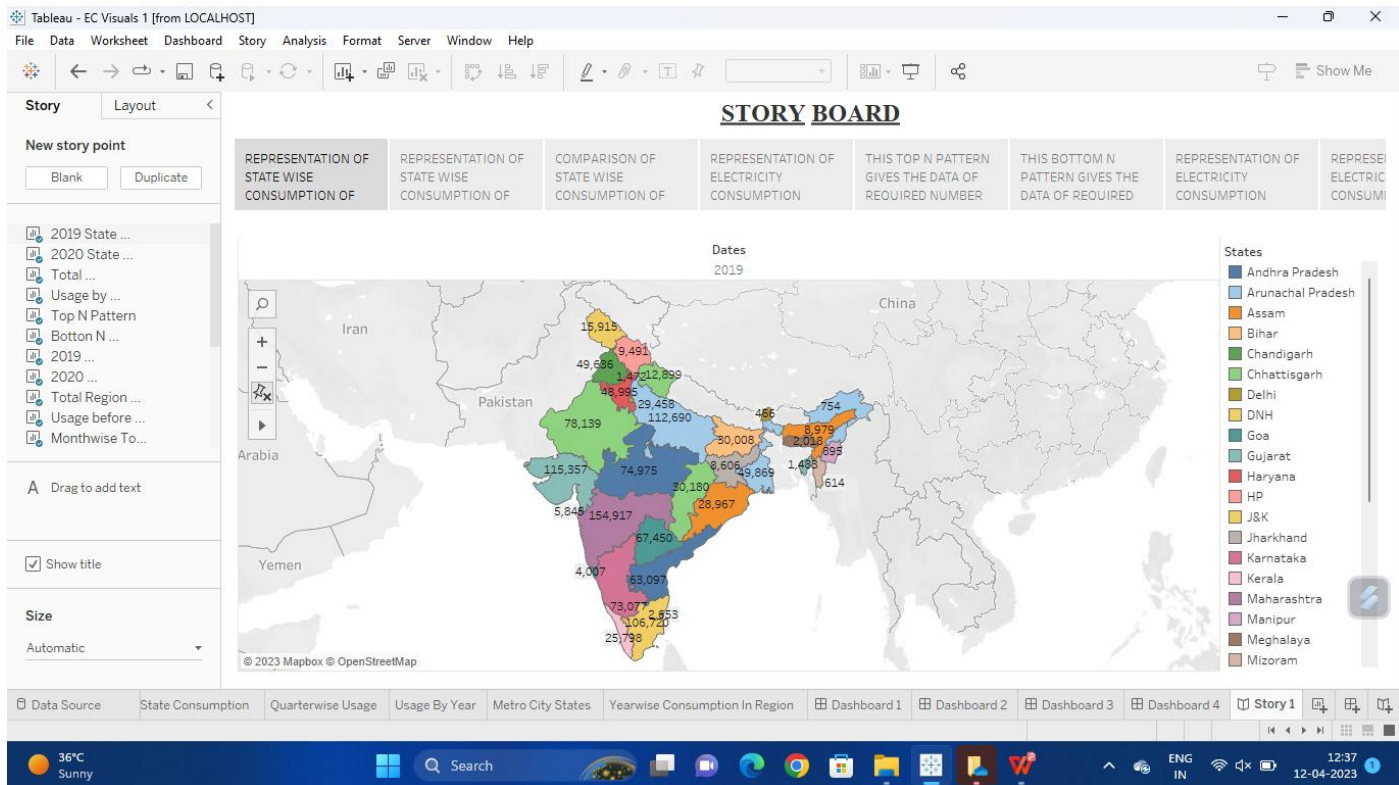


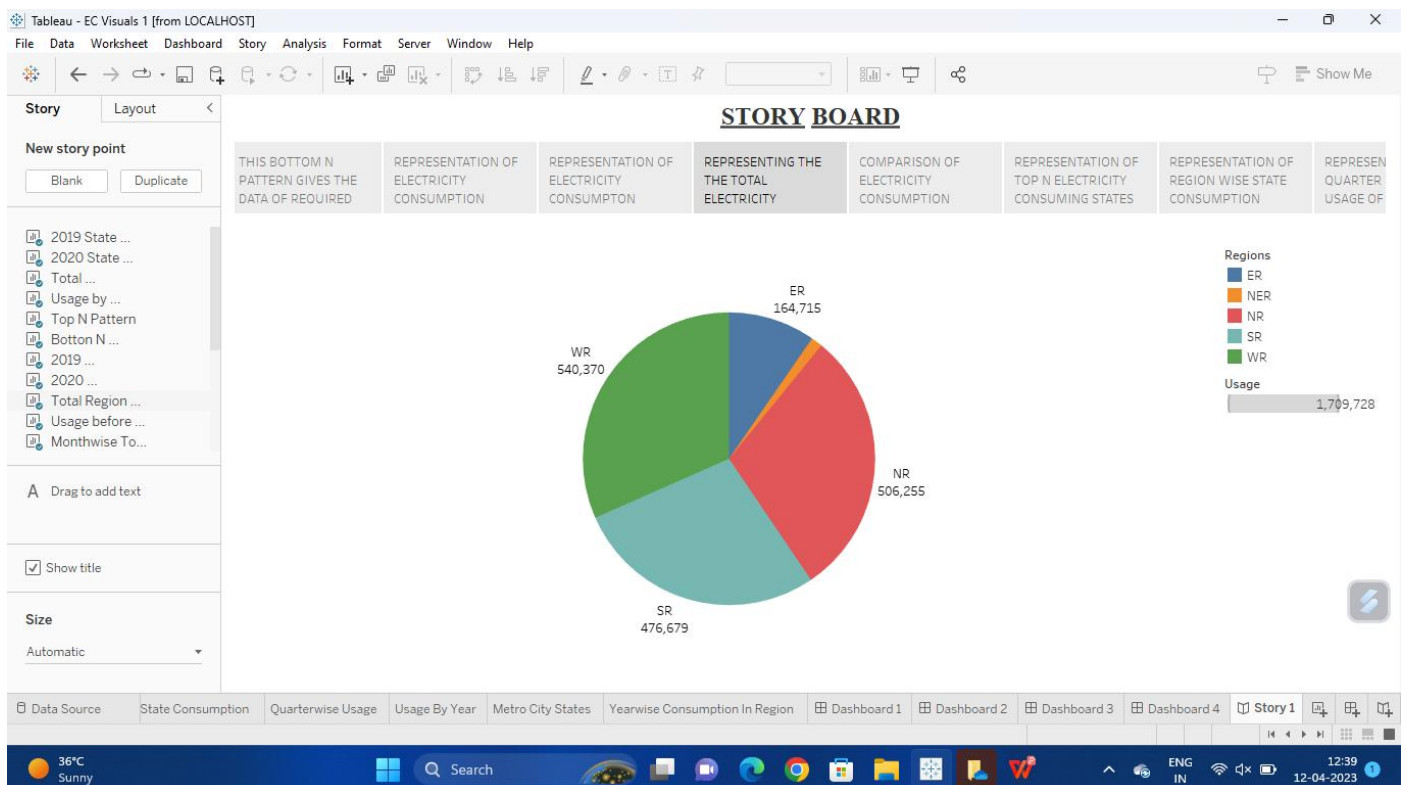
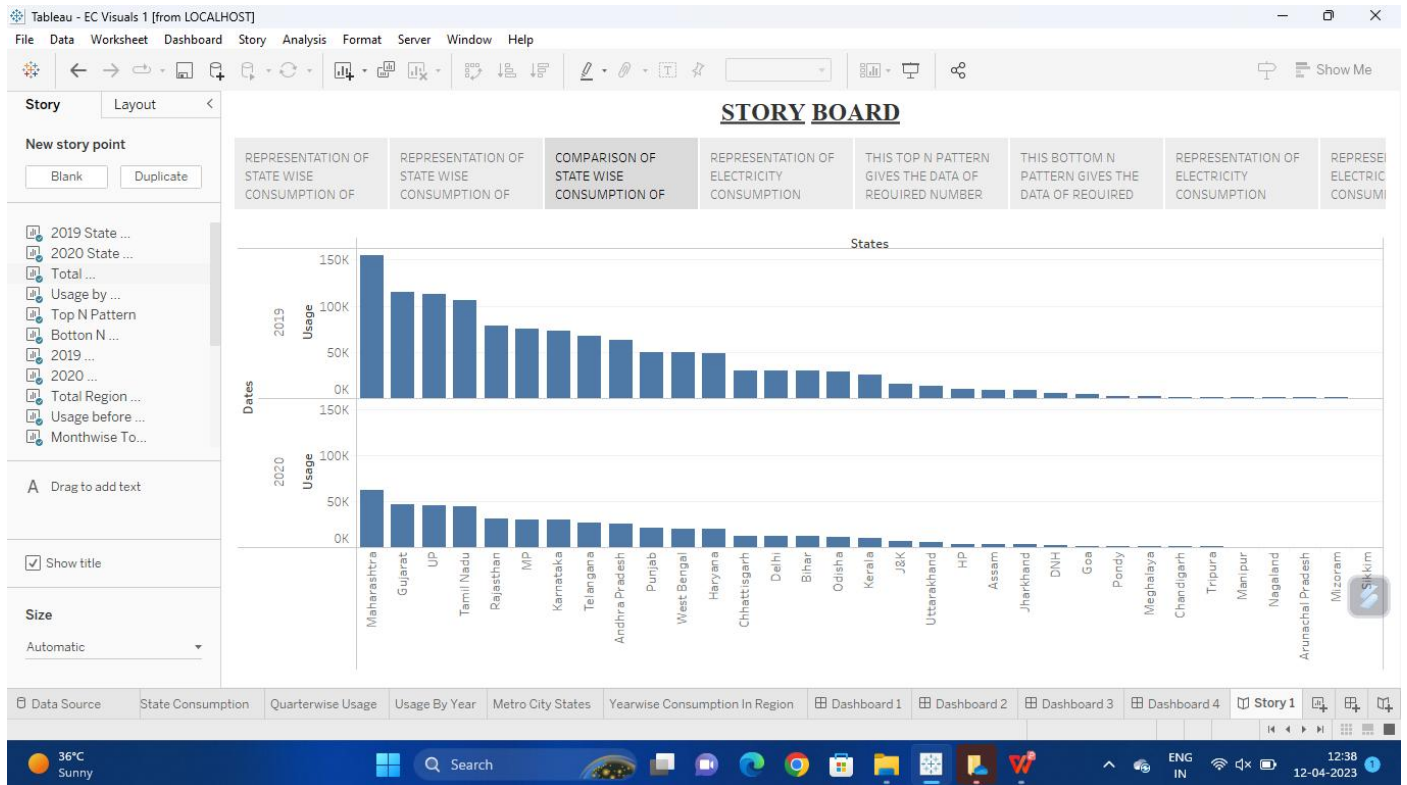




### 3.4 Story

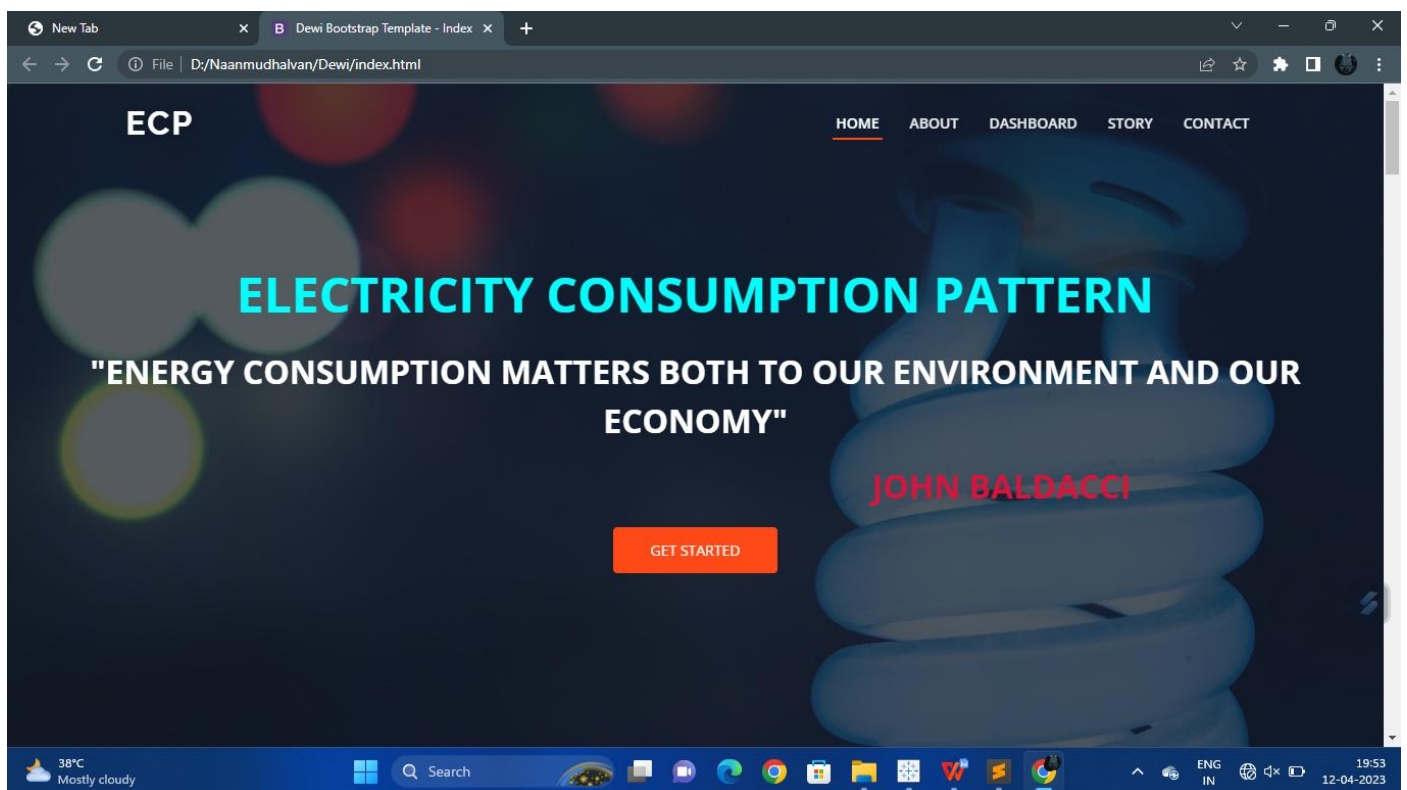
A data story is a way of presenting data and analysis in a narrative format, with the goal of making the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis in a logical and systematic way, and a conclusion that summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.



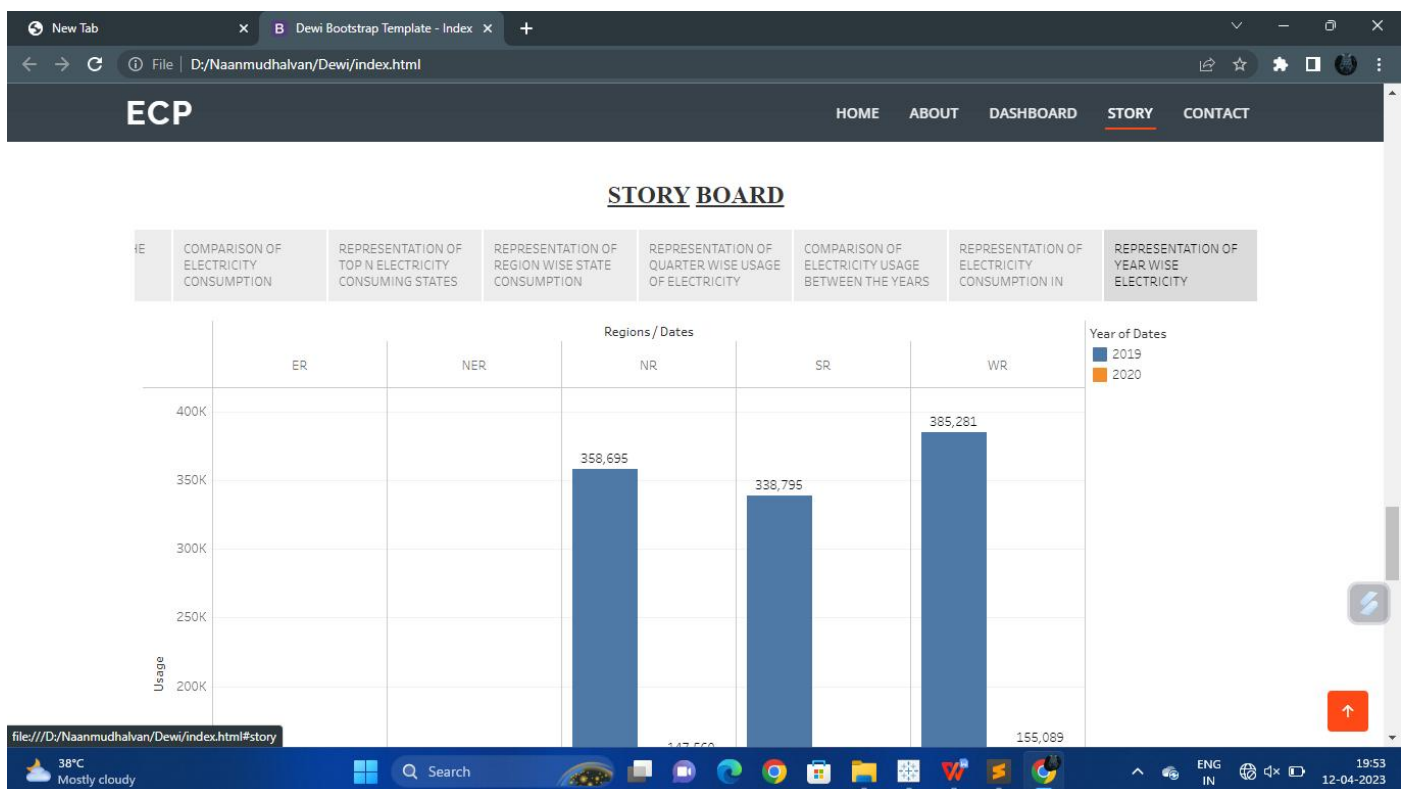
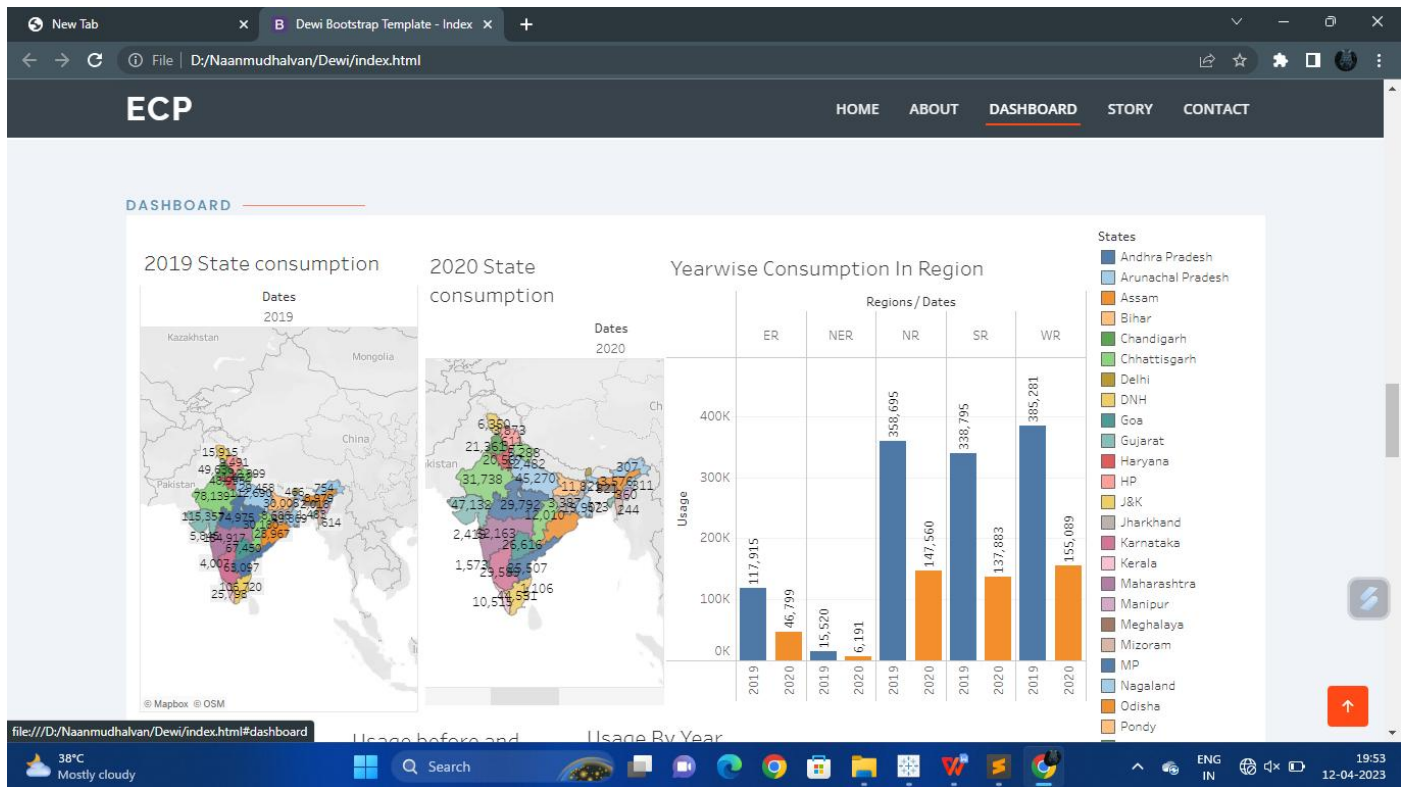


## 3.5 Web Integration

Web data integration (WDI) is the process of aggregating and managing data from different websites into a single, homogeneous workflow. This process includes data access, transformation, mapping, quality assurance and fusion of data. Data that is sourced and structured from websites is referred to as "web data".









## **4. ADVANTAGES**

### **Entertainment**

Listening to music on MP3 players.

Watching Television.

Playing movies on DVDs, VCDs or VCRs runs on electricity.

### **Healthcare**

Surgical operations

Doctors need a powerful light during an operation on a patient

Without electricity, the operation can prove fatal.

### **Engineering**

Constructions of buildings and structures for the convenience of people require electricity at every step. Building houses, installing gates and windows, and welding materials require current electricity to operate the machines.

### **Transport and Communication**

Reaching places or communicating from a different corner of the world is only possible because of electricity. A power cut during airline travel can be dangerous.

## **Outdoors**

The street lights on the road use electricity to function, even the pool requires electricity to heat the water in colder regions. The lawnmower, which is used to cut grass, uses electricity to operate. The water sprinkler for the grass on the lawn uses electricity as well.

## **Household**

Starting from toasters to refrigerators, microwaves, washing machines, dishwashers, electrical chimneys, and many more appliances which are simple to use and made for the convenience of day-to-day activities use electricity to function.

## **Commercial places**

For the production of various materials, the factory uses heavy machinery which always runs on electricity. Even the magnets, which are giant-like structures, require electricity to keep them charged for lifting heavy metals.

## **Office**

We go to work in offices in which most things run on electricity. The lights, lifts, AC, coffee machine, ID card reader, biometric scanners and everything else require electricity.

## **Electricity as Fuel**

Electrical energy comes under renewable energy, and we can produce it using most of the natural resources available to us. Today, things which were running on fossil fuels, such as cars and bikes, are now made in such a way that it runs on electricity

(like solar-powered), which will be more convenient in the future.

## **Space**

The satellites and probes which are sent from the earth for space expeditions run on electricity. The electricity is generated with the help of a generator or is battery-powered. The Apollo mission for the landing of humans on the moon would not have been possible without the use of electricity.



## **Disadvantages**

### **1. Inadequate last mile connectivity.**

The country already has adequate generation and transmission capacity to meet the full consumer demand, both temporally and spatially. However, due to the lack of last-mile link-up between all electricity consumers and a reliable power supply (to exceed 99%), many consumers depend on diesel generators. Nearly 80 billion kWh of electricity is generated annually in India by diesel generator sets that consume nearly 15

million tons of diesel oil. Over 10 million households use battery storage UPS as back-ups in case of load shedding. India imports nearly US\$2 billion worth of battery storage UPS every year.

As overhead lines cause distribution problems during rain and wind storms, there is a plan to lay buried cables from low voltage substations to supply cheaper emergency power in cities and towns and thus reduce diesel oil consumption by diesel generator sets and the installation of UPS systems.[*citation needed*].

## **2. Demand build up measures.**

Electricity-intensive industries consume the cheaper electricity (average price Rs 2.5 per kWhr) available from the grid instead of running their own coal/gas/oil fired captive power plants.

The captive power generation capacity by such plants is nearly 53,000 MW, and they are mainly established in steel, fertilizer, aluminium, cement, etc. industries. These plants can draw cheaper electricity from the grid on short term open access (STOA) basis, avoiding their own higher cost of electricity generation and diverting power from other consumers. Some of these idling captive power plants can be used for ancillary services or grid reserve service and earn extra revenue.

## **3. Unequal electricity distribution.**

Almost all households have access to electricity. However, most households find the electricity supply intermittent and unreliable. At the same time, many power stations are idling for lack of electricity demand and the idling generation capacity is sufficient to supply the needs of households lacking electricity three times over.

#### **4. Erratic power pricing.**

In general, industrial and commercial consumers subsidize domestic and agricultural consumers. Government giveaways such as free electricity for farmers, created partly to curry political favor, have depleted the cash reserves of state-run electricity-distribution system and led to debts of ₹2.5 trillion (US\$31 billion). This has financially crippled the distribution network, and its ability to pay to purchase power in the absence of subsidies from state governments. This situation has been worsened by state government departments that do not pay their electricity bills.

#### **5. Over-rated capacity.**

Many coal-fired plants are overrated above the actual maximum continuous rating (MCR) capacity. to allow the plant cost to be inflated. These plants operate 15 to 10% below their declared capacity on a daily basis and rarely operate at declared capacity, undermining grid stability.

#### **6. Lack of timely information on load and demand.**



Intranet graphs at 15-minute or more frequent intervals are required to understand the shortcomings of the power grid with respect to grid frequency, including comprehensive data collected from SCADA for all grid-connected generating stations ( $\geq 100$  KW) and load data from all substations.

### **7.Lack of adequate coal supply:**

Despite abundant reserves of coal, power plants are frequently under-supplied. India's monopoly coal producer, state-controlled Coal India, is constrained by primitive mining techniques and is rife with theft and corruption.[*citation needed*] Poor coal transport infrastructure has worsened these problems. Most of India's coal lies under protected forests or designated tribal lands and efforts to mine additional deposits have been resisted.

### **8.Poor gas pipeline connectivity and infrastructure.**

India has abundant coal bed methane and natural gas potential. However a giant new offshore natural gas field has delivered far less gas than claimed, causing a shortage of natural gas.

### **9.Transmission, distribution and consumer-level losses.**

Losses exceed 30%, including the auxiliary power consumption of thermal power stations and fictitious electricity generation by wind generators, solar power plants & independent power producers (IPPs), etc.

### **10.Resistance to energy efficiency in the residential building sector.**

Continuous urbanization and the growth of population result in increased power consumption in buildings. The belief still predominates among stakeholders that energy-efficient buildings are more expensive than conventional buildings, adversely affecting the "greening" of the building sector.

### **11. Resistance to hydroelectric power projects.**

Hydroelectric power projects in India's mountainous north and northeast regions have been slowed down by ecological, environmental and rehabilitation controversies, coupled with public interest litigation.

### **12. Resistance to nuclear power generation.**

Political activism since the Fukushima disaster has reduced progress in this sector. The track record of executing nuclear power plants is also very poor in India.

### **13. Theft of power.**

The financial loss due to theft of electricity is estimated at \$16 billion yearly.



## Application

Electricity is a very convenient way to transfer energy, and it has been adapted to a huge, and growing, number of uses. The invention of a practical incandescent light bulb in the 1870s led to lighting becoming one of the first publicly available applications of electrical power. Although electrification brought with it its own dangers, replacing the naked flames of gas lighting greatly reduced fire hazards within homes and factories. Public utilities were set up in many cities targeting the burgeoning market for electrical lighting. In the late 20th century and in modern times, the trend has started to flow in the direction of deregulation in the electrical power sector.

The resistive Joule heating effect employed in filament light bulbs also sees more direct use in electric heating. While this is versatile and controllable, it can be seen as wasteful, since most electrical generation has already required the production of heat at a power station. A number of countries, such as Denmark, have issued legislation restricting or banning the use of resistive electric heating in new buildings. Electricity is however still a highly practical energy source for heating and refrigeration, with air conditioning/heat pumps representing a growing sector for electricity demand for heating and cooling, the effects of which electricity utilities are increasingly obliged to accommodate. Electrification is expected to play a major role in the decarbonisation of sectors that rely on direct fossil fuel burning, such as transport (using electric vehicles) and heating (using heat pumps).

The effects of electromagnetism are most visibly employed in the electric motor, which provides a clean and efficient means of motive power. A stationary motor such as a winch is easily provided with a supply of power, but a motor that moves with its application, such as an electric vehicle, is obliged to either carry along a power source such as a battery, or to collect current from a sliding contact such as a pantograph. Electrically powered vehicles are used in public transportation, such as electric buses and trains, and an increasing number of battery-powered electric cars in private ownership.

Electricity is used within telecommunications, and indeed the electrical telegraph, demonstrated commercially in 1837 by Cooke and Wheatstone,[84] was one of its earliest applications. With the construction of first transcontinental, and then transatlantic, telegraph systems in the 1860s, electricity had enabled communications in minutes across the globe. Optical fibre and satellite communication have taken a share of the market for communications systems, but electricity can be expected to remain an essential part of the process.

Electronic devices make use of the transistor, perhaps one of the most important inventions of the twentieth century, and a fundamental building block of all modern circuitry. A modern integrated circuit may contain many billions of miniaturised transistors in a region only a few centimetres square.

## **6.CONCLUSION**

With the improvement in electricity generation its consumption has also recorded phenomenal growth. With the

rise of the standard of living of the people, urbanisation, industrialisation and transport development there has been rapid increase in the demand for electricity. The country is facing acute power crisis and the mismanagement of state electrical boards has further aggravated the problem. With the modernization agriculture this demand is bound to increase further in near future. Although the net consumption of electricity has increased in all sectors the trend of consumption has recorded faster growth in agricultural and domestic sectors.

## **7.FUTURE SCOPE OF POPULATION ANALYSIS**

With the eagerness of the government to bring in reforms to the power sector, easily availability of resources, renewed thrust on ‘aatmanirbhar’ manufacturing, and urgency to revive ailing DISCOMS, makes the switch to advanced smart metering infrastructure more viable today and is absolutely the need of the hour. Smart metering is the quickly becoming the new norm in the power and utility industry.

The electricity demand in the country is expected to grow rapidly and almost double by 2030. To support this increasing energy demand the government has focused on expanding our energy mix and incentivised installation on non-fossil fuel-based energy generation plants to meet the current and future requirements. Understandably, manage the rapid complexities arising out of the increase in demand as well as generation capacities the country would need to shift en-mass towards establishing a robust smart electricity grid in the country.

Digitally augmented smart electricity grids will help to automate and manage the increasing intricacies on the supply as well as the demand side. Smart grids will not only help in smartly integrating renewable energy but would be extremely helpful in reducing AT&C losses. With the reduction in AT&C losses, the crisis in the power



distribution sector can be alleviated, and the DISCOMS can become efficient.

Data from public sector undertaking Energy Efficiency Services Ltd (EESL) shows that utilities have smart metering infrastructure showed 95% billing efficiency during the lockdown in the first quarter of this fiscal year, and were additionally able to generate 15-20% more revenue per meter.

There is already a push from government as well as power sector to replace conventional electricity meters into prepaid smart meter. Government of India has shown considerable focus on smart metering and Energy Efficiency Services Ltd.'s (EESL) Smart Meter National Programme aims to retrofit 250 million conventional meters with smart variants in the coming years.

Advanced Smart Metering Infrastructure provides a reliable and effective solution. Large-scale adoption of smart metering solutions can quickly ramp up collection efficiency for the DISCOMS. AMI enables two-way communications with customers, remote meter reading for error-free data, identifying network problems; load profiling, energy audit and partial load curtailment in place of load shedding.

From the perspective of DISCOMS and utility, a major driver pushing for quick adoption of smart meters is the reduction in AT&C loss. At the same time, it allows for seamless online billing process, real time tracking of electricity usage, and reduction of billing errors.

DISCOMs will also get the advantage of tracking inefficient points of losses and unauthorized usage of electricity network while also analyzing and predicting energy requirement. With real time sharing of data on energy usage will help in keeping the energy grid balanced and better managed. Additionally, smart meters enable time of day metering

and thus contribute to the better integration of renewable power in India's energy mix.

From the consumer point of view, smart metering infrastructure enhances consumer satisfaction through better grievance management, system stability, reliability and transparency. Consumers can access real time information on energy consumption in an in-home display unit, thus allowing consumers to understand their energy use that can translate into energy and capital savings for the consumers.

Today's smart metering technology is rapidly evolving to cater to the ever growing need of the power segment, at the time smart metering technology can be effectively used to monitor water and piped cooking gas connections as well. For smart meters the emerging possibilities are immense and lot of technological innovation are being undertaken to make the smart meters more and more smarter. With the capacity to harness and process more and more data, smart meters are becoming more and more advanced and efficient.

Cellular technology is rapidly advancing and smart meters with 2G & 3G technologies are no longer capable of supporting the data speeds for modern communications. Latest technological research and innovation in smart metering technology are looking for solutions such as 4G and LTE, Narrow-Band IoT (NB-IoT) for new generation smart meters. These cellular technologies are significantly better and offer higher density, making better use of available spectrum and at offer faster speeds and high level of scalability.

While there are tremendous advantages of smart meters, there are some potential security challenges, such as ranging from privacy breach to state-sponsored cyber-attacks that need to be taken into consideration while rapidly adopting smart meter technology. Enhanced security protocols, advanced encryption and management Systems specifically

designed for smart energy grid must be designed taking into consideration the cyber security challenges faced by India.

With the eagerness of the government to bring in reforms to the power sector, easily availability of resources, renewed thrust on

‘aatmanirbhar’ manufacturing, and urgency to revive ailing DISCOMS, makes the switch to advanced smart metering infrastructure more viable today and is absolutely the need of the hour. Smart metering is the quickly becoming the new norm in the power and utility industry.

Already traditional metering system with manual data collection becoming obsolete and with further the advancement of IoT technology, it is only a matter of time to implement advanced smart metering infrastructure across the length and breadth of a country.

## **8.APPENDIX**

### **SOURCE CODE FOR HTML**

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
<meta charset="utf-8">
```

```
<meta content="width=device-width, initial-scale=1.0"  
name="viewport">
```

```
<title>Dewi Bootstrap Template - Index</title>
```

```
<meta content="" name="description">
```

```
<meta content="" name="keywords">
```

**<!-- Favicons -->**

**<link href="assets/img/favicon.png" rel="icon">**

**<link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">**

**<!-- Google Fonts -->**

**<link**

**href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i|Raleway:300,300i,400,400i,500,500i,600,600i,700,700i|Poppins:300,300i,400,400i,500,500i,600,600i,700,700i" rel="stylesheet">**

**<!-- Vendor CSS Files -->**

**<link href="assets/vendor/aos/aos.css" rel="stylesheet">**

**<link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">**

**<link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">**

**<link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">**

**<link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">**

**<link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">**

**<link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">**

**<link href="assets/css/style.css" rel="stylesheet">**

**</head>**

**<body>**

**<!-- ===== Header ===== -->**

**<header id="header" class="fixed-top ">**

**<div class="container d-flex align-items-center  
justify-content-between">**

**<h1 class="logo"><a href="index.html">ECP</a></h1>**

**<!-- Uncomment below if you prefer to use an image logo -->**

**<!-- <a href="index.html" class="logo"></a> -->**

**<nav id="navbar" class="navbar">**

**<ul>**

**<li><a class="nav-link scrollto active"  
href="#hero">Home</a></li>**

**<li><a class="nav-link scrollto" href="#about">About</a></li>**

**<li><a class="nav-link scrollto"  
href="#dashboard">Dashboard</a></li>**

**<li><a class="nav-link scrollto " href="#story">Story</a></li>**

**<li><a class="nav-link scrollto" href="#cat">Contact</a></li>**

**<!--<li><a class="getstarted scrollto" href="#about">Get  
Started</a></li>-->**

**</ul>**

**<i class="bi bi-list mobile-nav-toggle"></i>**

**</nav><!-- .navbar -->**



</div>

</header><!-- End Header -->

<!-- ===== Hero Section ===== -->

<section id="hero">

<div class="hero-container" data-aos="fade-up"  
data-aos-delay="150">

<p class="first"> ELECTRICITY CONSUMPTION PATTERN  
</p>

<p class="second"> "ENERGY CONSUMPTION MATTERS  
BOTH TO OUR ENVIRONMENT AND OUR ECONOMY"</p>

<p class="third"> JOHN BALDACCI </p>

<div class="d-flex">

<a href="#about" class="btn-get-started scrollto">Get  
Started</a>

<!-- <a href="https://www.youtube.com/watch?v=jDDaplaOz7Q"  
class="glightbox btn-watch-video"><i class="bi  
bi-play-circle"></i><span>Watch Video</span></a> -->

</div>

</div>

</section><!-- End Hero -->

<main id="main">

<!-- ===== About Section ===== -->

<section id="about" class="about">

<div class="container" data-aos="fade-up">

<div class="row justify-content-end">

<div class="col-lg-11">

<div class="row justify-content-end">

<div class="row">

<div class="col-lg-6 video-box align-self-baseline"  
data-aos="zoom-in" data-aos-delay="100">



<a href="https://www.youtube.com/watch?v=l-COPhM4y0Q"  
class="lightbox play-btn mb-4"></a>

</div>

<!--  -->

<!--  -->

<div class="col-lg-6 pt-3 pt-lg-0 content">

<h3> Electricity consumption in India</h3>

<p class="fst-italic">

India is the third largest producer of electricity in the world. During the fiscal year (FY) 2021–22, the total electricity generation in the country was 1,719 TWh, of which 1,484 TWh was generated by utilities.

The gross electricity consumption per capita in FY2019 was 1,208 kWh. In FY2015, electric energy consumption in agriculture was recorded as being the highest (17.89%) worldwide. The per capita electricity consumption is low compared to most other countries despite India having a low electricity tariff.<br> <br>

The national electric grid in India has an installed capacity of 410.3 GW as of 31 December 2022. Renewable power plants, which also include large hydroelectric power plants, constitute 40.7% of the total installed capacity. India has a surplus power generation capacity but lacks adequate fuel

supply and power distribution infrastructure. The average capacity factor of thermal power plants is below 60% against the norm of 85%.<br><br>

India's electricity sector is dominated by fossil fuels, in particular coal, which produced about three-quarters of the country's electricity. The government declared its efforts to increase investment in renewable energy. The government's draft National Electricity Plan of 2022 states that the country does not need anymore fossil fuel power plants in the utility sector until 2027 besides those currently under construction. It is expected that non-fossil fuel generation contribution is likely to be around 44.7% of the total gross electricity generation by 2029–30.

</p>

<br> <br>

## <h2> Electricity Transmission and Distribution</h2>

<p>As of 2013, India has a single wide area synchronous grid that covers the entire country except distant islands

The total length of high voltage (HV) transmission lines (220kV and above) would be enough to form a square matrix of area 266 km<sup>2</sup> (i.e. a square grid 16.3 km on a side, so that on average there is at least one HV line within a distance of 8.15 km) over the entire area of the country. This represents a total of almost 20% more HV transmission lines than that of the United States (322,000 km (200,000 mi) of 230 kV and above). However the Indian grid transmits far less electricity.[221] The installed length of transmission lines of 66 kV and above is 649,833 km (403,788 mi) (on average, there is at least one  $\geq 66$  kV transmission line within 4.95 km across the country). The length of secondary transmission lines (400 V and above) is 10,381,226 km (6,450,595 mi) as of 31 March 2018. The spread of total transmission lines ( $\geq 400$  V) would be sufficient to form a square matrix of area 0.36 km<sup>2</sup> (i.e. on average, at least one transmission line within 0.31 km distance) over the entire area of the country. In a future grid dominated by decentralized power generation like solar and wind power, unscientific expansion of the electrical grid would yield negative results due to Braess paradox.

The all-time maximum peak load met was 182,610 MW on 30 May 2019.[223] The maximum achieved demand factor of substations is nearly 60% at the 220 kV level. However, the operational performance of the system is not satisfactory in meeting peak electricity loads. This has led to the initiation of detailed forensic engineering studies, with a plan to make capital investments in a smart grid that maximizes the utility of the existing transmission infrastructure.

The introduction of an availability based tariff (ABT) originally helped to stabilize the Indian transmission grids.[citation needed] However, as the grid transitions to power surplus the ABT has become less useful. The July 2012 blackout, affecting the north of the country, was the largest power grid failure in history as measured by the number of people affected.[citation needed]

India's aggregate transmission and commercial (ATC) losses were nearly 21.35% in 2017–18. This compares unfavorably to the total ATC loss in the electricity sector of the United States, which was only 6.6% out of 4,404 billion kWh electricity supplied during the year 2018. The Indian government set a target of reducing losses to 17.1% by 2017 and to 14.1% by 2022. A high proportion of non-technical losses are caused by illegal tapping of lines, faulty electric meters and fictitious power generation that underestimates actual consumption and also contributes to reduced payment collection. A case study in Kerala estimated that replacing faulty meters could reduce distribution losses from 34% to 29%.</p>

</div>

<div class="col-lg-6 order-1 order-lg-2 text-center">





```

```

```

```

```
</div>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
</section><!-- End Features Section -->
```

```
<!-- ===== Services Section ===== -->
```

```
<section id="dashboard" class="services section-bg">
```

```
<div class="container" data-aos="fade-up">
```

```
<div class="section-title">
```

```
<h2>Dashboard</h2>
```

```
<div class='tableauPlaceholder' id='viz1681037662411'
style='position: relative'><noscript><a href='#'><img alt='Dashboard 1 '
src='https://public.tableau.com/static/images/EC
/ECVisuals1/Dashboard1/1_rss.png' style='border: none'
/></a></noscript><object class='tableauViz' style='display:none;'><param
name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' />
<param name='embed_code_version' value='3' /> <param name='site_root'
value='' /><param name='name' value='ECVisuals1/Dashboard1'
/><param name='tabs' value='no' /><param name='toolbar' value='yes'
/><param name='static_image'
value='https://public.tableau.com/static/images/
EC/ECVisuals1/Dashboard1/1.png' /> <param
```

```

name='animate_transition' value='yes' /><param
name='display_static_image' value='yes' /><param name='display_spinner'
value='yes' /><param name='display_overlay' value='yes' /><param
name='display_count' value='yes' /><param name='language' value='en-US'
/><param name='filter' value='publish=yes' /></object></div>
<script type='text/javascript'>                                var divElement =
document.getElementById('viz1681037662411');                                var
vizElement = divElement.getElementsByTagName('object')[0];
if ( divElement.offsetWidth > 800 )
{ vizElement.style.width='100%';vizElement.style.height=(divElement.offset
Width*0.75)+'px';} else if ( divElement.offsetWidth > 500 )
{ vizElement.style.width='100%';vizElement.style.height=(divElement.offset
Width*0.75)+'px';} else
{ vizElement.style.width='100%';vizElement.style.height='2127px';}
var scriptElement = document.createElement('script');
scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);
</script>

</div>

</div>

</section>

<!-- ===== Portfolio Section ===== -->

<section id="story" class="portfolio">

    <div class="container" data-aos="fade-up">

        <div class='tableauPlaceholder' id='viz1681037826009'
style='position: relative'><noscript><a href='#'><img alt='STORY BOARD
',
src='https://public.tableau.com/static/images/EC
&#47;ECVisuals1-story&#47;Story1&#47;1_rss.png' style='border: none'
/></a></noscript><object class='tableauViz' style='display:none;'><param
name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' />
<param name='embed_code_version' value='3' /> <param name='site_root'
value='' /><param name='name' value='ECVisuals1-story&#47;Story1'
/><param name='tabs' value='no' /><param name='toolbar' value='yes'
/><param name='static_image'

```



```

value='https://public.tableau.com/static/images/EC/ECVisuals1-story/Story1/1.png' /> <param
name='animate_transition' value='yes' /><param
name='display_static_image' value='yes' /><param name='display_spinner'
value='yes' /><param name='display_overlay' value='yes' /><param
name='display_count' value='yes' /><param name='language' value='en-US'
/><param name='filter' value='publish=yes' /></object></div>
<script type='text/javascript'>                                var divElement =
document.getElementById('viz1681037826009');                                var
vizElement = divElement.getElementsByTagName('object')[0];
vizElement.style.width='100%';vizElement.style.height=(divElement.offset
Width*0.75)+'px';                                var scriptElement =
document.createElement('script');                                scriptElement.src
= 'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);
</script>

</div>

</div>

</section>

<!-- ===== Contact Section ===== -->

<section id="cat" class="contact">

    <div class="container" data-aos="fade-up">

        <div class=" section-title">

            <h2>Contact</h2>

            <p>Contact Us</p>

        </div>

        <div class="row">

            <div class="col-lg-6">

```

```

<div class="row">
  <div class="col-md-12">
    <div class="info-box">
      <i class="bx bx-map"></i>
      <h3>Our Address</h3>
      <p>Sri Vasavi College , Bhavani , Erode.</p>
    </div>
  </div>
  <div class="col-md-6">
    <div class="info-box mt-4">
      <i class="bx bx-envelope"></i>
      <h3>Email Us</h3>
      <p>info@example.com<br>contact@example.com</p>
    </div>
  </div>
  <div class="col-md-6">
    <div class="info-box mt-4">
      <i class="bx bx-phone-call"></i>
      <h3>Call Us</h3>
      <p>+91 9876556789<br>+91 9876543210</p>
    </div>
  </div>
</div>
</div>

```

```

<div class="col-lg-6 mt-4 mt-lg-0">
    <form action="forms/contact.php" method="post" role="form"
class="php-email-form">
        <div class="row">
            <div class="col-md-6 form-group">
                <input type="text" name="name" class="form-control"
id="name" placeholder="Your Name" required>
            </div>
            <div class="col-md-6 form-group mt-3 mt-md-0">
                <input type="email" class="form-control"
name="email" id="email" placeholder="Your Email" required>
            </div>
        </div>
        <div class="form-group mt-3">
            <input type="text" class="form-control" name="subject"
id="subject" placeholder="Subject" required>
        </div>
        <div class="form-group mt-3">
            <textarea class="form-control" name="message"
rows="5" placeholder="Message" required></textarea>
        </div>
        <div class="my-3">
            <div class="loading">Loading</div>
            <div class="error-message"></div>
            <div class="sent-message">Your message has been sent.
Thank you!</div>
        </div>
        <div class="text-center"><button type="submit">Send
Message</button></div>

```

</form>

</div>

</div>

</div>

</section><!-- End Contact Section -->

</main><!-- End #main -->

<!-- ===== Footer ===== -->

<footer id="footer">

<div class="footer-top">

<div class="container">

<div class="row">

<div class="col-lg-3 col-md-6">

<div class="footer-info">

<h3>Dewi</h3>

<p>Sri Vasavi College , Bhavani , Erode.

<br>

<br><br>

<strong>Phone:</strong> +91 9876556789<br>

<strong>Email:</strong> info@example.com<br>

</p>

<div class="social-links mt-3">

```

        <a href="#" class="twitter"><i class="bx
bxl-twitter"></i></a>

        <a href="#" class="facebook"><i class="bx
bxl-facebook"></i></a>

        <a href="#" class="instagram"><i class="bx
bxl-instagram"></i></a>

        <a href="#" class="google-plus"><i class="bx
bxl-skype"></i></a>

        <a href="#" class="linkedin"><i class="bx
bxl-linkedin"></i></a>

    </div>

</div>

</div>

```

```

<div id="preloader"></div>

```

```

<a href="#" class="back-to-top d-flex align-items-center
justify-content-center"><i class="bi bi-arrow-up-short"></i></a>

```

```

<!-- Vendor JS Files -->

```

```

<script
src="assets/vendor/purecounter/purecounter_vanilla.js"></script>

```

```

<script src="assets/vendor/aos/aos.js"></script>

```

```

<script
src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>

```

```

<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>

```

```

<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>

```

```

<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>

```

```

<script src="assets/vendor/php-email-form/validate.js"></script>

```

```
<!-- Template Main JS File -->
```

```
<script src="assets/js/main.js"></script>
```

```
</body>
```

```
</html>
```

## SOURCE CODE FOR CSS STYLE

```
/*-----
```

```
# General
```

```
-----*/
```

```
body {
```

```
    font-family: "Open Sans", sans-serif;
```

```
    color: #444444;
```

```
}
```

```
.first
```

```
{
```

```
    color: aqua;
```

```
    font-size: 3pc;
```

```
    font-weight: bold;
```

```
}
```

```
.second
```



```
{  
    color:white;  
    font-size: 2pc;  
    font-weight: bold;  
}  
  
.third  
{  
    color:crimson;  
    font-size: 2pc;  
    font-weight: bold;  
    margin-right:-600px;  
}  
  
a {  
    color: #ff4a17;  
    text-decoration: none;  
}  
  
a:hover {  
    color: #ff724a;  
    text-decoration: none;  
}  
  
h1,  
h2,  
h3,
```

```

h4,
h5,
h6 {
    font-family: "Raleway", sans-serif;
}

/*-----

# Back to top button

-----*/

.back-to-top {
    position: fixed;
    visibility: hidden;
    opacity: 0;
    right: 15px;
    bottom: 15px;
    z-index: 996;
    background: #ff4a17;
    width: 40px;
    height: 40px;
    border-radius: 4px;
    transition: all 0.4s;
}

.back-to-top i {
    font-size: 24px;

```

```

    color: #fff;
    line-height: 0;
}

.back-to-top:hover {
    background: #ff6a40;
    color: #fff;
}

.back-to-top.active {
    visibility: visible;
    opacity: 1;
}

/*-----
# Preloader
-----*/

#preloader {
    position: fixed;
    top: 0;
    left: 0;
    right: 0;
    bottom: 0;
    z-index: 9999;
    overflow: hidden;

```

```
background: #fff;
}

#preloader:before {
  content: "";
  position: fixed;
  top: calc(50% - 30px);
  left: calc(50% - 30px);
  border: 6px solid #ff4a17;
  border-top-color: #ffe9e3;
  border-radius: 50%;
  width: 60px;
  height: 60px;
  animation: animate-preloader 1s linear infinite;
}

@keyframes animate-preloader {
  0% {
    transform: rotate(0deg);
  }

  100% {
    transform: rotate(360deg);
  }
}
```

```
/*-----
```

```
# Disable aos animation delay on mobile devices
```

```
-----*/
```

```
@media screen and (max-width: 768px) {
```

```
  [data-aos-delay] {
```

```
    transition-delay: 0 !important;
```

```
  }
```

```
}
```

```
/*-----
```

```
# Header
```

```
-----*/
```

```
#header {
```

```
  transition: all 0.5s;
```

```
  z-index: 997;
```

```
  padding: 20px 0;
```

```
}
```

```
#header.header-scrolled,
```

```
#header.header-inner-pages {
```

```
  background: rgba(21, 34, 43, 0.85);
```

```
  padding: 10px 0;
```

```
}
```

```
#header .logo {  
    font-size: 32px;  
    margin: 0;  
    padding: 0;  
    line-height: 1;  
    font-weight: 700;  
    letter-spacing: 2px;  
}
```

```
#header .logo a {  
    color: #fff;  
}
```

```
#header .logo img {  
    max-height: 40px;  
}
```

```
/*-----
```

```
# Navigation Menu
```

```
-----*/
```

```
/**
```

```
* Desktop Navigation
```

```
*/
```

```
.navbar {  
    padding: 0;
```



```
}
```

```
.navbar ul {  
  margin: 0;  
  padding: 0;  
  display: flex;  
  list-style: none;  
  align-items: center;  
}
```

```
.navbar li {  
  position: relative;  
}
```

```
.navbar>ul>li {  
  white-space: nowrap;  
  padding: 8px 12px;  
}
```

```
.navbar a,  
.navbar a:focus {  
  display: flex;  
  align-items: center;  
  position: relative;  
  justify-content: space-between;
```

```
padding: 0 3px;  
font-size: 14px;  
text-transform: uppercase;  
font-weight: 600;  
color: rgba(255, 255, 255, 0.9);  
white-space: nowrap;  
transition: 0.3s;  
}
```

```
.navbar a i,  
.navbar a:focus i {  
    font-size: 12px;  
    line-height: 0;  
    margin-left: 5px;  
}
```

```
.navbar>ul>li>a:before {  
    content: "";  
    position: absolute;  
    width: 100%;  
    height: 2px;  
    bottom: -6px;  
    left: 0;  
    background-color: #ff4a17;  
    visibility: hidden;
```

```
width: 0px;  
transition: all 0.3s ease-in-out 0s;  
}
```

```
.navbar a:hover:before,  
.navbar li:hover>a:before,  
.navbar .active:before {  
  visibility: visible;  
  width: 100%;  
}
```

```
.navbar a:hover,  
.navbar .active,  
.navbar .active:focus,  
.navbar li:hover>a {  
  color: #fff;  
}
```

```
.navbar .getstarted,  
.navbar .getstarted:focus {  
  padding: 8px 25px;  
  margin-left: 30px;  
  border-radius: 4px;  
  color: #fff;  
  border: 2px solid #fff;
```

```
}

.navbar .getstarted:hover,
.navbar .getstarted:focus:hover {
    color: #fff;
    background: #fd3800;
    border-color: #ff4a17;
}

.navbar>ul>li>.getstarted:before {
    visibility: hidden;
}

.navbar .dropdown ul {
    display: block;
    position: absolute;
    left: 14px;
    top: calc(100% + 30px);
    margin: 0;
    padding: 10px 0;
    z-index: 99;
    opacity: 0;
    visibility: hidden;
    background: #fff;
    box-shadow: 0px 0px 30px rgba(127, 137, 161, 0.25);
```

```
transition: 0.3s;  
border-radius: 4px;  
}  
  
.navbar .dropdown ul li {  
  min-width: 200px;  
}  
  
.navbar .dropdown ul a {  
  padding: 10px 20px;  
  font-size: 14px;  
  text-transform: none;  
  color: #15222b;  
  font-weight: 400;  
}  
  
.navbar .dropdown ul a i {  
  font-size: 12px;  
}  
  
.navbar .dropdown ul a:hover,  
.navbar .dropdown ul .active:hover,  
.navbar .dropdown ul li:hover>a {  
  color: #ff4a17;  
}
```

```
.navbar .dropdown:hover>ul {  
  opacity: 1;  
  top: 100%;  
  visibility: visible;  
}
```

```
.navbar .dropdown .dropdown ul {  
  top: 0;  
  left: calc(100% - 30px);  
  visibility: hidden;  
}
```

```
.navbar .dropdown .dropdown:hover>ul {  
  opacity: 1;  
  top: 0;  
  left: 100%;  
  visibility: visible;  
}
```

```
@media (max-width: 1366px) {  
  .navbar .dropdown .dropdown ul {  
    left: -90%;  
  }  
}
```



```
.navbar .dropdown .dropdown:hover>ul {  
    left: -100%;  
}  
}
```

```
/**
```

```
* Mobile Navigation
```

```
*/
```

```
.mobile-nav-toggle {  
    color: #fff;  
    font-size: 28px;  
    cursor: pointer;  
    display: none;  
    line-height: 0;  
    transition: 0.5s;  
}
```

```
@media (max-width: 991px) {
```

```
    .mobile-nav-toggle {  
        display: block;  
    }  
}
```

```
.navbar ul {  
    display: none;  
}
```

}

```
.navbar-mobile {  
  position: fixed;  
  overflow: hidden;  
  top: 0;  
  right: 0;  
  left: 0;  
  bottom: 0;  
  background: rgba(4, 7, 9, 0.9);  
  transition: 0.3s;  
  z-index: 999;  
}
```

}

```
.navbar-mobile .mobile-nav-toggle {  
  position: absolute;  
  top: 15px;  
  right: 15px;  
}
```

}

```
.navbar-mobile ul {  
  display: block;  
  position: absolute;  
  top: 55px;  
  right: 15px;  
}
```

```
bottom: 15px;  
left: 15px;  
padding: 10px 0;  
border-radius: 10px;  
background-color: #fff;  
overflow-y: auto;  
transition: 0.3s;  
}
```

```
.navbar-mobile a,  
.navbar-mobile a:focus {  
    padding: 10px 20px;  
    font-size: 15px;  
    color: #15222b;  
}
```

```
.navbar-mobile a:hover,  
.navbar-mobile .active,  
.navbar-mobile li:hover>a {  
    color: #ff4a17;  
}
```

```
.navbar-mobile .getstarted,  
.navbar-mobile .getstarted:focus {  
    margin: 15px;
```

```
}

.navbar-mobile .dropdown ul {
    position: static;
    display: none;
    margin: 10px 20px;
    padding: 10px 0;
    z-index: 99;
    opacity: 1;
    visibility: visible;
    background: #fff;
    box-shadow: 0px 0px 30px rgba(127, 137, 161, 0.25);
}

.navbar-mobile .dropdown ul li {
    min-width: 200px;
}

.navbar-mobile .dropdown ul a {
    padding: 10px 20px;
}

.navbar-mobile .dropdown ul a i {
    font-size: 12px;
}
```

```
.navbar-mobile .dropdown ul a:hover,  
.navbar-mobile .dropdown ul .active:hover,  
.navbar-mobile .dropdown ul li:hover>a {  
    color: #ff4a17;  
}  
  
.navbar-mobile .dropdown>.dropdown-active {  
    display: block;  
}
```

```
/*-----  
# Hero Section  
-----*/
```

```
#hero {  
    width: 100%;  
    height: 100vh;  
    background: url("ec wp.jpg") top center;  
    background-size: cover;  
    position: relative;  
    padding: 0;  
}
```

```
#hero:before {  
    content: "";
```

```
background: rgba(13, 20, 26, 0.7);  
position: absolute;  
bottom: 0;  
top: 0;  
left: 0;  
right: 0;  
}
```

```
#hero .hero-container {  
  position: absolute;  
  bottom: 0;  
  top: 0;  
  left: 0;  
  right: 0;  
  display: flex;  
  justify-content: center;  
  align-items: center;  
  flex-direction: column;  
  text-align: center;  
}
```

```
#hero h1 {  
  margin: 0 0 10px 0;  
  font-size: 48px;  
  font-weight: 700;
```

```
line-height: 56px;  
text-transform: uppercase;  
color: #fff;  
}  
  
#hero h2 {  
  color: #eee;  
  margin-bottom: 50px;  
  font-size: 24px;  
}  
  
#hero .btn-get-started {  
  font-family: "Open Sans", sans-serif;  
  text-transform: uppercase;  
  font-weight: 500;  
  font-size: 14px;  
  display: inline-block;  
  padding: 10px 35px 10px 35px;  
  border-radius: 4px;  
  transition: 0.5s;  
  color: #fff;  
  background: #ff4a17;  
  border: 2px solid #ff4a17;  
}
```

```
#hero .btn-get-started:hover {  
    border-color: #fff;  
    background: rgba(255, 255, 255, 0.1);  
}
```

```
#hero .btn-watch-video {  
    font-size: 16px;  
    display: inline-block;  
    transition: 0.5s;  
    margin-left: 25px;  
    color: #fff;  
    display: inline-flex;  
    align-items: center;  
    justify-content: center;  
}
```

```
#hero .btn-watch-video i {  
    line-height: 0;  
    color: #fff;  
    font-size: 32px;  
    transition: 0.3s;  
    margin-right: 8px;  
}
```

```
#hero .btn-watch-video:hover i {
```



```

    color: #ff4a17;
}

@media (min-width: 1024px) {
    #hero {
        background-attachment: fixed;
    }
}

@media (max-width: 768px) {
    #hero h1 {
        font-size: 28px;
        line-height: 36px;
    }

    #hero h2 {
        font-size: 18px;
        line-height: 24px;
        margin-bottom: 30px;
    }
}

/*-----
# Sections General
-----*/

```

```
section {  
    padding: 60px 0;  
    overflow: hidden;  
}  
  
.section-bg {  
    background-color: #f0f4f8;  
}  
  
.section-title {  
    padding-bottom: 40px;  
}  
  
.section-title h2 {  
    font-size: 14px;  
    font-weight: 500;  
    padding: 0;  
    line-height: 1px;  
    margin: 0 0 5px 0;  
    letter-spacing: 2px;  
    text-transform: uppercase;  
    color: #5c8eb0;  
    font-family: "Poppins", sans-serif;  
}
```

```
.section-title h2::after {  
    content: "";  
    width: 120px;  
    height: 1px;  
    display: inline-block;  
    background: #ff8664;  
    margin: 4px 10px;  
}
```

```
.section-title p {  
    margin: 0;  
    margin: 0;  
    font-size: 36px;  
    font-weight: 700;  
    text-transform: uppercase;  
    font-family: "Poppins", sans-serif;  
    color: #263d4d;  
}
```

```
/*-----  
# About  
-----*/
```

```
.about .container {  
    box-shadow: 0px 2px 15px rgba(0, 0, 0, 0.1);  
    padding-bottom: 15px;
```

```
}
```

```
.about .count-box {  
  padding: 60px 0;  
  width: 100%;  
}
```

```
.about .count-box i {  
  display: block;  
  font-size: 48px;  
  color: #a1bdd1;  
  float: left;  
  line-height: 0;  
}
```

```
.about .count-box span {  
  font-size: 28px;  
  line-height: 25px;  
  display: block;  
  font-weight: 700;  
  color: #365870;  
  margin-left: 60px;  
}
```

```
.about .count-box p {
```

```
padding: 5px 0 0 0;
margin: 0 0 0 60px;
font-family: "Raleway", sans-serif;
font-weight: 600;
font-size: 14px;
color: #2e4b5e;
}
```

```
.about .count-box a {
    font-weight: 600;
    display: block;
    margin-top: 20px;
    color: #2e4b5e;
    font-size: 15px;
    font-family: "Poppins", sans-serif;
    transition: ease-in-out 0.3s;
}
```

```
.about .count-box a:hover {
    color: #477392;
}
```

```
.about .content {
    font-size: 15px;
}
```

```
.about .content h3 {  
    font-weight: 700;  
    font-size: 24px;  
    color: #263d4d;  
}
```

```
.about .content ul {  
    list-style: none;  
    padding: 0;  
}
```

```
.about .content ul li {  
    padding-bottom: 10px;  
    padding-left: 28px;  
    position: relative;  
}
```

```
.about .content ul i {  
    font-size: 24px;  
    color: #ff4a17;  
    position: absolute;  
    left: 0;  
    top: -2px;  
}
```

```
.about .content p:last-child {  
    margin-bottom: 0;  
}
```

```
.about .play-btn {  
    width: 94px;  
    height: 94px;  
    background: radial-gradient(#ff4a17 50%, rgba(255, 74, 23, 0.4)  
52%);  
    border-radius: 50%;  
    display: block;  
    position: absolute;  
    left: calc(50% - 47px);  
    top: calc(50% - 47px);  
    overflow: hidden;  
}
```

```
.about .play-btn::after {  
    content: "";  
    position: absolute;  
    left: 50%;  
    top: 50%;  
    transform: translateX(-40%) translateY(-50%);  
    width: 0;
```

```
height: 0;  
border-top: 10px solid transparent;  
border-bottom: 10px solid transparent;  
border-left: 15px solid #fff;  
z-index: 100;  
transition: all 400ms cubic-bezier(0.55, 0.055, 0.675, 0.19);  
}
```

```
.about .play-btn::before {  
  content: "";  
  position: absolute;  
  width: 120px;  
  height: 120px;  
  animation-delay: 0s;  
  animation: pulsate-btn 2s;  
  animation-direction: forwards;  
  animation-iteration-count: infinite;  
  animation-timing-function: steps;  
  opacity: 1;  
  border-radius: 50%;  
  border: 5px solid rgba(255, 74, 23, 0.7);  
  top: -15%;  
  left: -15%;  
  background: rgba(198, 16, 0, 0);  
}
```



```
.about .play-btn:hover::after {  
  border-left: 15px solid #ff4a17;  
  transform: scale(20);  
}
```

```
.about .play-btn:hover::before {  
  content: "";  
  position: absolute;  
  left: 50%;  
  top: 50%;  
  transform: translateX(-40%) translateY(-50%);  
  width: 0;  
  height: 0;  
  border: none;  
  border-top: 10px solid transparent;  
  border-bottom: 10px solid transparent;  
  border-left: 15px solid #fff;  
  z-index: 200;  
  animation: none;  
  border-radius: 0;  
}
```

```
@keyframes pulsate-btn {  
  0% {
```

```
transform: scale(0.6, 0.6);  
opacity: 1;  
}
```

```
100% {  
  transform: scale(1, 1);  
  opacity: 0;  
}  
}
```

```
/*-----
```

## **# About Boxes**

```
-----*/
```

```
.about-boxes {  
  background: url("../img/about-boxes-bg.jpg") center top  
no-repeat fixed;  
  background-size: cover;  
  padding: 60px 0 30px 0;  
  position: relative;  
}
```

```
.about-boxes::before {  
  content: "";  
  position: absolute;  
  left: 0;
```

```
right: 0;  
top: 0;  
bottom: 0;  
background: rgba(255, 255, 255, 0.92);  
z-index: 9;  
}
```

```
.about-boxes .container,  
.about-boxes .container-fluid {  
    position: relative;  
    z-index: 10;  
}
```

```
.about-boxes .card {  
    border-radius: 3px;  
    border: 0;  
    box-shadow: 0px 2px 15px rgba(0, 0, 0, 0.1);  
    margin-bottom: 30px;  
}
```

```
.about-boxes .card-icon {  
    text-align: center;  
    margin-top: -32px;  
}
```

```
.about-boxes .card-icon i {  
    font-size: 32px;  
    color: #fff;  
    width: 64px;  
    height: 64px;  
    padding-top: 5px;  
    text-align: center;  
    background-color: #ff4a17;  
    border-radius: 4px;  
    text-align: center;  
    border: 4px solid #fff;  
    transition: 0.3s;  
    display: inline-block;  
}
```

```
.about-boxes .card-body {  
    padding-top: 12px;  
}
```

```
.about-boxes .card-title {  
    font-weight: 700;  
    text-align: center;  
}
```

```
.about-boxes .card-title a {
```

```

    color: #15222b;
}

.about-boxes .card-title a:hover {
    color: #ff4a17;
}

.about-boxes .card-text {
    color: #5e5e5e;
}

.about-boxes .card:hover .card-icon i {
    background: #fff;
    color: #ff4a17;
}

@media (max-width: 1024px) {
    .about-boxes {
        background-attachment: scroll;
    }
}

/*-----

# Clients

-----*/

```

```
.clients {  
  background: #f0f4f8;  
  padding: 15px 0;  
  text-align: center;  
}  
  
.clients img {  
  max-width: 45%;  
  transition: all 0.4s ease-in-out;  
  display: inline-block;  
  padding: 15px 0;  
  filter: grayscale(100);  
}  
  
.clients img:hover {  
  filter: none;  
  transform: scale(1.15);  
}  
  
@media (max-width: 768px) {  
  .clients img {  
    max-width: 40%;  
  }  
}
```

```
/*-----
```

## # Features

```
-----*/
```

```
.features .nav-tabs {  
  border: 0;  
}
```

```
.features .nav-link {  
  border: 1px solid #b5ccdb;  
  padding: 15px;  
  transition: 0.3s;  
  color: #15222b;  
  border-radius: 0;  
  display: flex;  
  align-items: center;  
  justify-content: center;  
}
```

```
.features .nav-link i {  
  padding-right: 15px;  
  font-size: 48px;  
}
```

```
.features .nav-link h4 {  
  font-size: 18px;
```

```
font-weight: 600;  
margin: 0;  
}  
  
.features .nav-link:hover {  
  color: #ff4a17;  
}  
  
.features .nav-link.active {  
  background: #ff4a17;  
  color: #fff;  
  border-color: #ff4a17;  
}  
  
@media (max-width: 768px) {  
  .features .nav-link i {  
    padding: 0;  
    line-height: 1;  
    font-size: 36px;  
  }  
}  
  
@media (max-width: 575px) {  
  .features .nav-link {  
    padding: 15px;
```



```
}
```

```
.features .nav-link i {  
    font-size: 24px;
```

```
}
```

```
}
```

```
.features .tab-content {  
    margin-top: 30px;
```

```
}
```

```
.features .tab-pane h3 {  
    font-weight: 600;  
    font-size: 26px;
```

```
}
```

```
.features .tab-pane ul {  
    list-style: none;  
    padding: 0;
```

```
}
```

```
.features .tab-pane ul li {  
    padding-bottom: 10px;
```

```
}
```

```
.features .tab-pane ul i {  
    font-size: 20px;  
    padding-right: 4px;  
    color: #ff4a17;  
}
```

```
.features .tab-pane p:last-child {  
    margin-bottom: 0;  
}
```

```
/*-----
```

```
# Services
```

```
-----*/
```

```
.services .icon-box {  
    margin-bottom: 20px;  
    padding: 30px;  
    border-radius: 6px;  
    background: #fff;  
}
```

```
.services .icon-box i {  
    float: left;  
    color: #5c8eb0;  
    font-size: 40px;  
    line-height: 0;
```

```
}
```

```
.services .icon-box h4 {  
    margin-left: 70px;  
    font-weight: 700;  
    margin-bottom: 15px;  
    font-size: 18px;  
}
```

```
.services .icon-box h4 a {  
    color: #365870;  
    transition: 0.3s;  
}
```

```
.services .icon-box .icon-box:hover h4 a {  
    color: #ff4a17;  
}
```

```
.services .icon-box p {  
    margin-left: 70px;  
    line-height: 24px;  
    font-size: 14px;  
}
```

```
.services .icon-box:hover h4 a {
```

```

    color: #ff4a17;
}

/*-----
# Testimonials
-----*/

.testimonials {
    padding: 80px 0;
    background: url("../img/testimonials-bg.jpg") no-repeat;
    background-position: center center;
    background-size: cover;
    position: relative;
}

.testimonials::before {
    content: "";
    position: absolute;
    left: 0;
    right: 0;
    top: 0;
    bottom: 0;
    background: rgba(13, 20, 26, 0.7);
}

.testimonials .section-header {

```

```
margin-bottom: 40px;
}

.testimonials .testimonials-carousel,
.testimonials .testimonials-slider {
    overflow: hidden;
}

.testimonials .testimonial-item {
    text-align: center;
    color: #fff;
}

.testimonials .testimonial-item .testimonial-img {
    width: 100px;
    border-radius: 50%;
    border: 6px solid rgba(255, 255, 255, 0.15);
    margin: 0 auto;
}

.testimonials .testimonial-item h3 {
    font-size: 20px;
    font-weight: bold;
    margin: 10px 0 5px 0;
    color: #fff;
```

```
}
```

```
.testimonials .testimonial-item h4 {
```

```
font-size: 14px;
```

```
color: #ddd;
```

```
margin: 0 0 15px 0;
```

```
}
```

```
.testimonials .testimonial-item .quote-icon-left,
```

```
.testimonials .testimonial-item .quote-icon-right {
```

```
color: rgba(255, 255, 255, 0.4);
```

```
font-size: 26px;
```

```
}
```

```
.testimonials .testimonial-item .quote-icon-left {
```

```
display: inline-block;
```

```
left: -5px;
```

```
position: relative;
```

```
}
```

```
.testimonials .testimonial-item .quote-icon-right {
```

```
display: inline-block;
```

```
right: -5px;
```

```
position: relative;
```

```
top: 10px;
```

}

```
.testimonials .testimonial-item p {  
  font-style: italic;  
  margin: 0 auto 15px auto;  
  color: #eee;
```

}

```
@media (min-width: 992px) {  
  .testimonials .testimonial-item p {  
    width: 80%;  
  }  
}
```

}

```
.testimonials .swiper-pagination {  
  margin-top: 20px;  
  position: relative;  
}
```

```
.testimonials .swiper-pagination .swiper-pagination-bullet {  
  width: 12px;  
  height: 12px;  
  background-color: #a1bdd1;  
  opacity: 0.5;
```

}

```
.testimonials .swiper-pagination .swiper-pagination-bullet-active {  
  background-color: #ff4a17;  
  opacity: 1;  
}
```

```
/*-----
```

```
# Portfolio
```

```
-----*/
```

```
.portfolio #portfolio-filters {  
  padding: 0;  
  margin: 0 auto 25px auto;  
  list-style: none;  
  text-align: center;  
  border-radius: 50px;  
}
```

```
.portfolio #portfolio-filters li {  
  cursor: pointer;  
  display: inline-block;  
  padding: 8px 16px;  
  font-size: 14px;  
  font-weight: 500;  
  line-height: 1;  
  color: #444444;
```



```

margin: 0 3px 10px 3px;
transition: all ease-in-out 0.3s;
background: #e5edf3;
border-radius: 4px;
}

.portfolio #portfolio-filters li:hover,
.portfolio #portfolio-filters li.filter-active {
    color: #fff;
    background: #ff4a17;
}

.portfolio #portfolio-filters li:last-child {
    margin-right: 0;
}

.portfolio .portfolio-item {
    margin-bottom: 30px;
    overflow: hidden;
}

.portfolio .portfolio-item img {
    position: relative;
    top: 0;
    transition: all 0.6s cubic-bezier(0.645, 0.045, 0.355, 1);

```

}

**.portfolio .portfolio-item .portfolio-info {**

**opacity: 0;**

**position: absolute;**

**left: 15px;**

**right: 15px;**

**bottom: -50px;**

**z-index: 3;**

**transition: all ease-in-out 0.3s;**

**background: #ff4a17;**

**padding: 15px 20px;**

}

**.portfolio .portfolio-item .portfolio-info h4 {**

**font-size: 18px;**

**color: #fff;**

**font-weight: 600;**

}

**.portfolio .portfolio-item .portfolio-info p {**

**color: #fff;**

**font-size: 14px;**

**margin-bottom: 0;**

}

```

.portfolio .portfolio-item .portfolio-info .preview-link,
.portfolio .portfolio-item .portfolio-info .details-link {
    position: absolute;
    right: 50px;
    font-size: 24px;
    top: calc(50% - 18px);
    color: white;
    transition: ease-in-out 0.3s;
}

.portfolio .portfolio-item .portfolio-info .preview-link:hover,
.portfolio .portfolio-item .portfolio-info .details-link:hover {
    color: #ffc1b0;
}

.portfolio .portfolio-item .portfolio-info .details-link {
    right: 15px;
}

.portfolio .portfolio-item:hover img {
    top: -30px;
}

.portfolio .portfolio-item:hover .portfolio-info {

```

```

    opacity: 1;
    bottom: 0;
}

/*-----
# Portfolio Details
-----*/

.portfolio-details {
    padding-top: 40px;
}

.portfolio-details .portfolio-details-slider img {
    width: 100%;
}

.portfolio-details .portfolio-details-slider .swiper-pagination {
    margin-top: 20px;
    position: relative;
}

.portfolio-details .portfolio-details-slider .swiper-pagination .swiper-
pagination-bullet {
    width: 12px;
    height: 12px;
    background-color: #fff;

```

```
opacity: 1;
border: 1px solid #ff4a17;
}

.portfolio-details .portfolio-details-slider .swiper-pagination .swiper-
pagination-bullet-active {
    background-color: #ff4a17;
}

.portfolio-details .portfolio-info {
    padding: 30px;
    box-shadow: 0px 0 30px rgba(21, 34, 43, 0.08);
}

.portfolio-details .portfolio-info h3 {
    font-size: 22px;
    font-weight: 700;
    margin-bottom: 20px;
    padding-bottom: 20px;
    border-bottom: 1px solid #eee;
}

.portfolio-details .portfolio-info ul {
    list-style: none;
    padding: 0;
```

```

    font-size: 15px;
}

.portfolio-details .portfolio-info ul li+li {
    margin-top: 10px;
}

.portfolio-details .portfolio-description {
    padding-top: 30px;
}

.portfolio-details .portfolio-description h2 {
    font-size: 26px;
    font-weight: 700;
    margin-bottom: 20px;
}

.portfolio-details .portfolio-description p {
    padding: 0;
}

/*-----
# Team
-----*/

.team {

```

```
position: relative;
}

.team .container {
    position: relative;
    z-index: 10;
}

.team .member {
    margin-bottom: 80px;
    position: relative;
}

.team .member .pic {
    overflow: hidden;
}

.team .member .member-info {
    position: absolute;
    bottom: -50px;
    left: 20px;
    right: 20px;
    background: #fff;
    padding: 20px 15px;
    color: #15222b;
```

```
box-shadow: 0px 2px 15px rgba(0, 0, 0, 0.1);  
overflow: hidden;  
transition: 0.5s;  
}
```

```
.team .member h4 {  
  font-weight: 700;  
  margin-bottom: 10px;  
  font-size: 16px;  
  color: #15222b;  
  position: relative;  
  padding-bottom: 10px;  
}
```

```
.team .member h4::after {  
  content: "";  
  position: absolute;  
  display: block;  
  width: 50px;  
  height: 1px;  
  background: #7fa5c0;  
  bottom: 0;  
  left: 0;  
}
```



```
.team .member span {  
    font-style: italic;  
    display: block;  
    font-size: 13px;  
}
```

```
.team .member .social {  
    position: absolute;  
    right: 15px;  
    bottom: 15px;  
}
```

```
.team .member .social a {  
    transition: color 0.3s;  
    color: #477392;  
}
```

```
.team .member .social a:hover {  
    color: #ff4a17;  
}
```

```
.team .member .social i {  
    font-size: 16px;  
    margin: 0 2px;  
}
```

```
@media (max-width: 992px) {
```

```
  .team .member {
```

```
    margin-bottom: 110px;
```

```
  }
```

```
}
```

```
/*-----
```

```
# Contact
```

```
-----*/
```

```
.contact .info-box {
```

```
  color: #444444;
```

```
  text-align: center;
```

```
  box-shadow: 0 0 30px rgba(214, 215, 216, 0.6);
```

```
  padding: 20px 0 30px 0;
```

```
}
```

```
.contact .info-box i {
```

```
  font-size: 32px;
```

```
  color: #ff4a17;
```

```
  border-radius: 50%;
```

```
  padding: 8px;
```

```
}
```

```
.contact .info-box h3 {
```

```
font-size: 20px;  
color: #777777;  
font-weight: 700;  
margin: 10px 0;  
}
```

```
.contact .info-box p {  
  padding: 0;  
  line-height: 24px;  
  font-size: 14px;  
  margin-bottom: 0;  
}
```

```
.contact .php-email-form {  
  box-shadow: 0 0 30px rgba(214, 215, 216, 0.6);  
  padding: 30px;  
}
```

```
.contact .php-email-form .error-message {  
  display: none;  
  color: #fff;  
  background: #ed3c0d;  
  text-align: left;  
  padding: 15px;  
  font-weight: 600;
```

}

**.contact .php-email-form .error-message br+br {  
margin-top: 25px;**

}

**.contact .php-email-form .sent-message {  
display: none;  
color: #fff;  
background: #18d26e;  
text-align: center;  
padding: 15px;  
font-weight: 600;  
}**

**.contact .php-email-form .loading {  
display: none;  
background: #fff;  
text-align: center;  
padding: 15px;  
}**

**.contact .php-email-form .loading:before {  
content: "";  
display: inline-block;**

```
border-radius: 50%;  
width: 24px;  
height: 24px;  
margin: 0 10px -6px 0;  
border: 3px solid #18d26e;  
border-top-color: #eee;  
animation: animate-loading 1s linear infinite;  
}
```

```
.contact .php-email-form input,  
.contact .php-email-form textarea {  
  border-radius: 0;  
  box-shadow: none;  
  font-size: 14px;  
  border-radius: 4px;  
}
```

```
.contact .php-email-form input:focus,  
.contact .php-email-form textarea:focus {  
  border-color: #ff4a17;  
}
```

```
.contact .php-email-form input {  
  padding: 10px 15px;  
}
```

```
.contact .php-email-form textarea {  
    padding: 12px 15px;  
}
```

```
.contact .php-email-form button[type=submit] {  
    background: #ff4a17;  
    border: 0;  
    padding: 10px 24px;  
    color: #fff;  
    transition: 0.4s;  
    border-radius: 4px;  
}
```

```
.contact .php-email-form button[type=submit]:hover {  
    background: #ff5e31;  
}
```

```
@keyframes animate-loading {  
    0% {  
        transform: rotate(0deg);  
    }  
  
    100% {  
        transform: rotate(360deg);  
    }  
}
```

```
    }  
}  
  
/*-----  
# Breadcrumbs  
-----*/  
  
.breadcrumbs {  
    padding: 15px 0;  
    background: #f0f4f8;  
    min-height: 40px;  
    margin-top: 78px;  
}  
  
.breadcrumbs h2 {  
    font-size: 28px;  
    font-weight: 400;  
}  
  
.breadcrumbs ol {  
    display: flex;  
    flex-wrap: wrap;  
    list-style: none;  
    padding: 0;  
    margin: 0;  
}
```

```
.breadcrumbs ol li+li {  
  padding-left: 10px;  
}
```

```
.breadcrumbs ol li+li::before {  
  display: inline-block;  
  padding-right: 10px;  
  color: #263d4d;  
  content: "/";  
}
```

```
@media (max-width: 992px) {  
  .breadcrumbs {  
    margin-top: 52px;  
  }  
}
```

```
.breadcrumbs .d-flex {  
  display: block !important;  
}
```

```
.breadcrumbs ol {  
  display: block;  
}
```



```
.breadcrumbs ol li {  
    display: inline-block;  
}  
}  
  
/*-----  
# Footer  
-----*/  
  
#footer {  
    background: #121d24;  
    padding: 0 0 30px 0;  
    color: #fff;  
    font-size: 14px;  
}  
  
#footer .footer-top {  
    background: #15222b;  
    border-bottom: 1px solid #1d303c;  
    padding: 60px 0 30px 0;  
}  
  
#footer .footer-top .footer-info {  
    margin-bottom: 30px;  
}
```

```
#footer .footer-top .footer-info h3 {  
    font-size: 28px;  
    margin: 0 0 15px 0;  
    padding: 2px 0 2px 0;  
    line-height: 1;  
    font-weight: 700;  
}
```

```
#footer .footer-top .footer-info p {  
    font-size: 14px;  
    line-height: 24px;  
    margin-bottom: 0;  
    font-family: "Raleway", sans-serif;  
    color: #fff;  
}
```

```
#footer .footer-top .social-links a {  
    font-size: 18px;  
    display: inline-block;  
    background: rgba(255, 255, 255, 0.08);  
    color: #fff;  
    line-height: 1;  
    padding: 8px 0;  
    margin-right: 4px;  
    border-radius: 4px;
```

```
text-align: center;  
width: 36px;  
height: 36px;  
transition: 0.3s;  
}  
  
#footer .footer-top .social-links a:hover {  
background: #ff4a17;  
color: #fff;  
text-decoration: none;  
}  
  
#footer .footer-top h4 {  
font-size: 16px;  
font-weight: 600;  
color: #fff;  
position: relative;  
padding-bottom: 12px;  
}  
  
#footer .footer-top .footer-links {  
margin-bottom: 30px;  
}  
  
#footer .footer-top .footer-links ul {
```

```
list-style: none;  
padding: 0;  
margin: 0;  
}  
  
#footer .footer-top .footer-links ul i {  
padding-right: 2px;  
color: #ff5e31;  
font-size: 18px;  
line-height: 1;  
}  
  
#footer .footer-top .footer-links ul li {  
padding: 10px 0;  
display: flex;  
align-items: center;  
}  
  
#footer .footer-top .footer-links ul li:first-child {  
padding-top: 0;  
}  
  
#footer .footer-top .footer-links ul a {  
color: #fff;  
transition: 0.3s;
```

```
display: inline-block;  
line-height: 1;  
}  
  
#footer .footer-top .footer-links ul a:hover {  
    color: #ff4a17;  
}  
  
#footer .footer-top .footer-newsletter form {  
    margin-top: 30px;  
    background: #fff;  
    padding: 6px 10px;  
    position: relative;  
    border-radius: 4px;  
}  
  
#footer .footer-top .footer-newsletter form input[type=email] {  
    border: 0;  
    padding: 4px;  
    width: calc(100% - 110px);  
}  
  
#footer .footer-top .footer-newsletter form input[type=submit] {  
    position: absolute;  
    top: 0;
```

```
right: -2px;
bottom: 0;
border: 0;
background: none;
font-size: 16px;
padding: 0 20px;
background: #ff4a17;
color: #fff;
transition: 0.3s;
border-radius: 0 4px 4px 0;
}

#footer .footer-top .footer-newsletter form
input[type=submit]:hover {
    background: #ff5e31;
}

#footer .copyright {
    text-align: center;
    padding-top: 30px;
}

#footer .credits {
    padding-top: 10px;
    text-align: center;
```

```
font-size: 13px;
color: #fff;
}

#footer .credits a {
    transition: 0.3s;
}

.pic
{
    padding-left:100px;
    margin-right: 100px;
}

.img4
{
    padding-right: 200px;
    margin-top:-2500px;
}

.img1
{
    padding-right: 200px;
    margin-top:-1775px;
}

.img2
{
    padding-right: 200px;
```

```
margin-top:-1050px;  
}  
.img3  
{  
padding-right: 200px;  
margin-top:-350px;  
}  
.img{  
margin-left: 500px;  
margin-bottom: 100px;  
width: 500px;  
height: 250px;  
}
```