DR. ZAKIR HUSAIN COLLEGE, ILAYANGUDI

P.G DEPARTMENT OF METHEMATICS

UNEARTHING THE ENVIRONMENTAL IMPACT OF HUMAN ACTIVITY: A GLOBAL CO2 EMISSION ANALYSIS

Submitted by,

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Project Report Template

1 INTRODUCTION

1.1 Overview

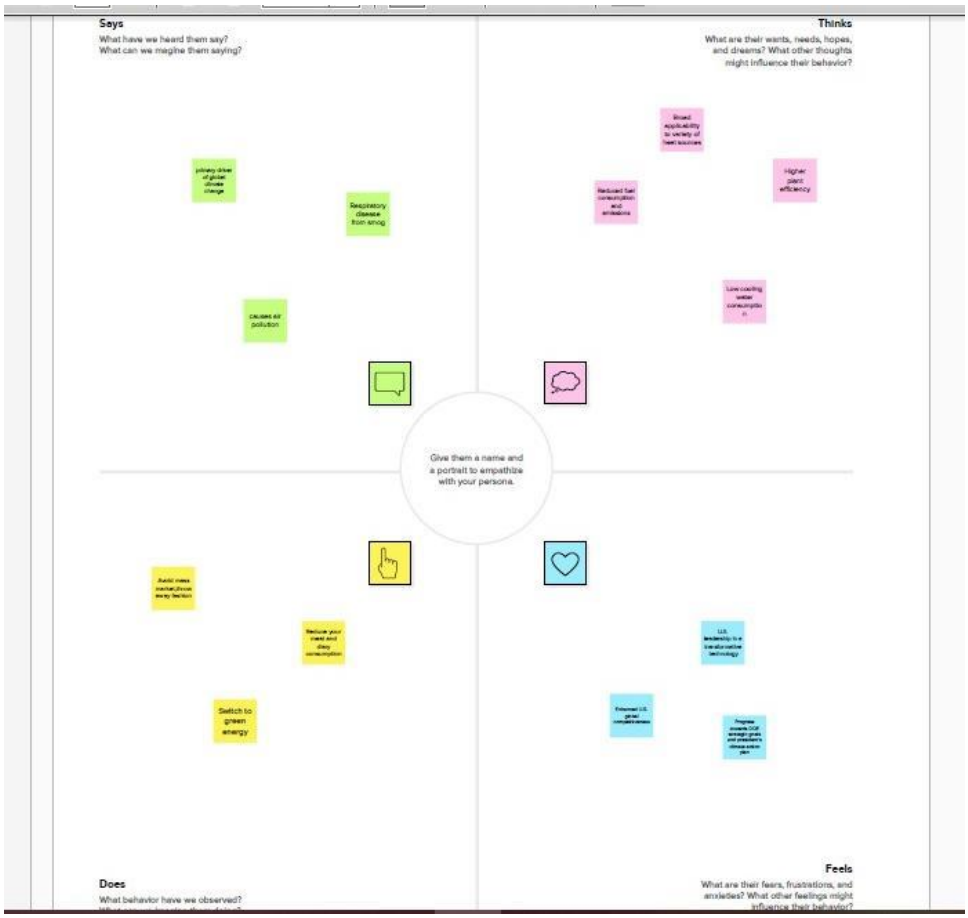
Global CO2 emissions declined by 5.8% in 2020, or almost 2 Gt CO2 – the largest ever decline and almost five times greater than the 2009 decline that followed the global financial crisis. CO2 emissions fell further than energy demand in 2020 owing to the pandemic hitting demand for oil and coal harder than other energy sources while renewables increased. Despite the decline in 2020, global energy-related CO2 emissions remained at 31.5 Gt, which contributed to CO2 reaching its highest ever average annual concentration in the atmosphere of 412.5 parts per million in 2020 – around 50% higher than when the industrial revolution began.

1.2 Purpose

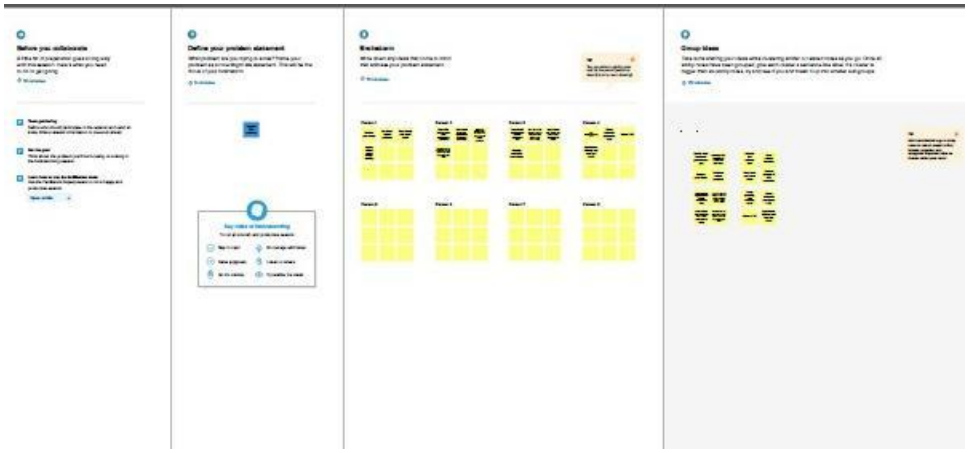
In 2021 global energy-related CO2 emissions are projected to rebound and grow by 4.8% as demand for coal, oil and gas rebounds with the economy. The increase of over 1 500 Mt CO2 would be the largest single increase since the carbon-intensive economic recovery from the global financial crisis more than a decade ago, it leaves global emissions in 2021 around 400 Mt CO2, or 1.2%, below the 2019 peak.

2 Problem Definition & Design Thinking

2.1 Empathy map

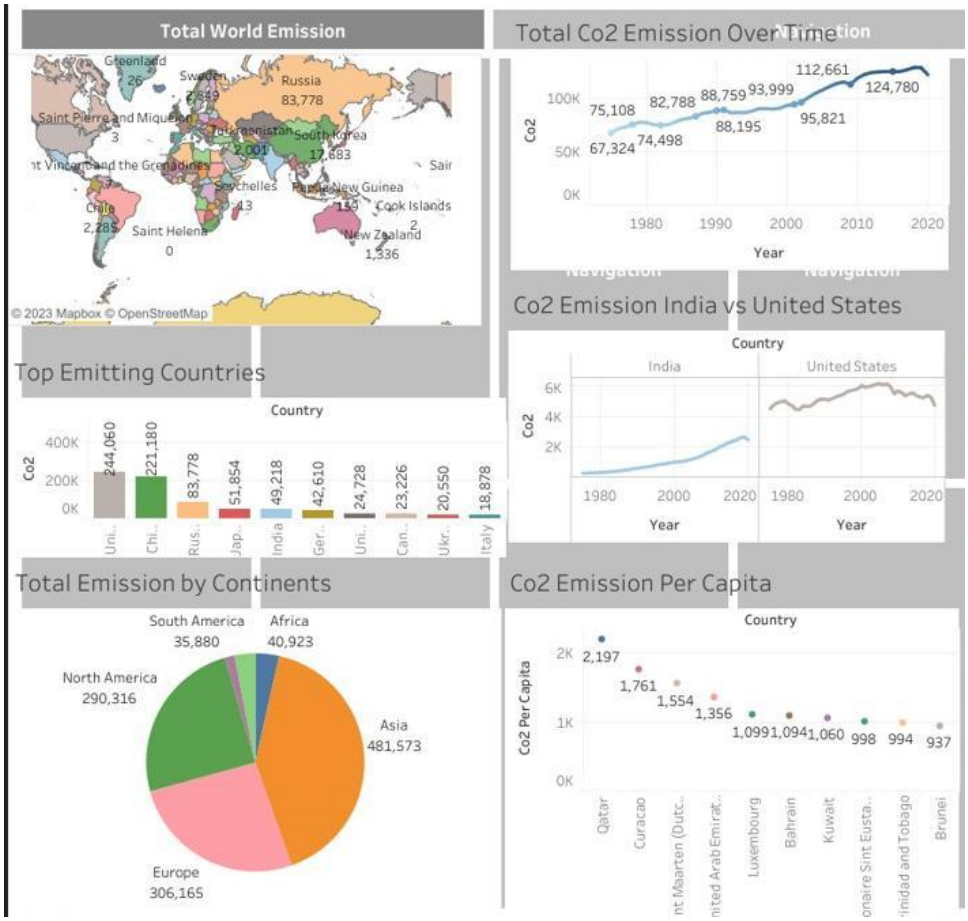


2.2 Ideation & Brainstorming Map



3 RESULT

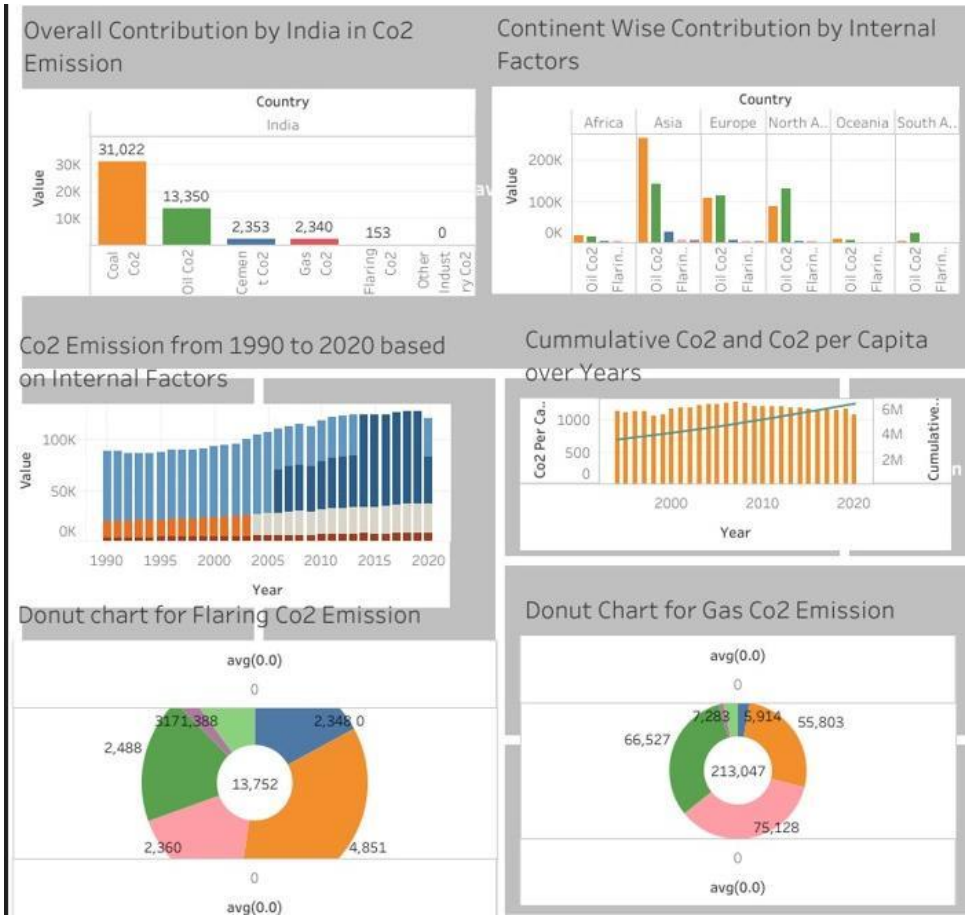
Dashboard 1


Total World Emission
Greenland
26
Sweden
7,849
Russia
83,778
Saint Pierre and Miquelon
3
Turkmenistan
2,001
South Korea
17,683
Seychelles
43
Papua New Guinea
135
Cook Islands
2
Chile
2,285
Saint Helena
0
New Zealand
1,336
© 2023 Mapbox © OpenStreetMap
Total Co2 Emission Over Time
Co2
100K
50K
0K
75,108
82,788
88,759
93,999
112,661
124,780
67,324
74,498
88,195
95,821
1980
1990
2000
2010
2020
Year
Co2 Emission India vs United States
Country
India
United States
Co2
6K
4K
2K
1980
2000
2020
Year
Top Emitting Countries
Country
Co2
400K
200K
0K
244,060
221,180
83,778
51,854
49,218
42,610
24,728
23,226
20,550
18,878
Uni..
Chi..
Rus..
Jap..
India
Ger..
Uni..
Can..
Ukr..
Italy
Total Emission by Continents
South America
35,880
Africa
40,923
North America
290,316
Asia
481,573
Europe
306,165
Co2 Emission Per Capita
Country
Co2 Per Capita
2K
1K
0K
2,197
1,761
1,554
1,356
1,099
1,094
1,060
998
994
937
Qatar
Curacao
Luxembourg
Bahrain
Kuwait
Brunei

Dashboard 2

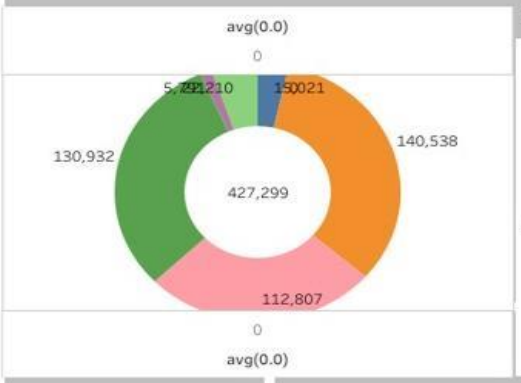

Co2 Emission Per Capita 2
Country
Co2 Per Capita
897.2
583.4
414.7
168.9
84.5
59.6
44.0
United..
Russia
Germa..
Japan
South..
China
Turkey
Brazil
Indon..
India
Co2 Emission by Other Factors
Country
Internationa l transport
Kuwaiti Oil Fires
Co2
1980
1990
2000
2010
2020
Year
Navigation
Emission Rate by Internal Factors
Year
Donut Chart for Coal Co2
avg(0.0)
86,441
3,445
15,929
249,912
471,028
107,632
AVG(0.0)
Donut Chart for Cement Co2
1,390
1,711
174
0
37,625
2,825
6,131
25,395
Co2 Emission Over Past 10 Years
Country
United States
China
Russia
Japan
India
Germany
United Kingdom
Canada
Ukraine
Italy
244,060
83,778
49,218
24,728
20,550
0K
50K
100K
150K
200K
250K
300K
Co2

Dashboard 3

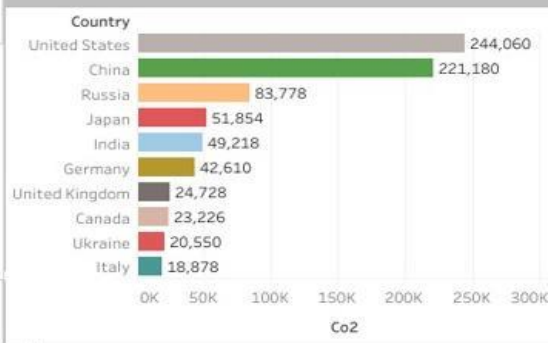

Overall Contribution by India in Co2 Emission
Country
India
Value
31,022
13,350
2,353
2,340
153
0
Coal Co2
Oil Co2
Cement Co2
Gas Co2
Flaring Co2
Other Industry Co2
Continent Wise Contribution by Internal Factors
Country
Africa
Asia
Europe
North A..
Oceania
South A..
Value
Co2 Emission from 1990 to 2020 based on Internal Factors
Value
Year
Cummulative Co2 and Co2 per Capita over Years
Co2 Per Ca..
Cumulative..
Year
Donut chart for Flaring Co2 Emission
avg(0.0)
3171,388
2,488
13,752
2,360
4,851
Donut Chart for Gas Co2 Emission
avg(0.0)
7,283
5,914
55,803
66,527
213,047
75,128

Dashboard 4

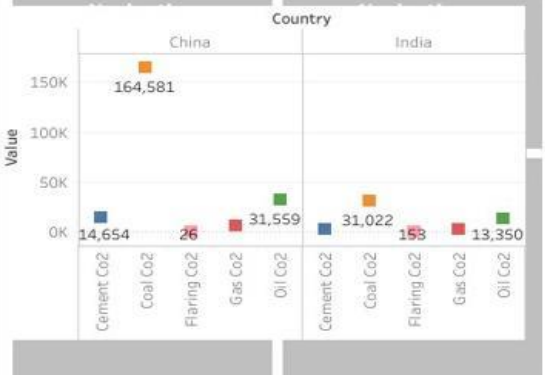
Donut Chart for Oil Co2 Emission



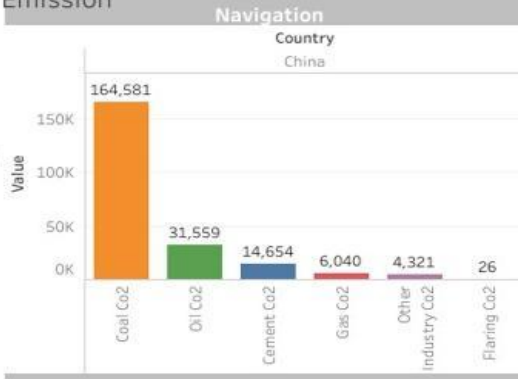
Co2 Emission in 2020



China VS Inida Internal Factors



Overall Contribution By China in Co2 Emission



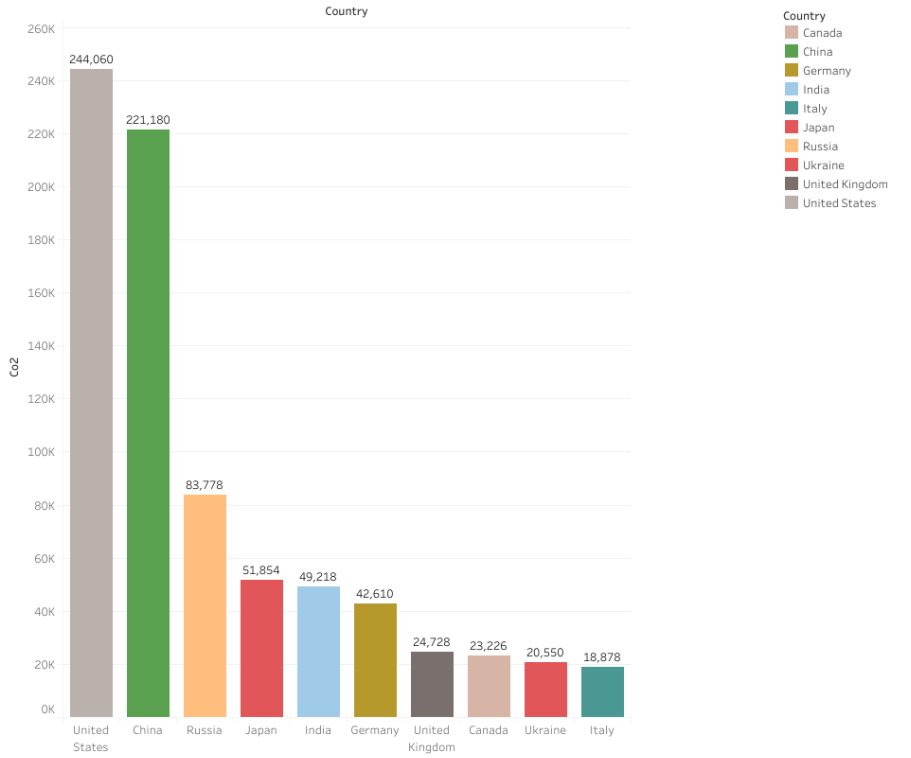
Story 1

Total World Emission | Top Emitting Countries | Total Co2 Emission Over Time | Co2 Emission India vs United States | Total Emission by Continents | Co2 Emission Per Capita | Co2 Emission Per Capita 2

Country
- Afghanistan
- Africa
- Albania
- Algeria
- Andorra
- Angola
- Anguilla
- Antarctica
- Antigua and Barbuda
- Argentina
- Armenia
- Aruba
- Asia
- Asia (excl. China & Ind..
- Australia
- Austria
- Azerbaijan
- Bahamas
- Bahrain
- Bangladesh
- Barbados
- Belarus
- Belgium
- Belize
- Benin
- Bermuda
- Bhutan
- Bolivia
- Bonaire Sint Eustatiu..
- Bosnia and Herzegovi..
- Botswana
- Brazil
- British Virgin Islands
- Brunei
- Bulgaria
- Burkina Faso
- Burundi
- Cambodia

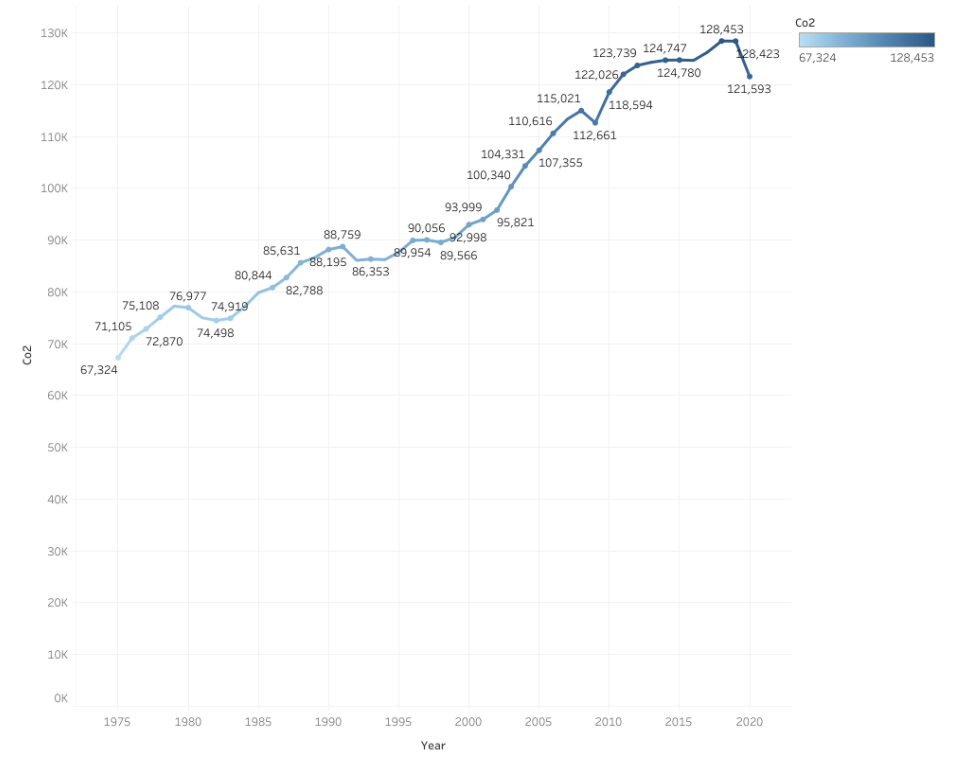
Story 1

Total World Emission | **Top Emitting Countries** | Total Co2 Emission Over Time | Co2 Emission India vs United States | Total Emission by Continents | Co2 Emission Per Capita | Co2 Emission Per Capita 2



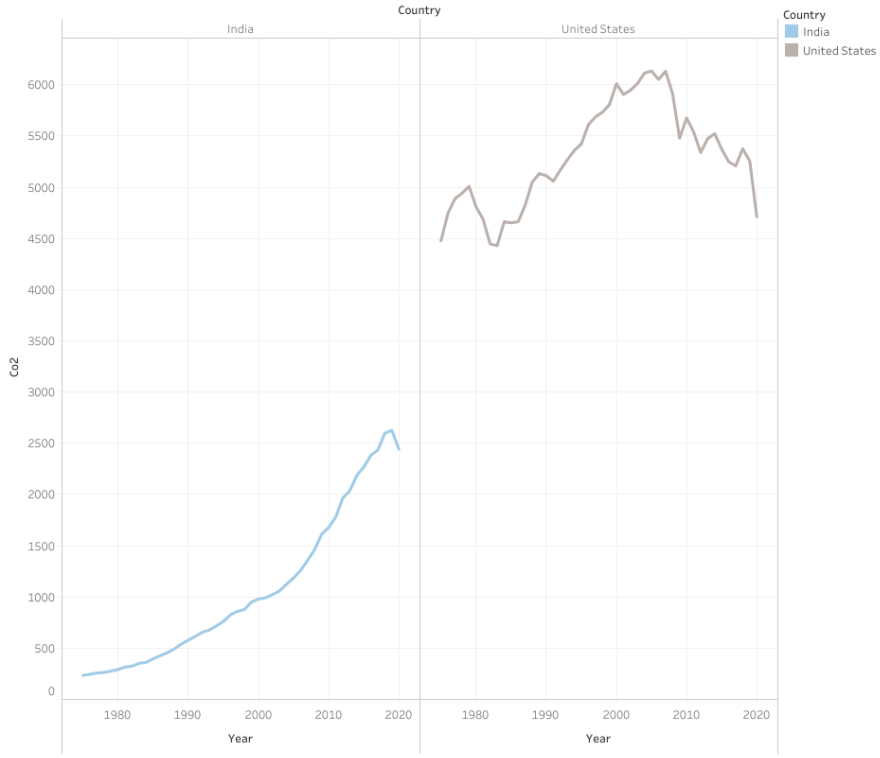
Story 1

Total World Emission | Top Emitting Countries | **Total Co2 Emission Over Time** | Co2 Emission India vs United States | Total Emission by Continents | Co2 Emission Per Capita | Co2 Emission Per Capita 2



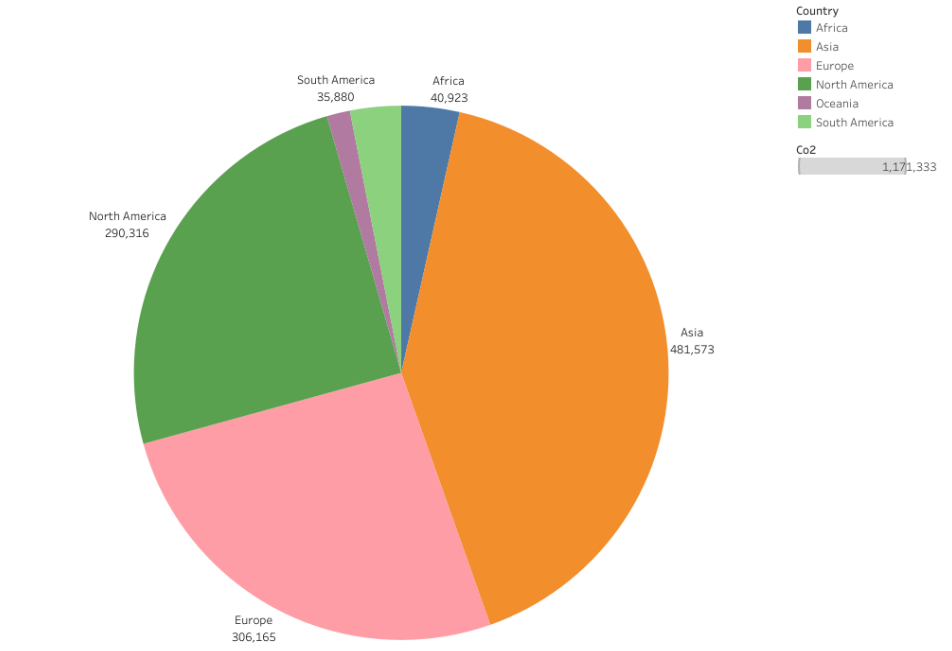
Story 1

Total World Emission | Top Emitting Countries | Total Co2 Emission Over Time | **Co2 Emission India vs United States** | Total Emission by Continents | Co2 Emission Per Capita | Co2 Emission Per Capita 2



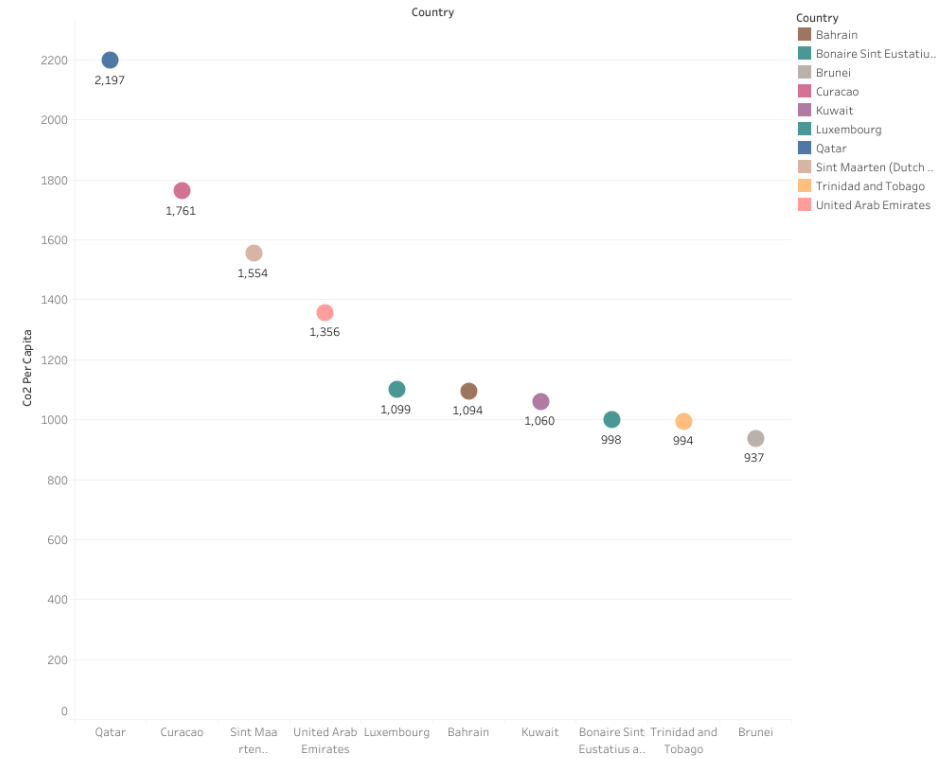
Story 1

Top Emitting Countries | Total Co2 Emission Over Time | Co2 Emission India vs United States | **Total Emission by Continents** | Co2 Emission Per Capita | Co2 Emission Per Capita 2 | Co2 Emission by Other Factors



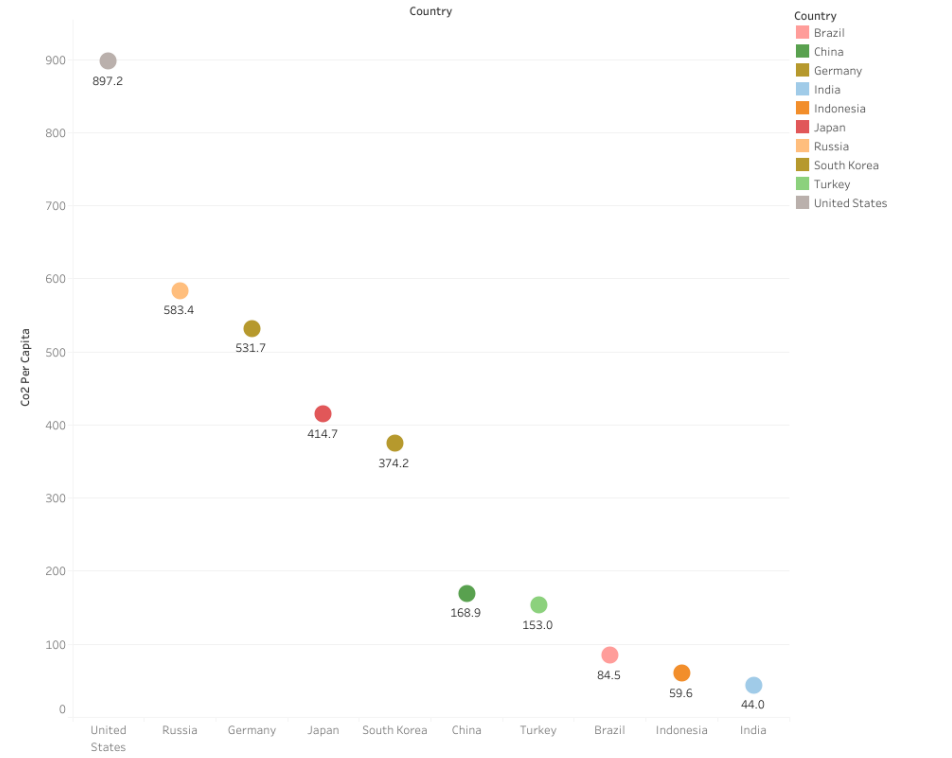
Story 1

Total Co2 Emission Over Ti.. | Co2 Emission India vs United States | Total Emission by Continents | **Co2 Emission Per Capita** | Co2 Emission Per Capita 2 | Co2 Emission by Other Factors | Emission Rate by Internal Factors



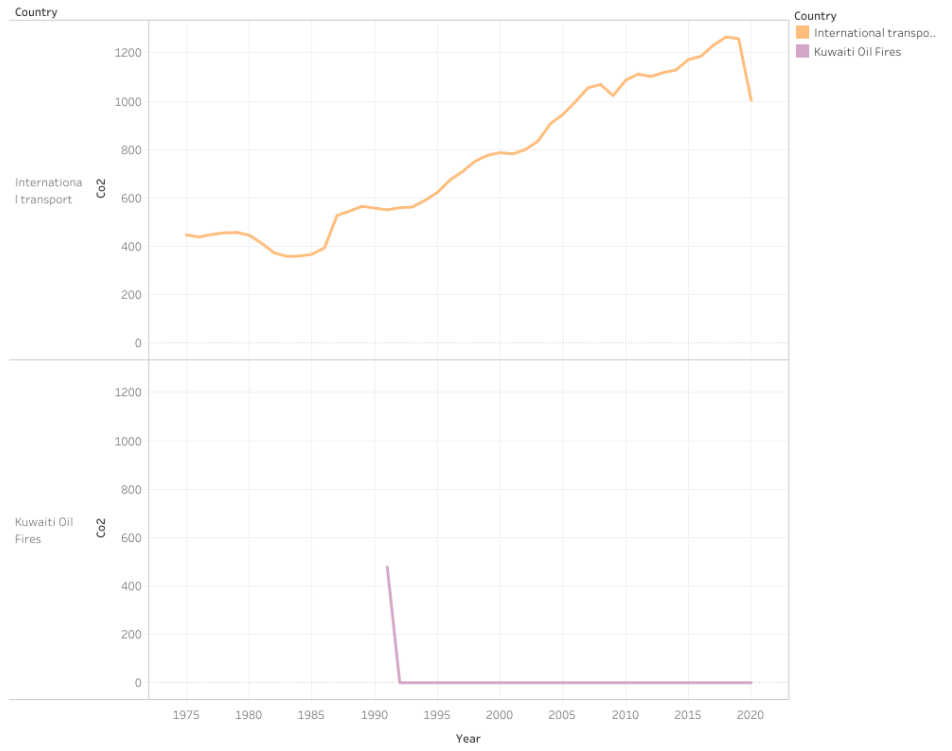
Story 1

Co2 Emission India vs United S.. | Total Emission by Continents | Co2 Emission Per Capita | **Co2 Emission Per Capita 2** | Co2 Emission by Other Factors | Emission Rate by Internal Factors | Donut Chart for Coal Co2



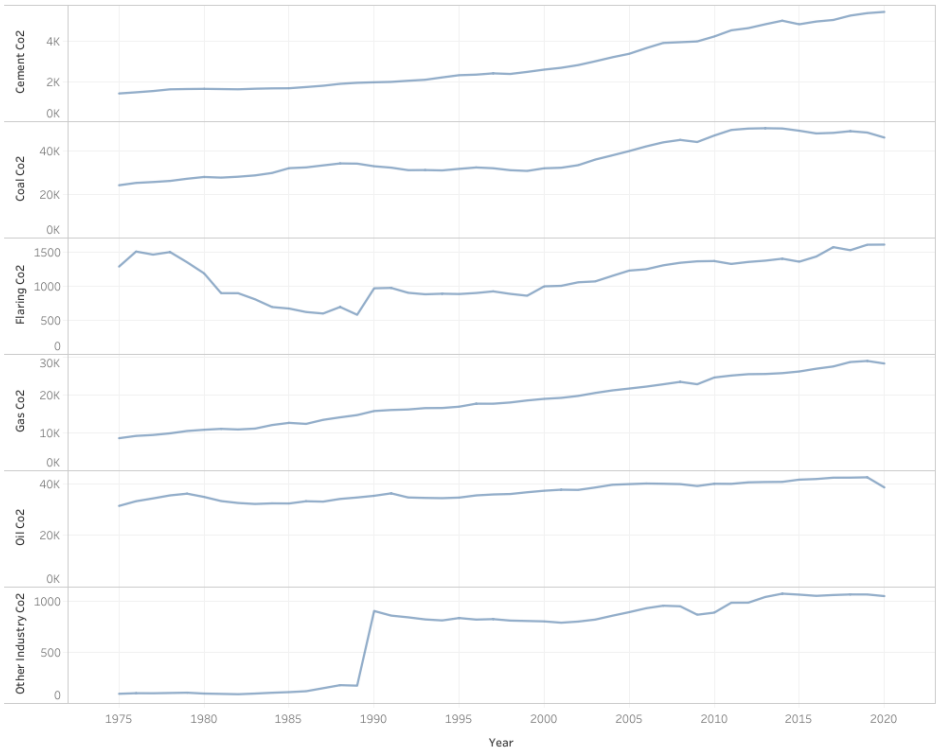
Story 1

Total Emission by Continents | Co2 Emission Per Capita | Co2 Emission Per Capita 2 | **Co2 Emission by Other Factors** | Emission Rate by Internal Factors | Donut Chart for Coal Co2 | Donut Chart for Cement Co2



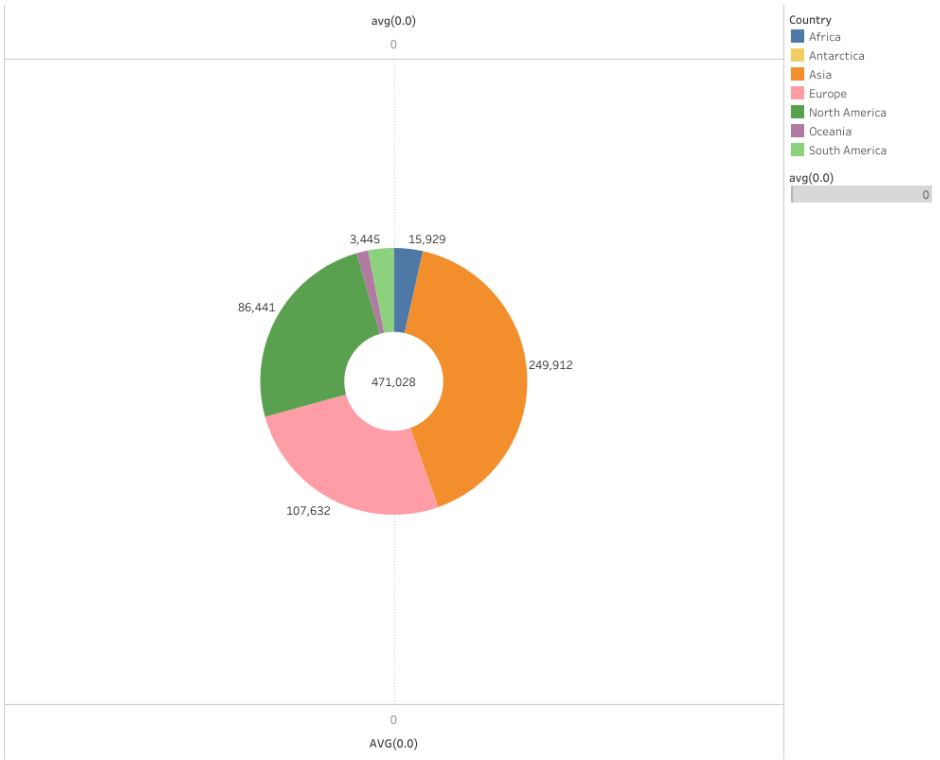
Story 1

Co2 Emission Per Capita | Co2 Emission Per Capita 2 | Co2 Emission by Other Factors | **Emission Rate by Internal Factors** | Donut Chart for Coal Co2 | Donut Chart for Cement Co2 | Co2 Emission Over Past 10 Years



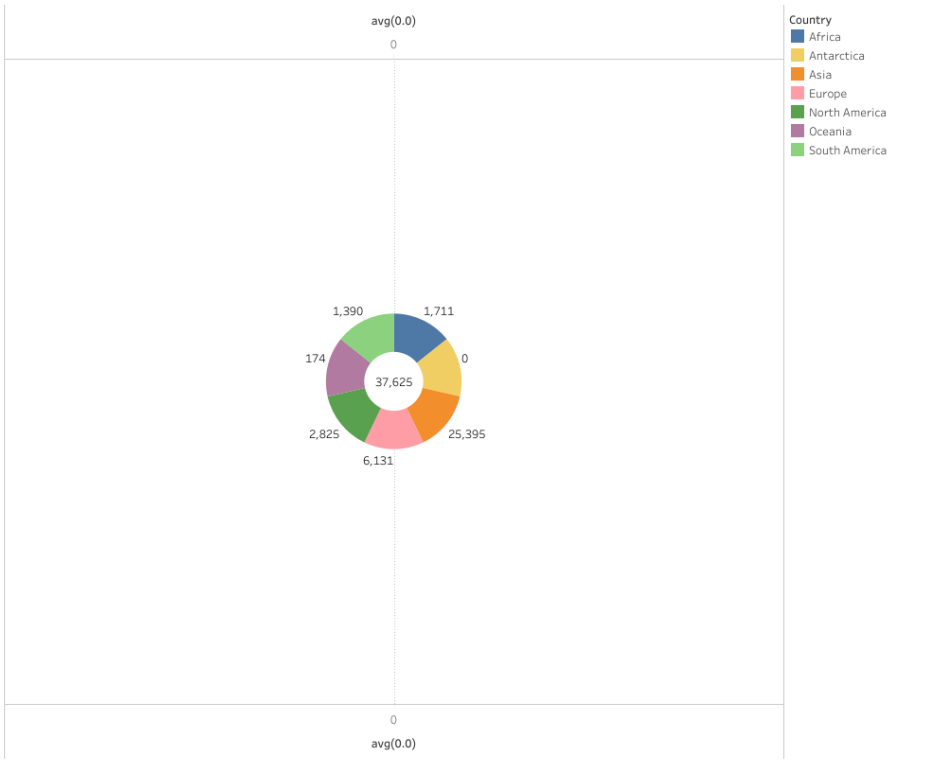
Story 1

Co2 Emission Per Capita 2 | Co2 Emission by Other Factors | Emission Rate by Internal Factors | **Donut Chart for Coal Co2** | Donut Chart for Cement Co2 | Co2 Emission Over Past 10 Years | Overall Contribution by India in Co2 Emi..



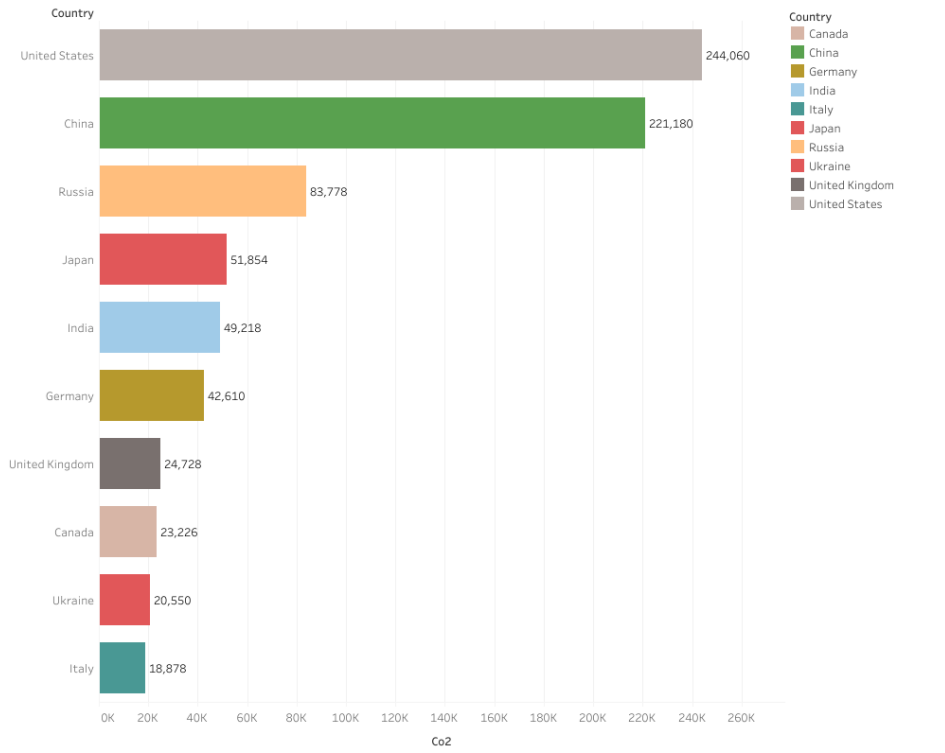
Story 1

Co2 Emission by Other Factors | Emission Rate by Internal Factors | Donut Chart for Coal Co2 | **Donut Chart for Cement Co2** | Co2 Emission Over Past 10 Years | Overall Contribution by India in Co2 Emissi.. | Contient Wise Contribution by Int..



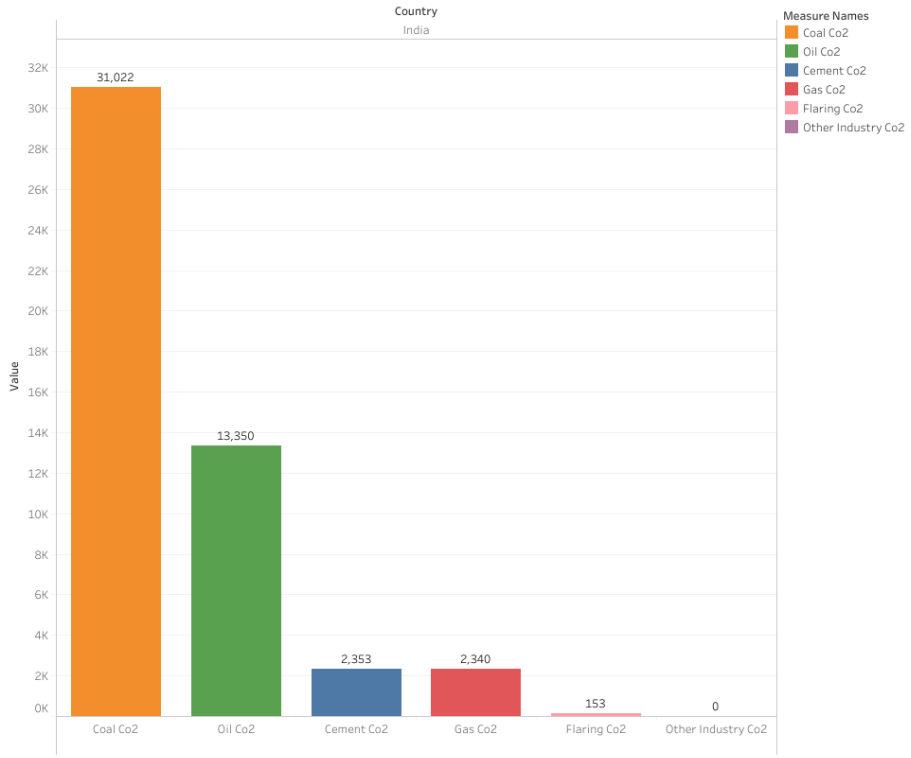
Story 1

Emission Rate by Internal Factors | Donut Chart for Coal Co2 | Donut Chart for Cement Co2 | **Co2 Emission Over Past 10 Years** | Overall Contribution by India in Co2 Emissi.. | Contient Wise Contribution by Inter.. | Co2 Emission from 1990 to 2020 base..



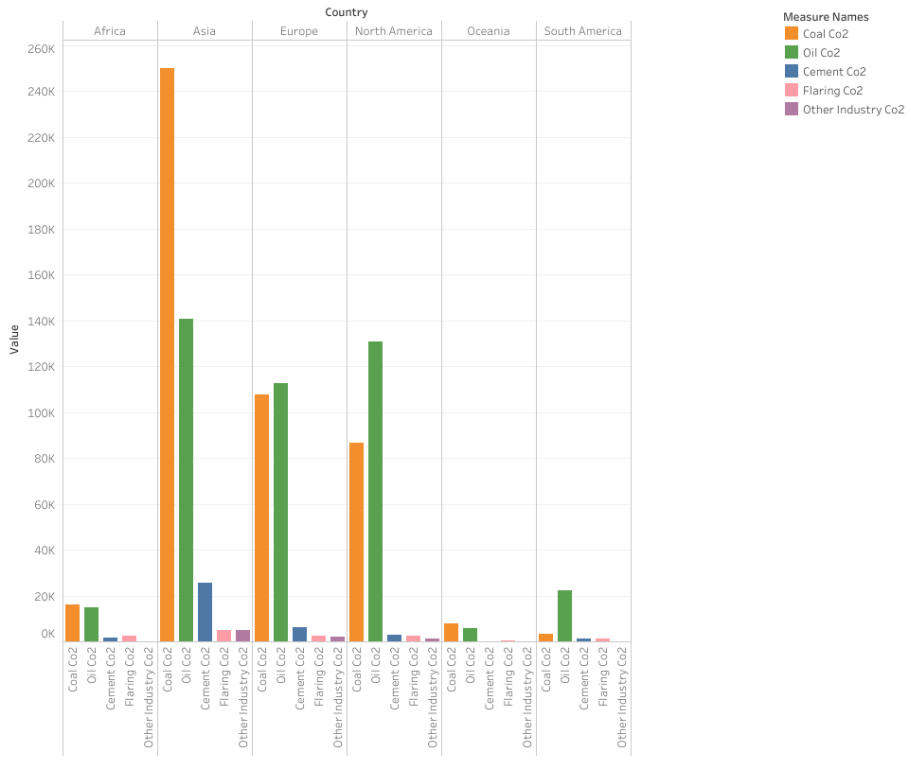
Story 1

Donut Chart for Coal Co2 | Donut Chart for Cement Co2 | Co2 Emission Over Past 10 Years | **Overall Contribution by India in Co2 Emissi..** | Contient Wise Contribution by Inter.. | Co2 Emission from 1990 to 2020 based o.. | Cummulative Co2 and Co2 Per Capita ..



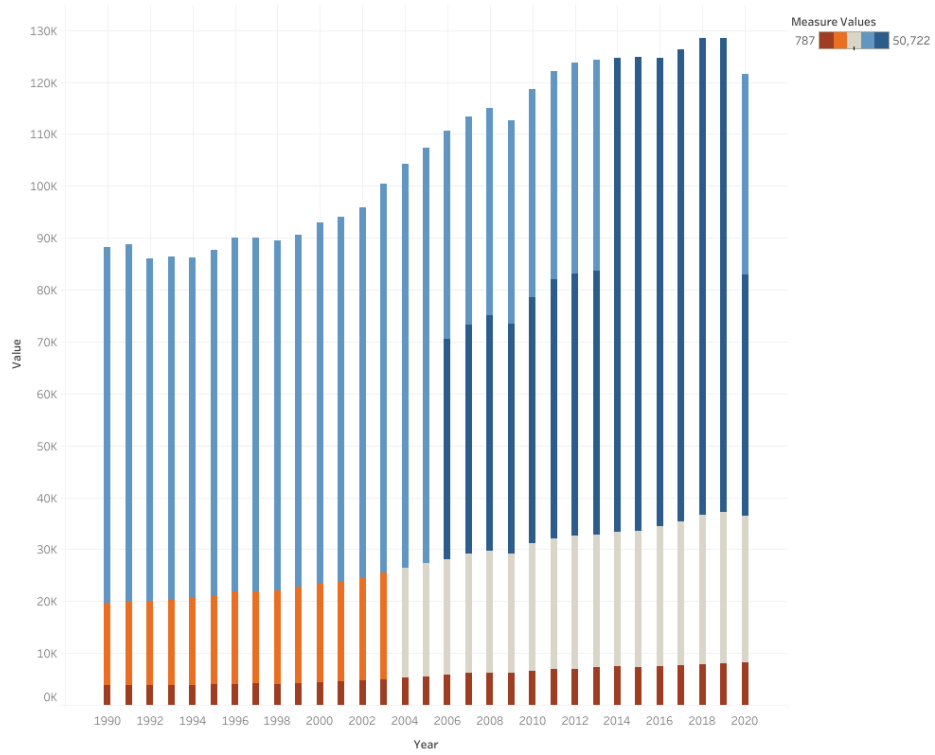
Story 1

Donut Chart for Cement Co2 | Co2 Emission Over Past 10 Years | Overall Contribution by India in Co2 Emissi.. | **Contient Wise Contribution by Inter..** | Co2 Emission from 1990 to 2020 based o.. | Cummulative Co2 and Co2 Per Capita Over Y.. | Donut Chart for Flaring Co2 Emission



Story 1

Co2 Emission Over Past 10 Ye.. | Overall Contribution by India in Co2 Emissi.. | Contient Wise Contribution by Inter.. | **Co2 Emission from 1990 to 2020 based o..** | Cummulative Co2 and Co2 Per Capita Over Y.. | Donut Chart for Flaring Co2 Emission | Donut Chart for Gas Co2 Emission

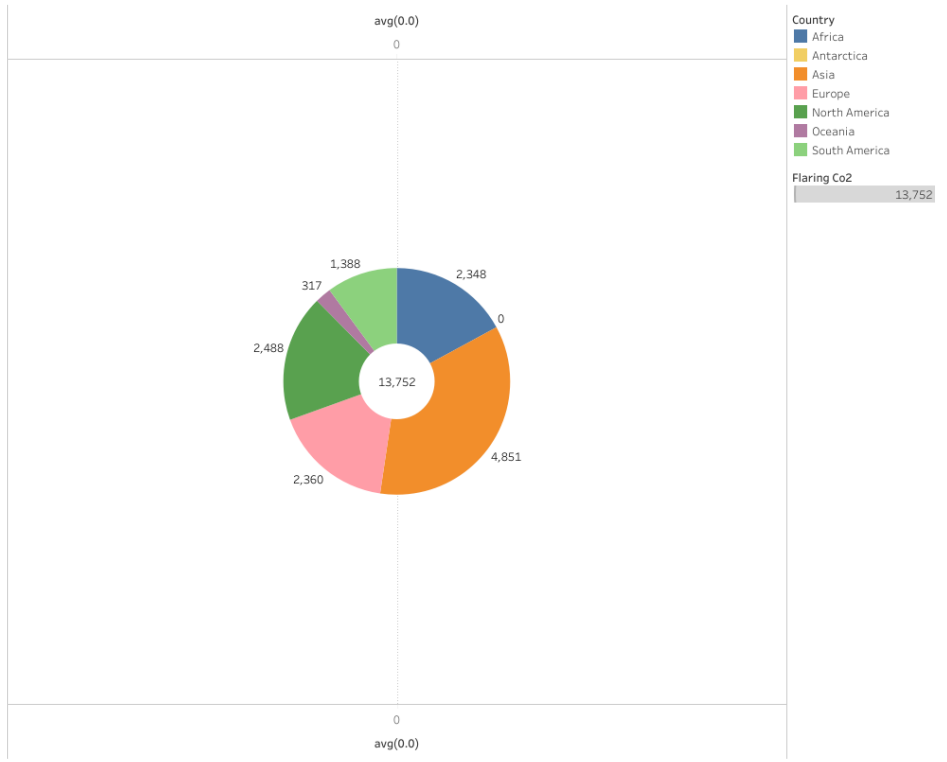


Story 1

Overall Contribution by .. | Contient Wise Contribution by Inter.. | Co2 Emission from 1990 to 2020 based o.. | **Cummulative Co2 and Co2 Per Capita Over Y..** | Donut Chart for Flaring Co2 Emission | Donut Chart for Gas Co2 Emission | Donut Chart for Oil Co2 Emission

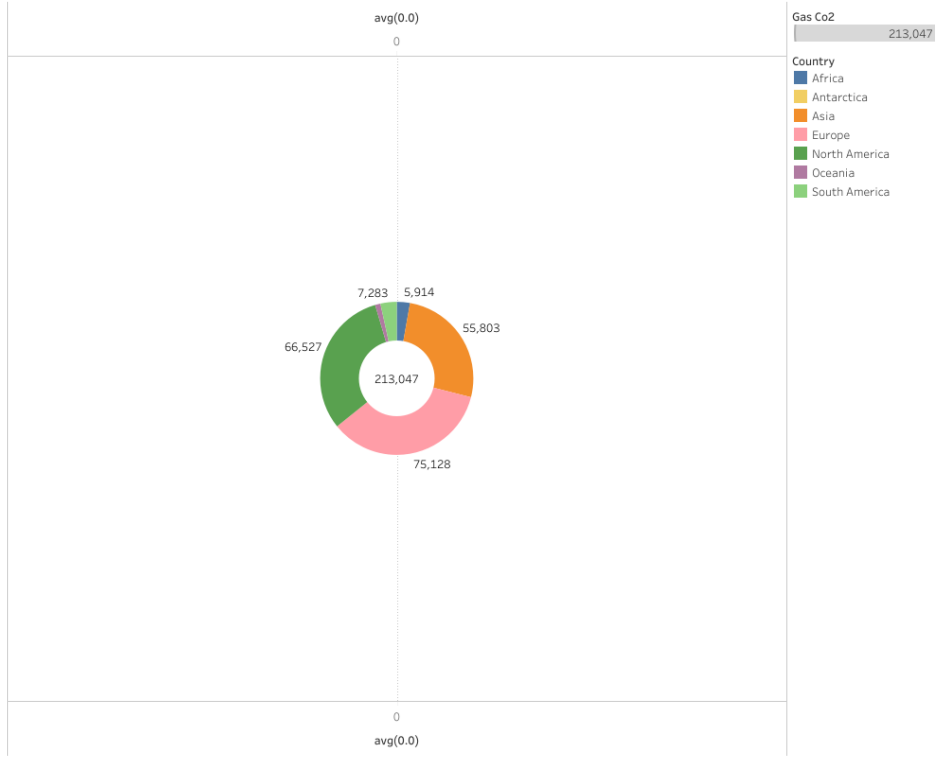
Story 1

Contient Wise Contribution by .. | Co2 Emission from 1990 to 2020 based o.. | Cummulative Co2 and Co2 Per Capita Over Y.. | **Donut Chart for Flaring Co2 Emission** | Donut Chart for Gas Co2 Emission | Donut Chart for Oil Co2 Emission | Co2 Emission in 2020



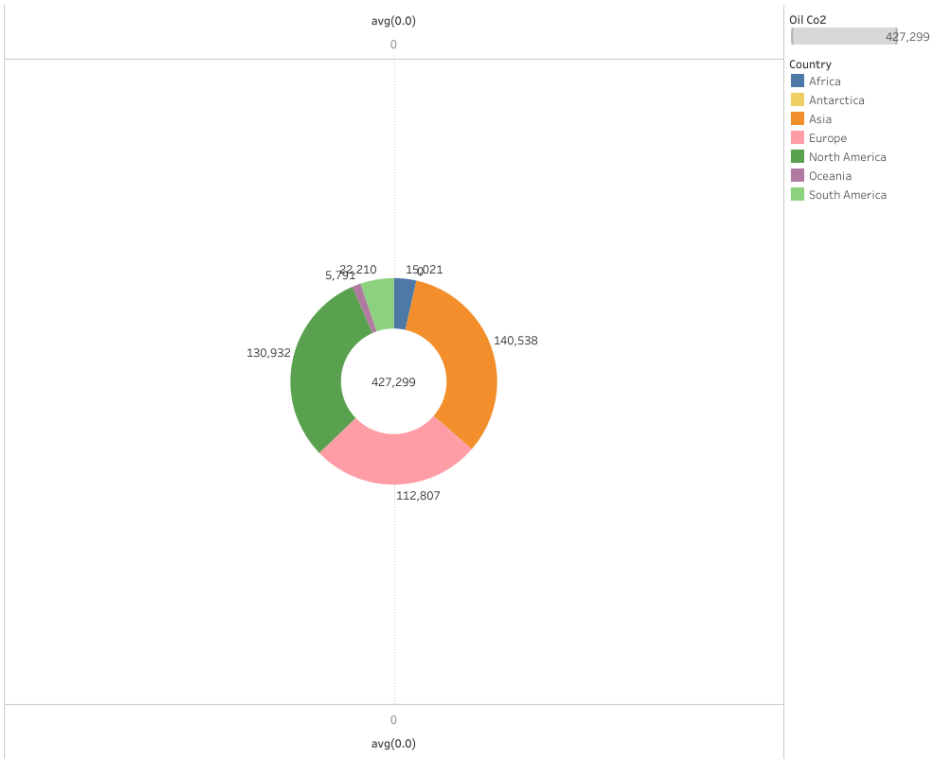
Story 1

Co2 Emission from 1990 to 20.. | Cummulative Co2 and Co2 Per Capita Over Y.. | Donut Chart for Flaring Co2 Emission | **Donut Chart for Gas Co2 Emission** | Donut Chart for Oil Co2 Emission | Co2 Emission in 2020 | China vs Inida Internal Factors



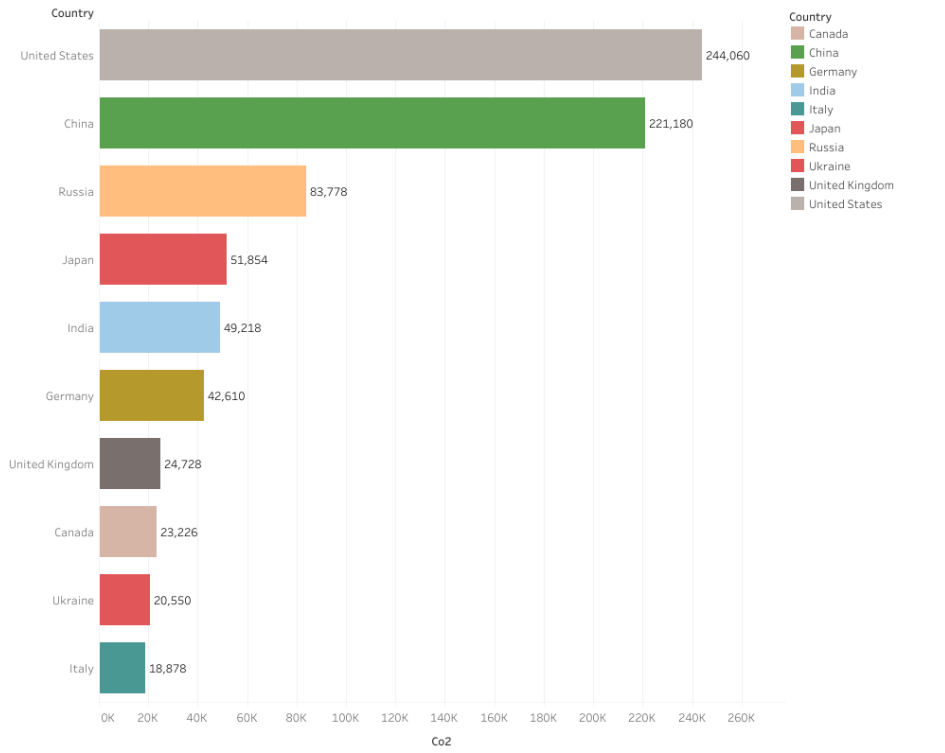
Story 1

Cummulative Co2 and Co2 Per Capi.. | Donut Chart for Flaring Co2 Emission | Donut Chart for Gas Co2 Emission | **Donut Chart for Oil Co2 Emission** | Co2 Emission in 2020 | China vs Inida Internal Factors | Overall Contribution By China in Co2 Emi..



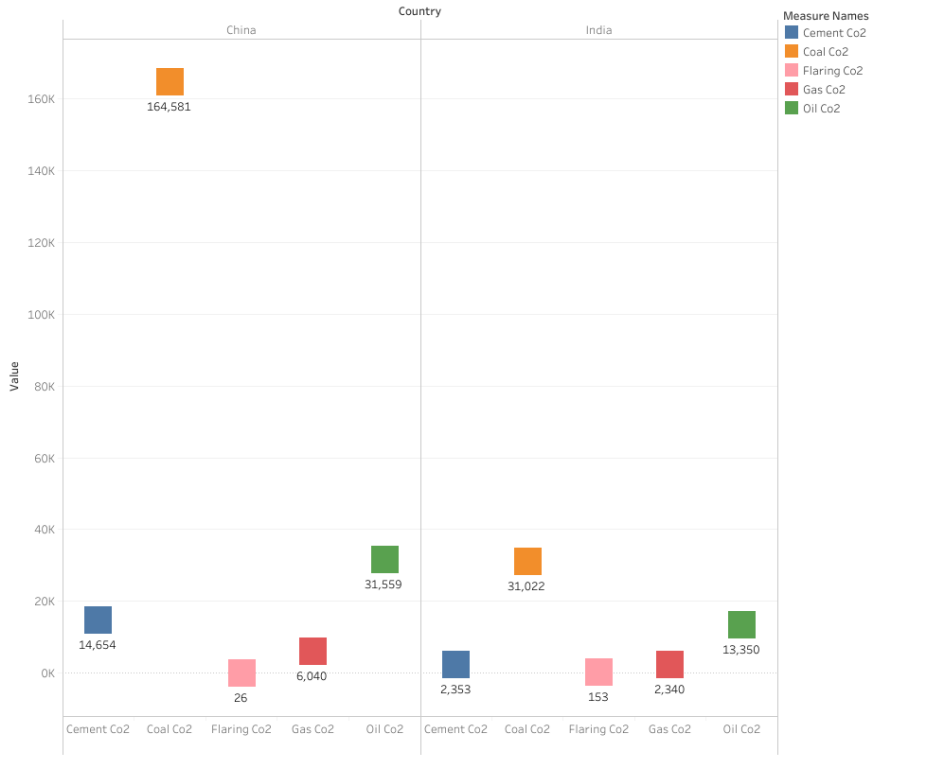
Story 1

Donut Chart for Flaring Co2 Emis.. | Donut Chart for Gas Co2 Emission | Donut Chart for Oil Co2 Emission | **Co2 Emission in 2020** | China vs Inida Internal Factors | Overall Contribution By China in Co2 Emiss..



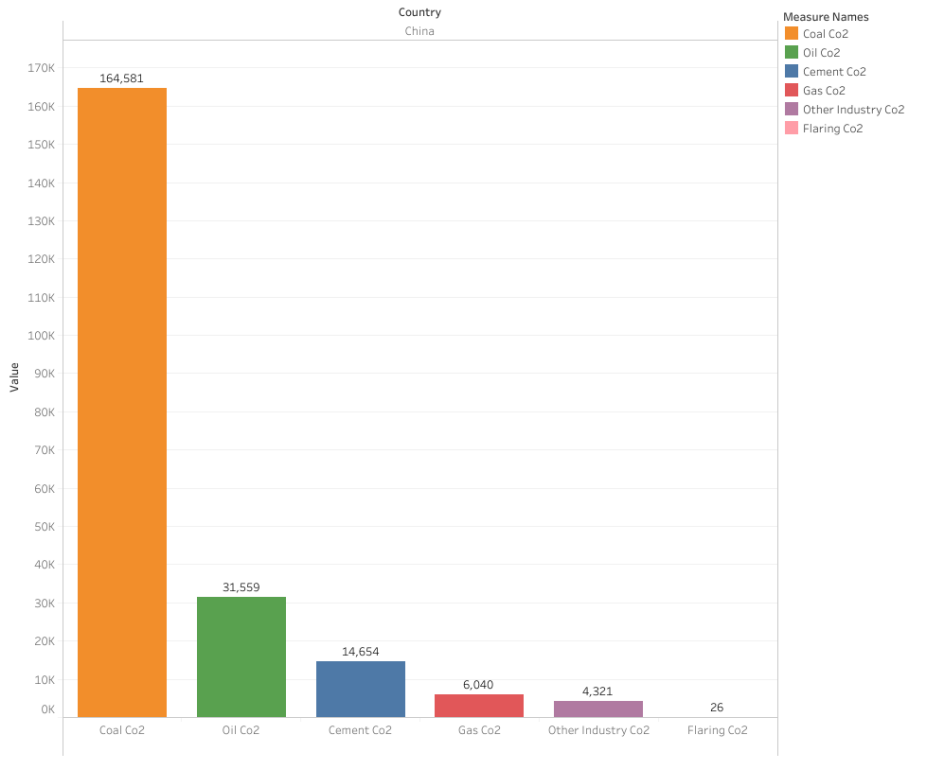
Story 1

Donut Chart for Gas Co2 Emission | Donut Chart for Oil Co2 Emission | Co2 Emission in 2020 | **China vs Inida Internal Factors** | Overall Contribution By China in Co2 Emiss..



Story 1

Donut Chart for Gas Co2 .. | Donut Chart for Oil Co2 Emission | Co2 Emission in 2020 | China vs Inida Internal Factors | **Overall Contribution By China in Co2 Emiss..**



4 ADVANTAGES & DISADVANTAGES

ADVANTAGES

The greenhouse effect helps in maintaining a manageable temperature which makes Earth habitable for all living beings. The greenhouse effect can be used to grow seasonal plants artificially in non-seasonal months.

DISADVANTAGES

Global warming is the greatest disadvantage of the greenhouse effect. It leads to an increase in the rising sea level. Oceans have gotten warmer which poses a threat to all marine life.

5 APPLICATIONS

The future market potential for CO_2-derived products and services is difficult to assess. The early stage of technology development and anticipated reliance on policy frameworks for most applications makes estimating the future market very challenging. Theoretically, some CO_2 use applications, such as fuels and chemicals, could grow to scales of multiple billions of tonnes of CO_2 use per year, but in practice would compete with direct use of low-carbon hydrogen or electricity, which would be more cost effective in most applications.

6 CONCLUSION

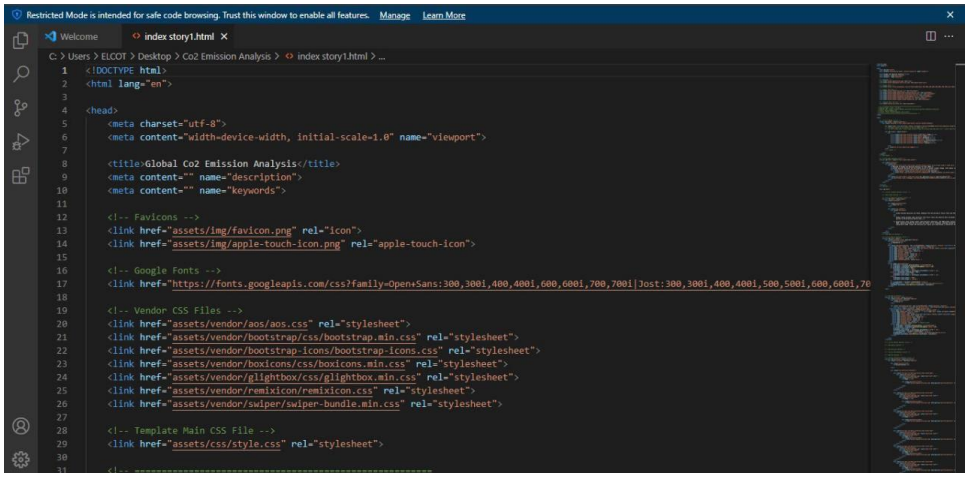
The relationship described above by Wittwer is illustrated below in Figure 8, where data pertaining to atmospheric CO2 emissions, food production, and human population are plotted. Standardized to a value of unity in 1961, each of these datasets has experienced rapid and interlinked growth over the past five decades. Rising global population has led to rising CO2 emissions and rising CO2 emissions have benefited food production.

7 FUTURE SCOPE

The future market for CO2-derived products and services is very difficult to assess, reflecting the early stage of technology development for many applications and the reliance on supporting policy frameworks. Global estimates range from less than 1 GtCO2 per year to 7 GtCO2 per year by 2030, depending on the assumptions applied. These higher estimates are considered extremely optimistic.

8 APPENDIX

A. Source Code


Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More
Welcome
index story1.html
C: > Users > ELCOT > Desktop > Co2 Emission Analysis > index story1.html > ...
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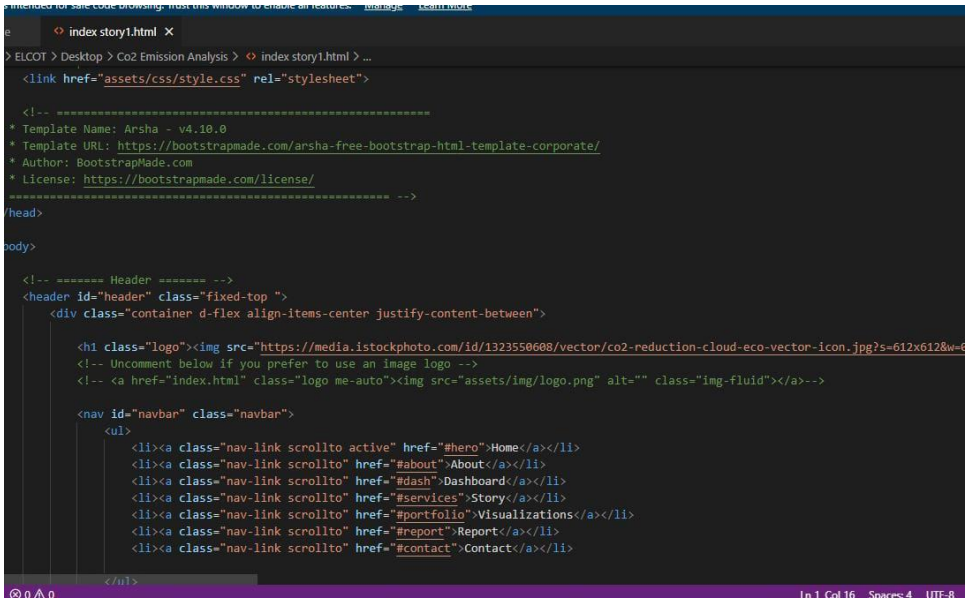
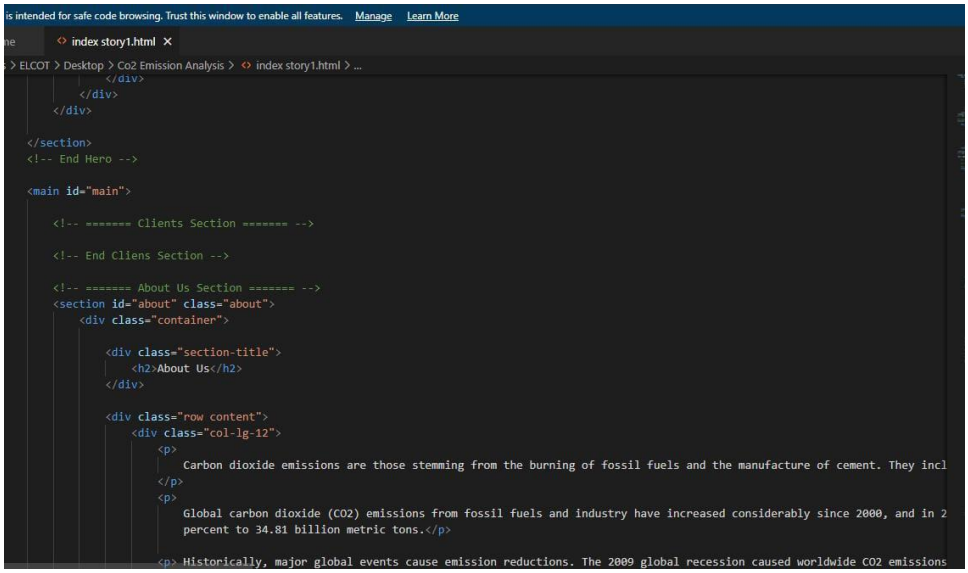
<link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">
<!-- Template Main CSS File -->
<link href="assets/css/style.css" rel="stylesheet">


index story1.html
> ELCOT > Desktop > Co2 Emission Analysis > index story1.html > ...
<link href="assets/css/style.css" rel="stylesheet">
* Template Name: Arsha - v4.10.0
* Template URL: https://bootstrapmade.com/arsha-free-bootstrap-html-template-corporate/
* Author: BootstrapMade.com
* License: https://bootstrapmade.com/license/
/head>
body>
<!-- ======= Header ======= -->
<header id="header" class="fixed-top ">

<h1 class="logo"><img src="https://media.istockphoto.com/id/1323550608/vector/co2-reduction-cloud-eco-vector-icon.jpg?s=612x612&w=
<!-- Uncomment below if you prefer to use an image logo -->
<!-- <img src="assets/img/logo.png" alt="" class="img-fluid">-->
<nav id="navbar" class="navbar">

Home
About
Dashboard
Story
Visualizations
Report
Contact

Ln 1, Col 16 Spaces: 4 UTF-8



```
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index story1.html
ELCOT > Desktop > Co2 Emission Analysis > index story1.html > ...
            </div>
        </div>
    </div>

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

<main id="main">

    <!-- ======= Clients Section ======= -->

    <!-- End Cliens Section -->

    <!-- ======= About Us Section ======= -->
    <section id="about" class="about">
        <div class="container">

            <div class="section-title">
                <h2>About Us</h2>
            </div>

            <div class="row content">
                <div class="col-lg-12">
                    <p>
                        Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They incl
                    </p>
                    <p>
                        Global carbon dioxide (CO2) emissions from fossil fuels and industry have increased considerably since 2000, and in 2
                        percent to 34.81 billion metric tons.</p>

                    <p> Historically, major global events cause emission reductions. The 2009 global recession caused worldwide CO2 emissions
```
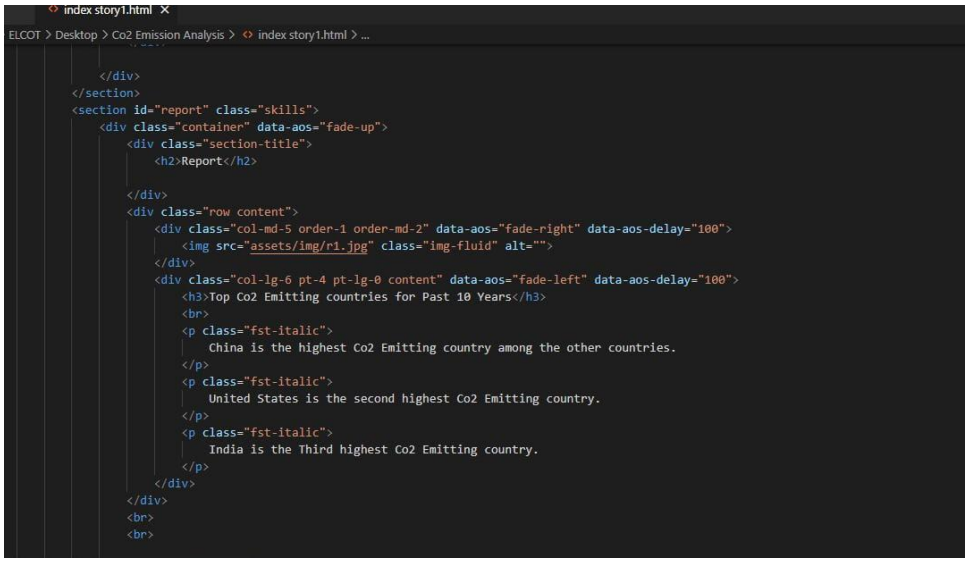
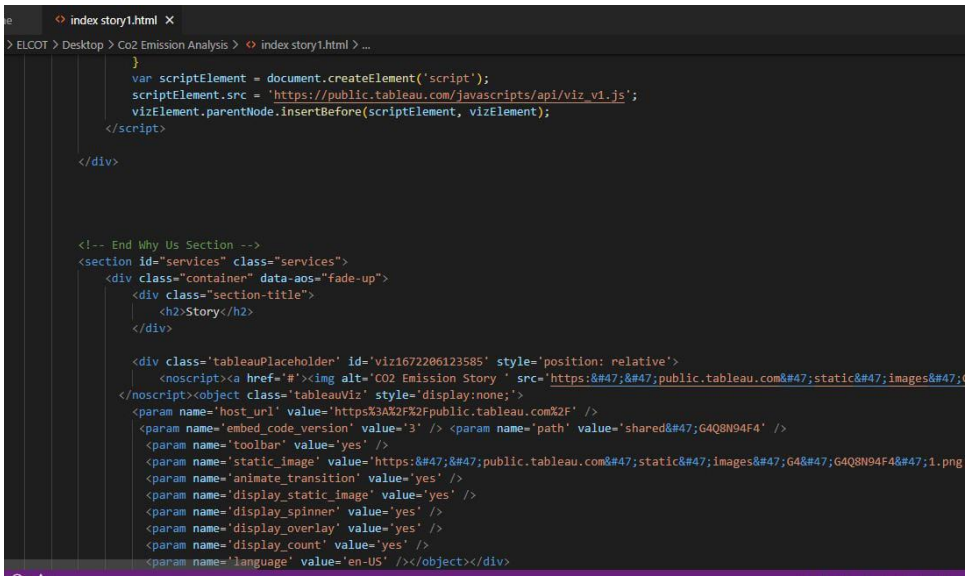



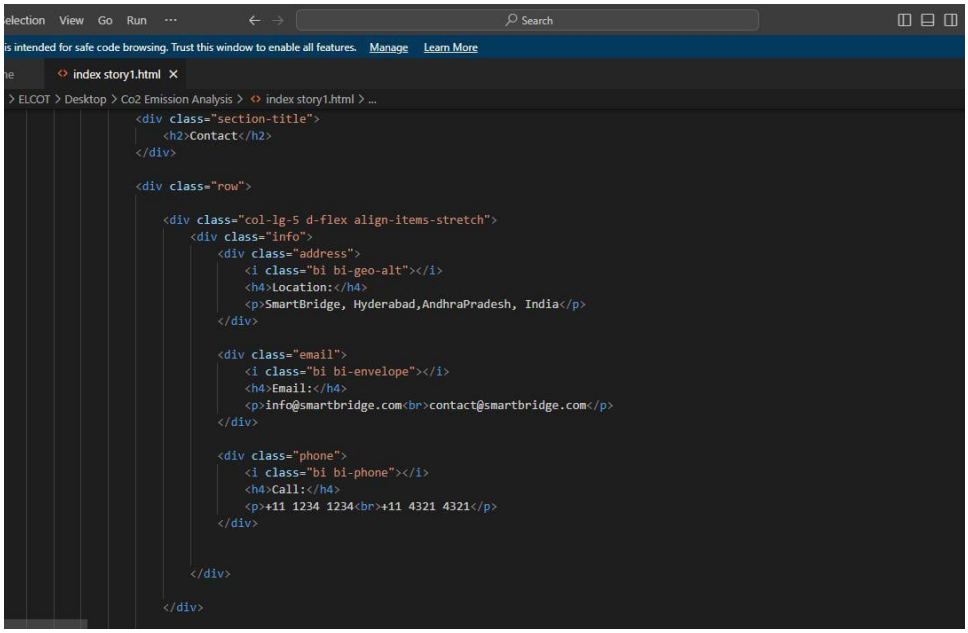
```
index story1.html
ELCOT > Desktop > Co2 Emission Analysis > index story1.html > ...
            </div>
        </section>
        <section id="report" class="skills">
            <div class="container" data-aos="fade-up">
                <div class="section-title">
                    <h2>Report</h2>

                </div>
                <div class="row content">
                    <div class="col-md-5 order-1 order-md-2" data-aos="fade-right" data-aos-delay="100">
                        <img src="assets/img/r1.jpg" class="img-fluid" alt="">
                    </div>
                    <div class="col-lg-6 pt-4 pt-lg-0 content" data-aos="fade-left" data-aos-delay="100">
                        <h3>Top Co2 Emitting countries for Past 10 Years</h3>
                        <br>
                        <p class="fst-italic">
                            China is the highest Co2 Emitting country among the other countries.
                        </p>
                        <p class="fst-italic">
                            United States is the second highest Co2 Emitting country.
                        </p>
                        <p class="fst-italic">
                            India is the Third highest Co2 Emitting country.
                        </p>
                    </div>
                </div>
                <br>
                <br>
```


index story1.html
ELCOT > Desktop > Co2 Emission Analysis > index story1.html > ...
}
var scriptElement = document.createElement('script');
scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);
</script>

<!-- End Why Us Section -->
<section id="services" class="services">

<h2>Story</h2>

<noscript><a href='#'><img alt='CO2 Emission Story ' src='https://public.tableau.com/static/images/
</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='path' value='shared/G4Q8N94F4' />
<param name='toolbar' value='yes' />
<param name='static_image' value='https://public.tableau.com/static/images/G4/G4Q8N94F4/1.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' /></object>


election View Go Run ···
Search
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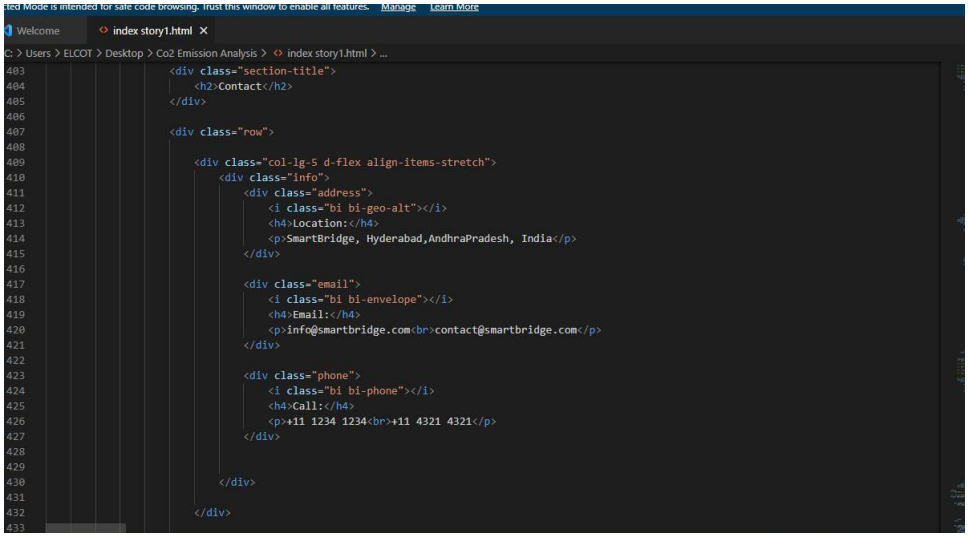
index story1.html
ELCOT > Desktop > Co2 Emission Analysis > index story1.html > ...

<h2>Contact</h2>

<h4>Location:</h4>
SmartBridge, Hyderabad,AndhraPradesh, India

<h4>Email:</h4>
info@smartbridge.com
contact@smartbridge.com

<h4>Call:</h4>
+11 1234 1234
+11 4321 4321


Welcome
index story1.html
C: > Users > ELCOT > Desktop > Co2 Emission Analysis > index story1.html > ...
403
404 <h2>Contact</h2>
405
406
407
408
409
410
411
412
413 <h4>Location:</h4>
414 SmartBridge, Hyderabad,AndhraPradesh, India
415
416
417
418
419 <h4>Email:</h4>
420 info@smartbridge.com
contact@smartbridge.com
421
422
423
424
425 <h4>Call:</h4>
426 +11 1234 1234
+11 4321 4321
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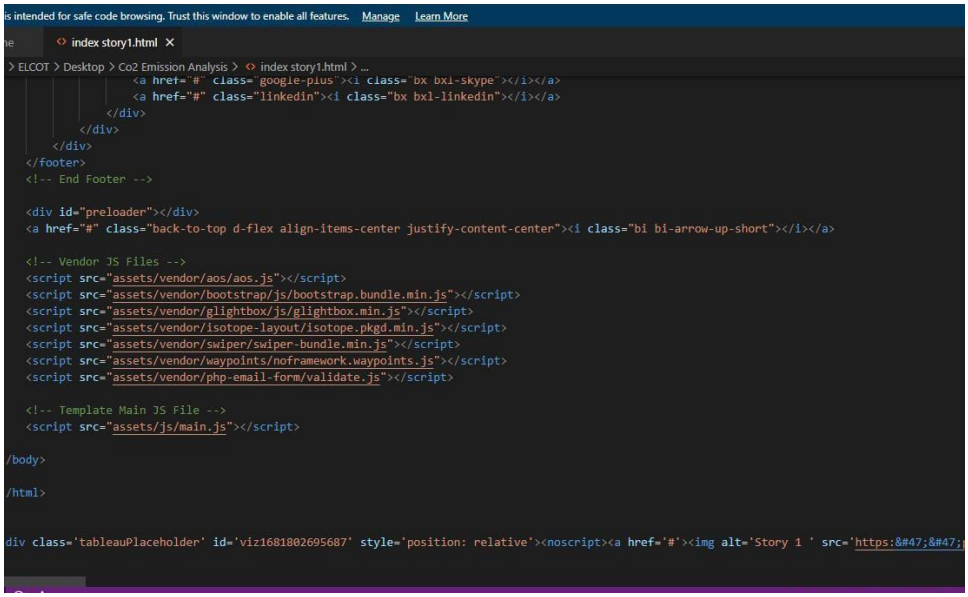
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index story1.html
ELCOT > Desktop > Co2 Emission Analysis > index story1.html > ...

</footer>
<!-- End Footer -->

<!-- Vendor JS Files -->
<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/waypoints/noframework.waypoints.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>
div class='tableauPlaceholder' id='viz1681802695687' style='position: relative'><noscript><a href='#'><img alt='Story 1 ' src='https://