

A GLOBAL CO₂ EMISSION ANALYSIS

1. Introduction

1.1 Overview

Carbon dioxide emissions, primarily from the combustion of fossil fuels, have risen dramatically since the start of the industrial revolution. Most of the world's greenhouse gas emissions come from a relatively small number of countries

Carbon dioxide emissions or CO₂ emissions are **emissions stemming from the burning of fossil fuels and the manufacture of cement**; they include carbon dioxide produced during consumption of solid, liquid, and gas fuels as well as gas flaring.

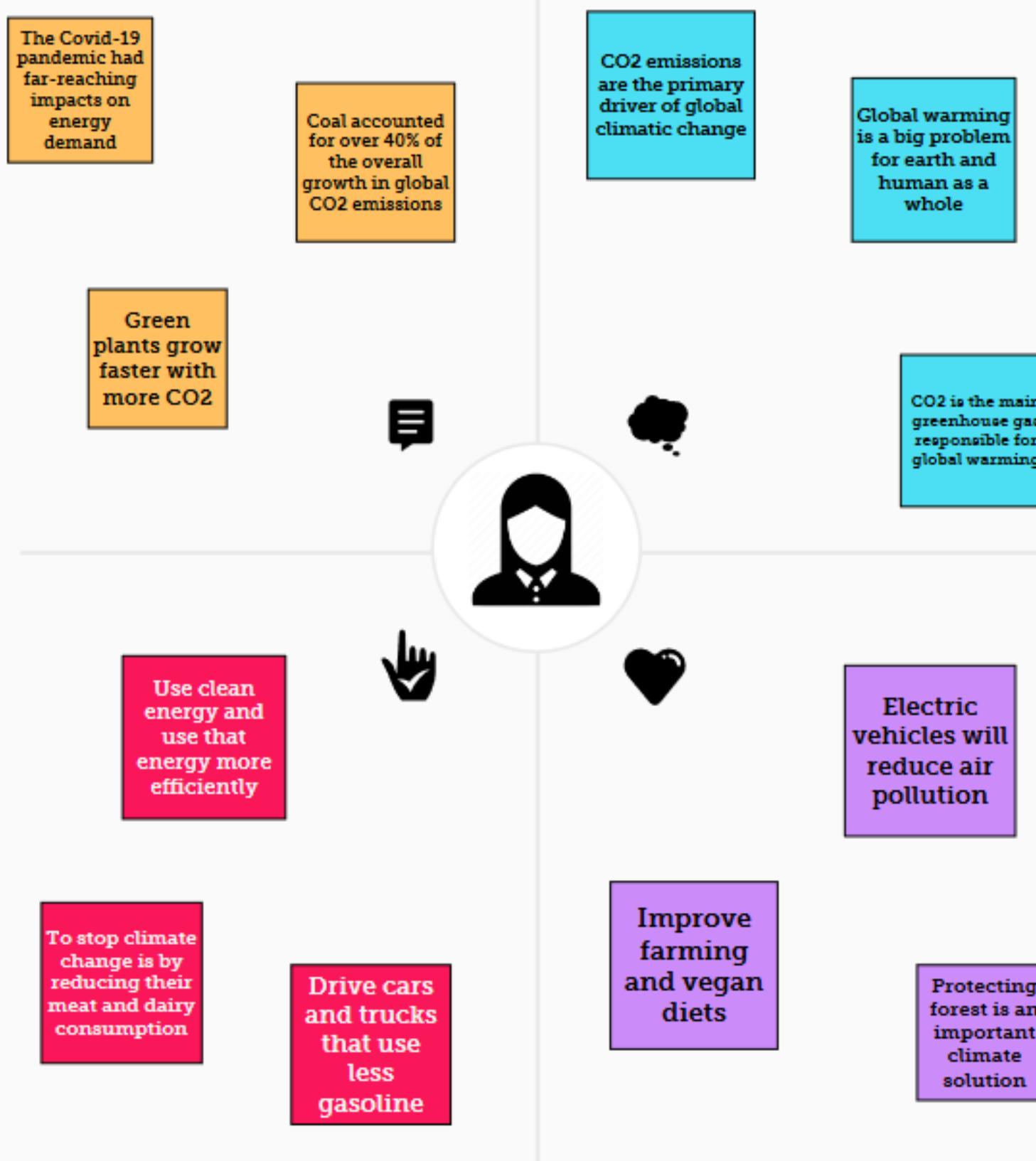
1.2 Purpose

Emission control refers to all measures taken to reduce the amount of pollutants emitted by combustion engines fueled by fossil energy sources. The term is most widely used to describe (passenger or transport) vehicle emissions control, but can also refer to industrial, aviation or marine emissions.

2. PROBLEM DESIGNING AND DESIGN THINKING

2.1 Empathy Map

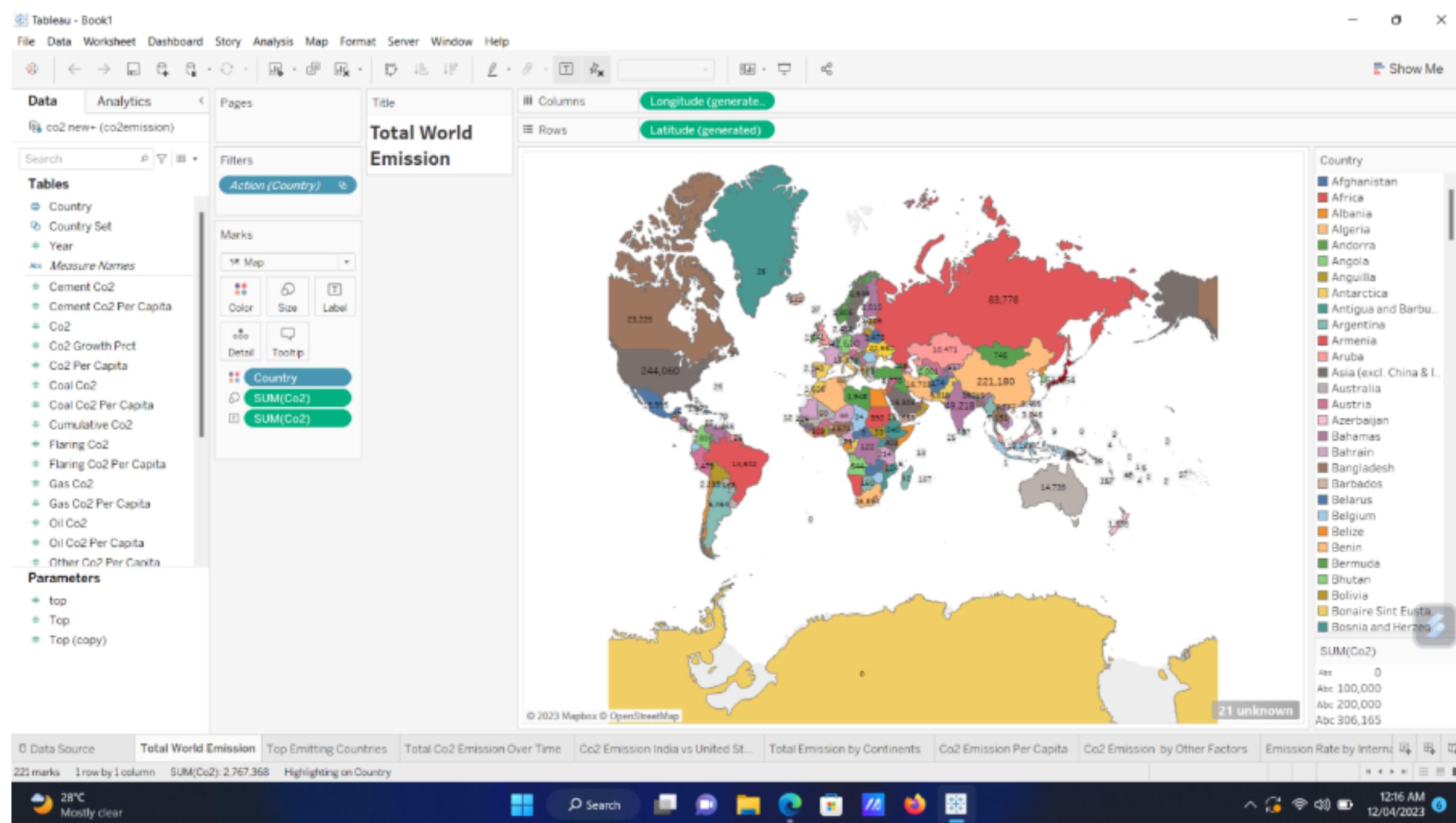
A GLOBAL CO₂ EMISSION ANALYSIS

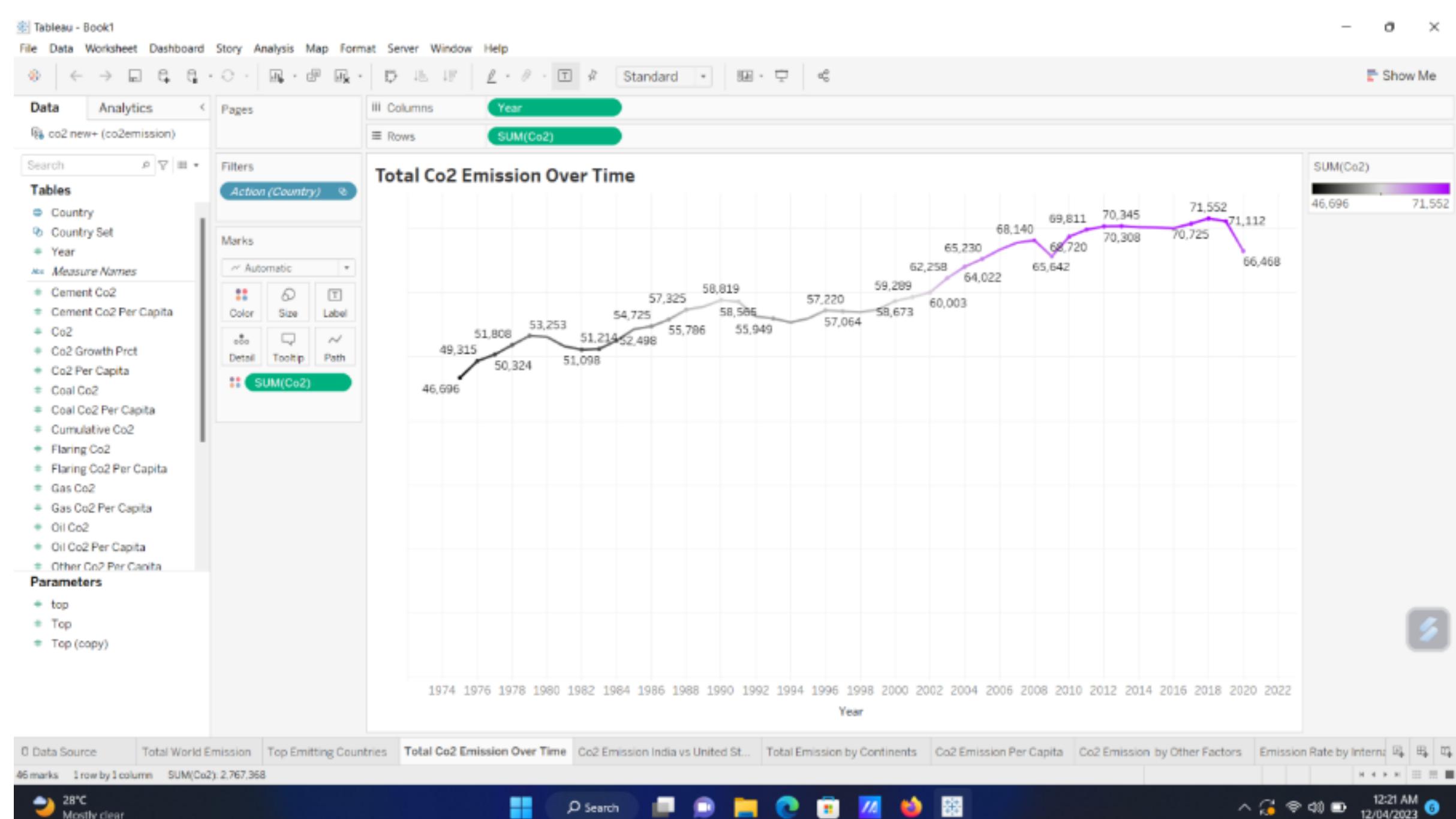
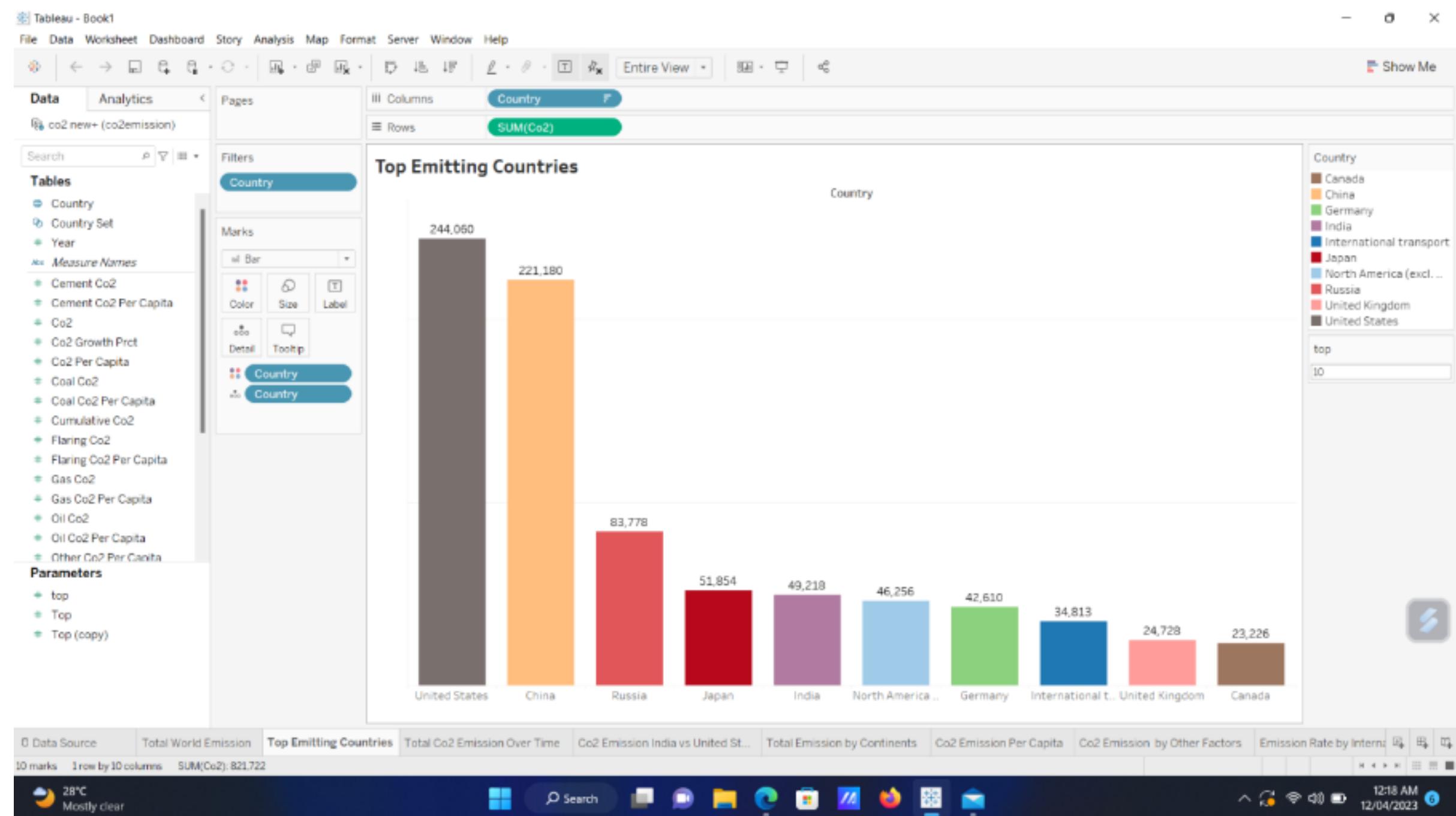


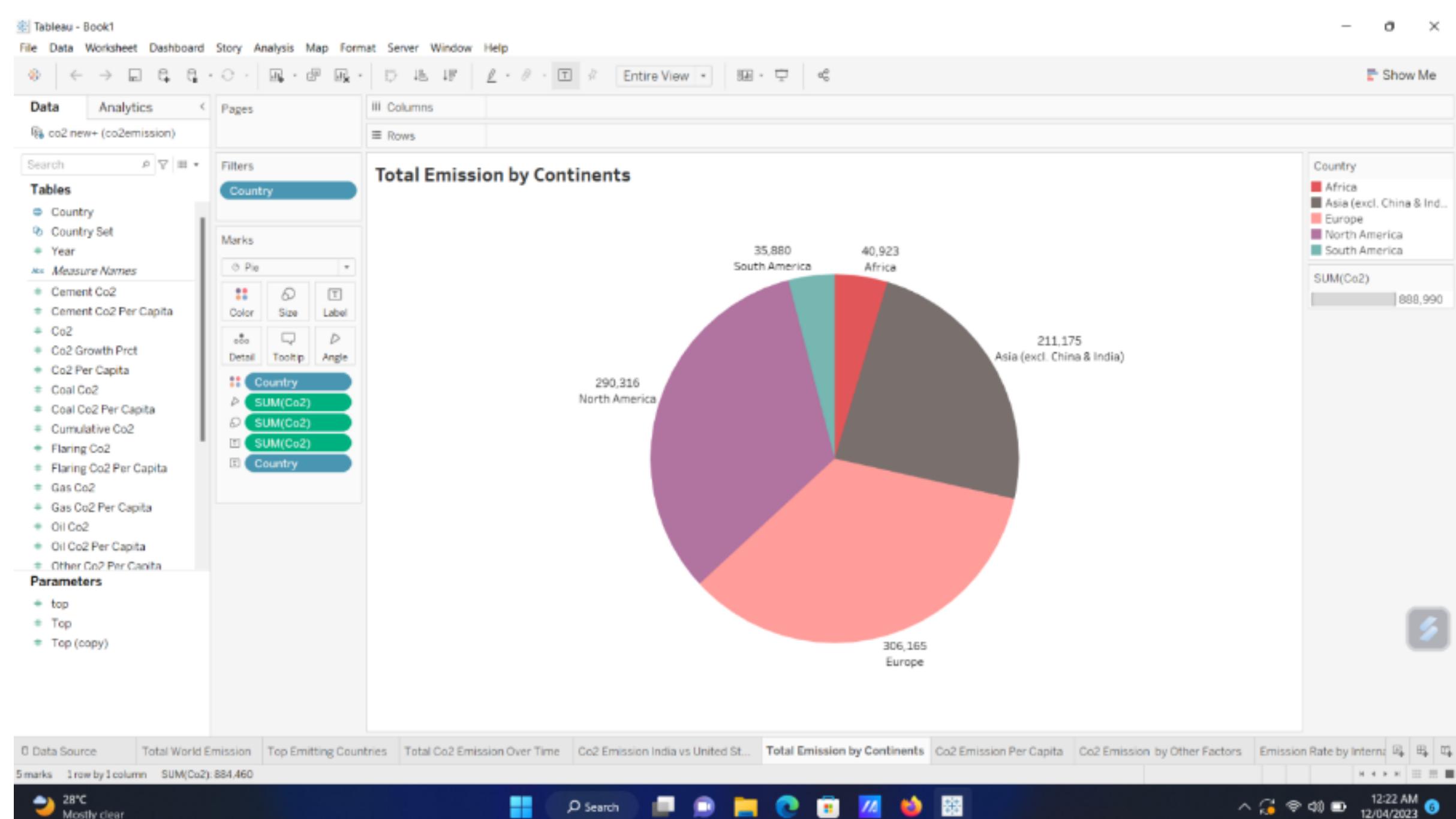
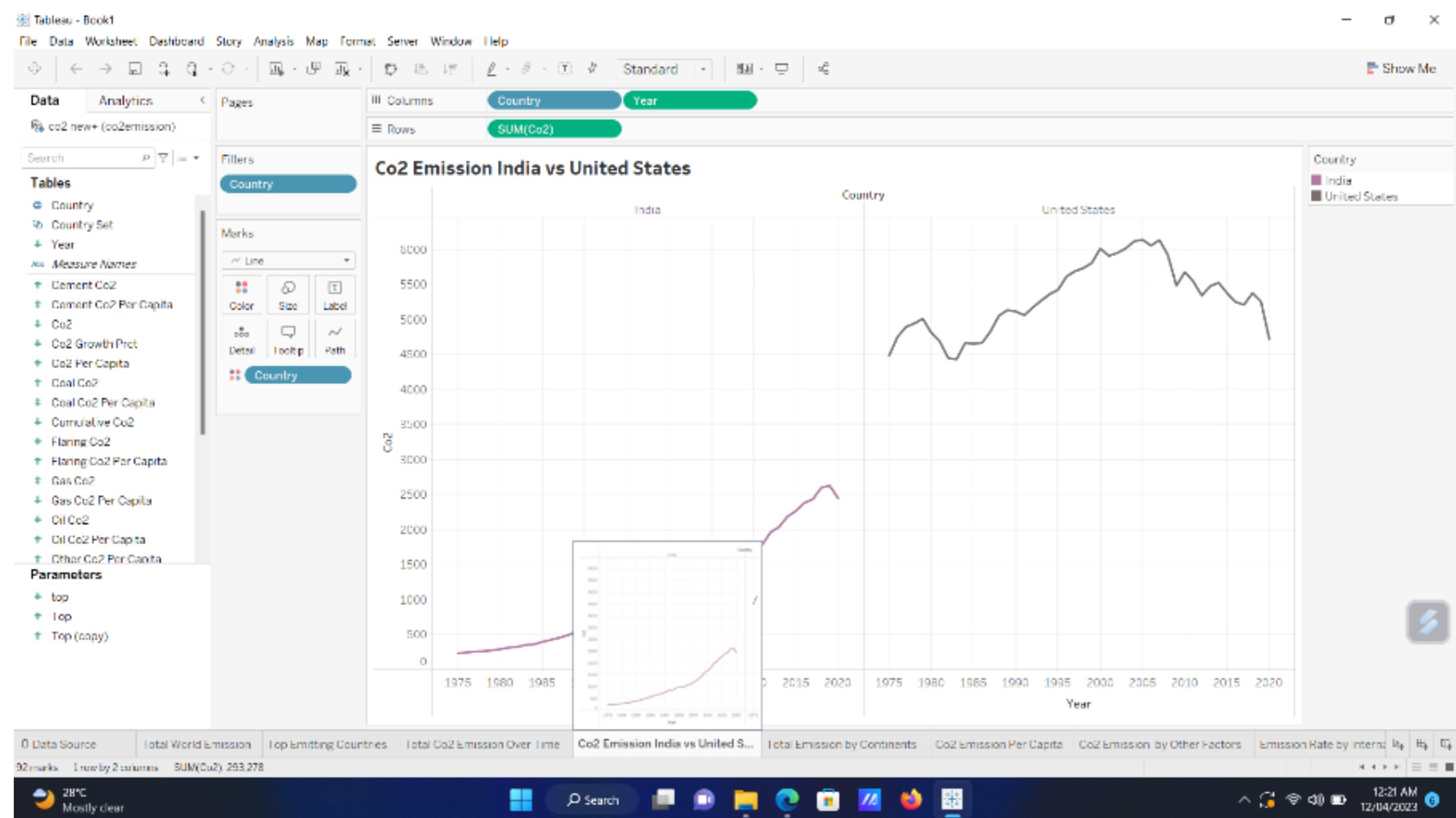
| 2.2 Ideation and Brainstorming Map

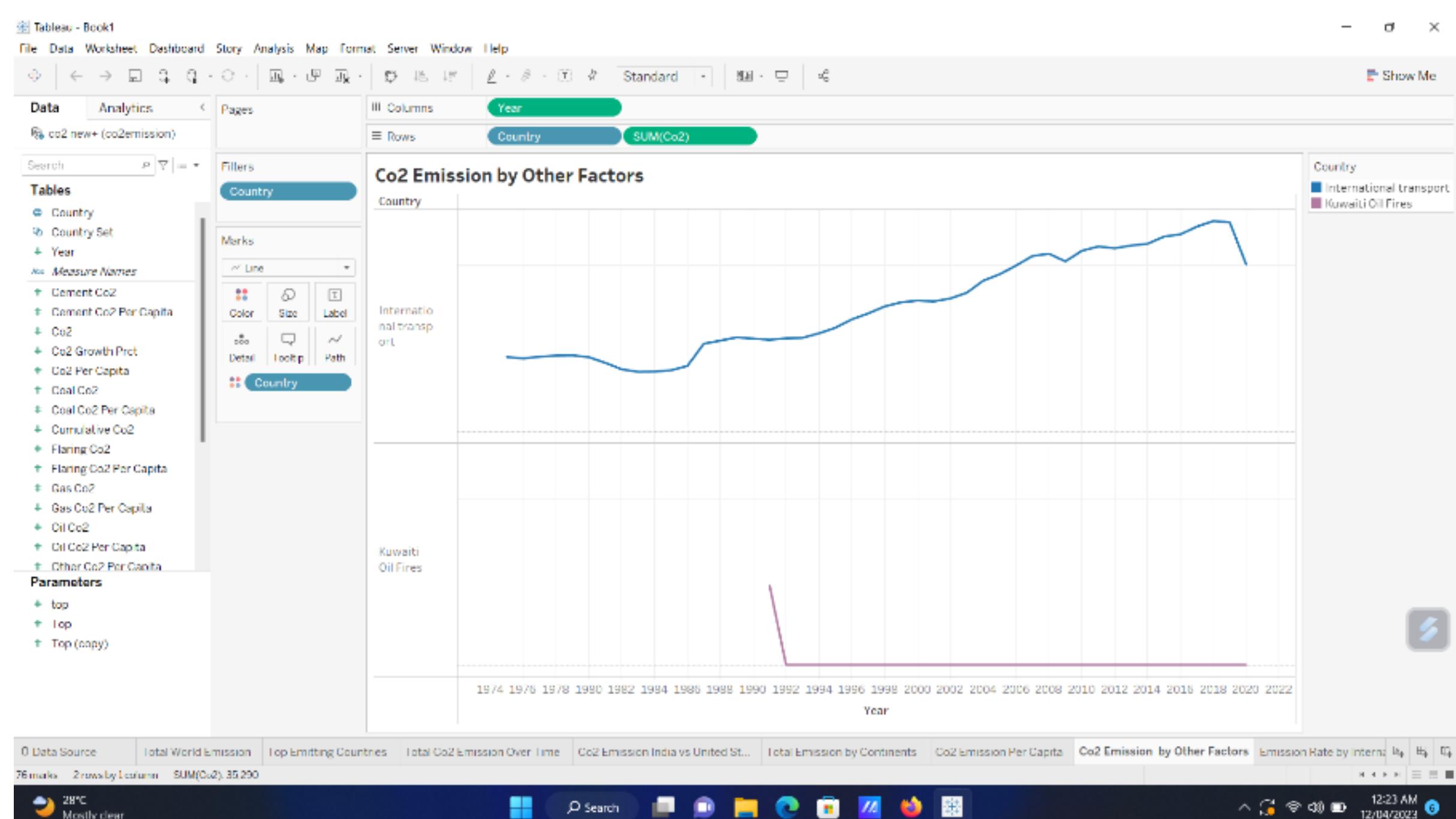
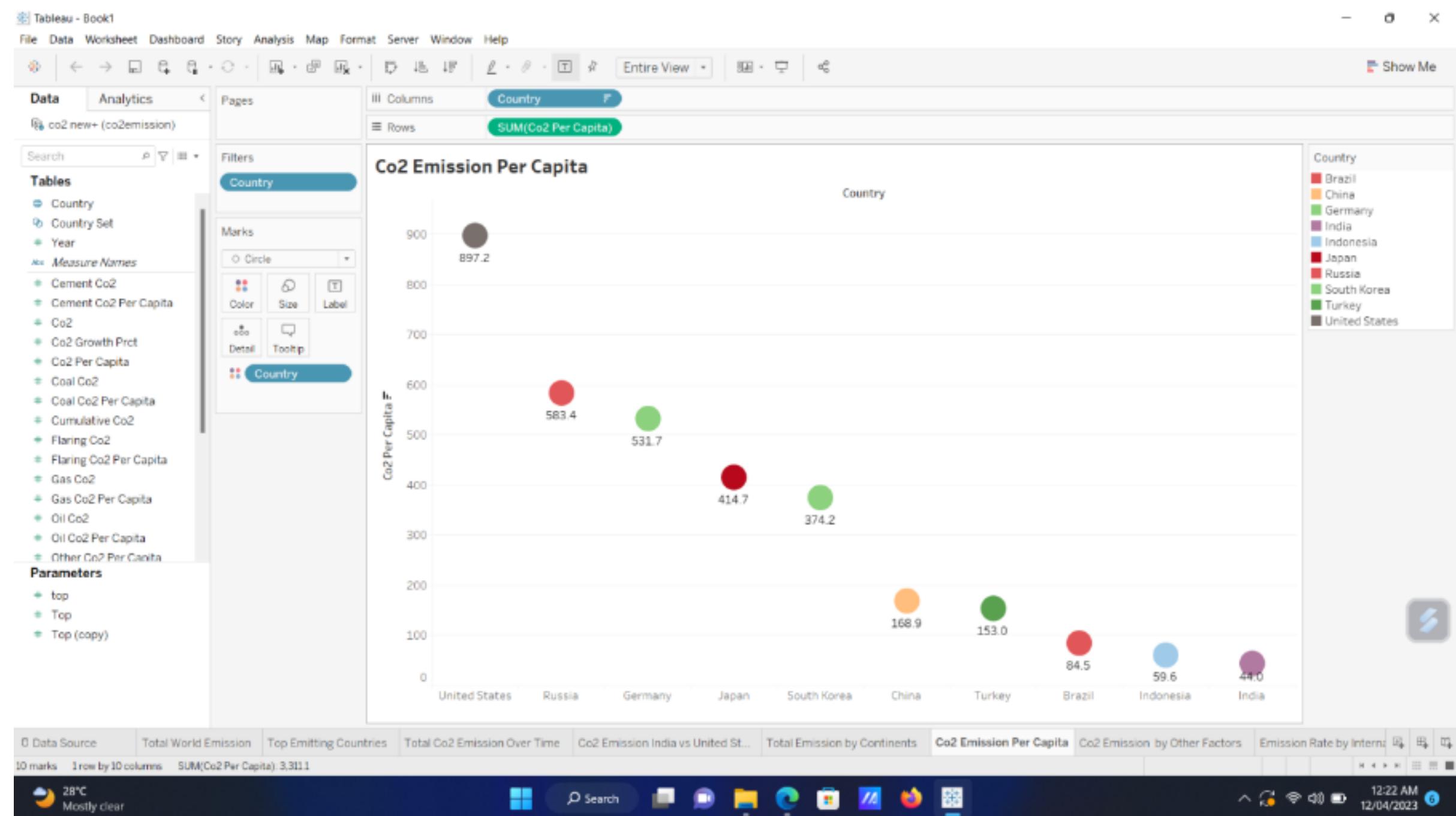


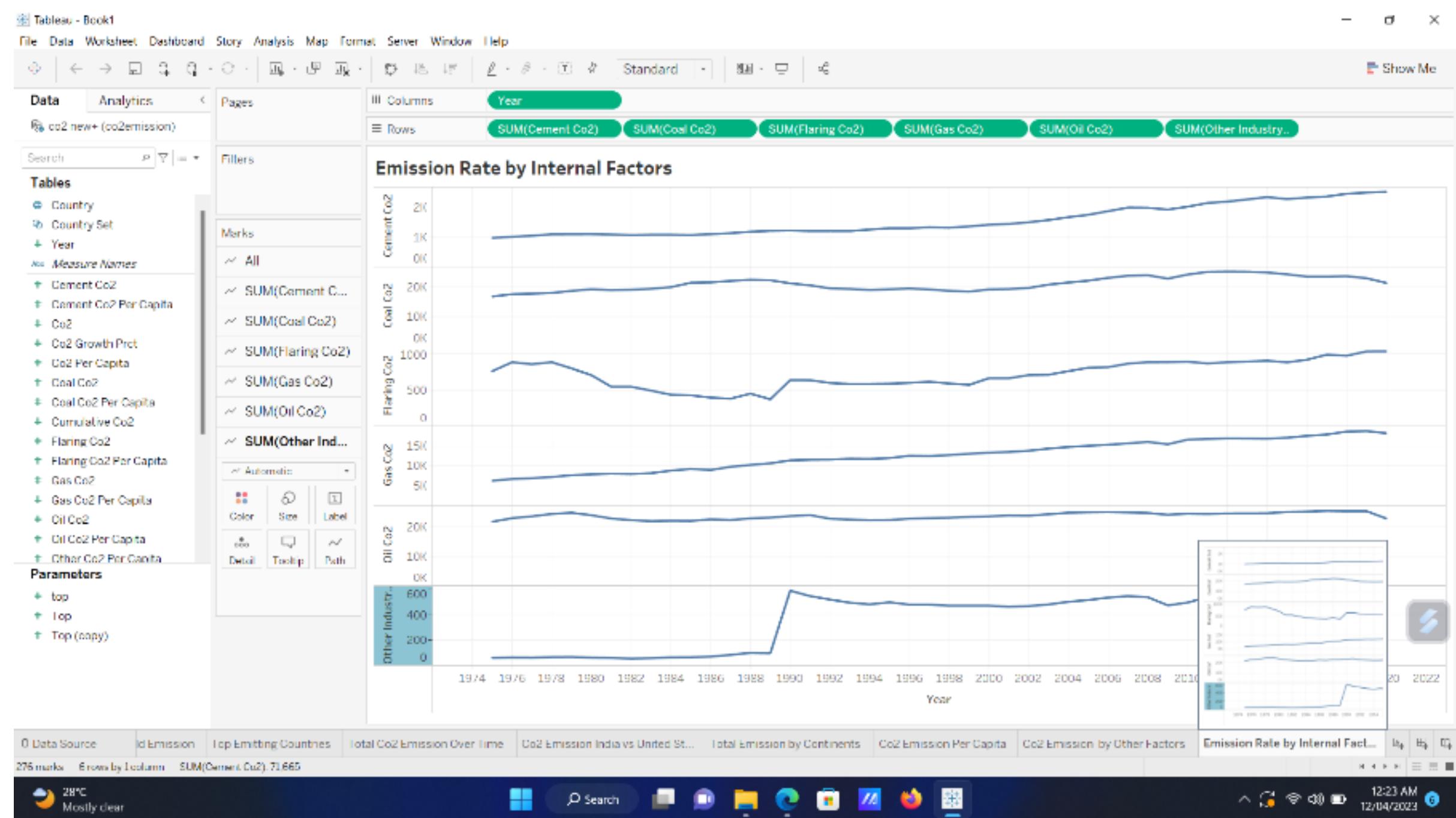
3. RESULT

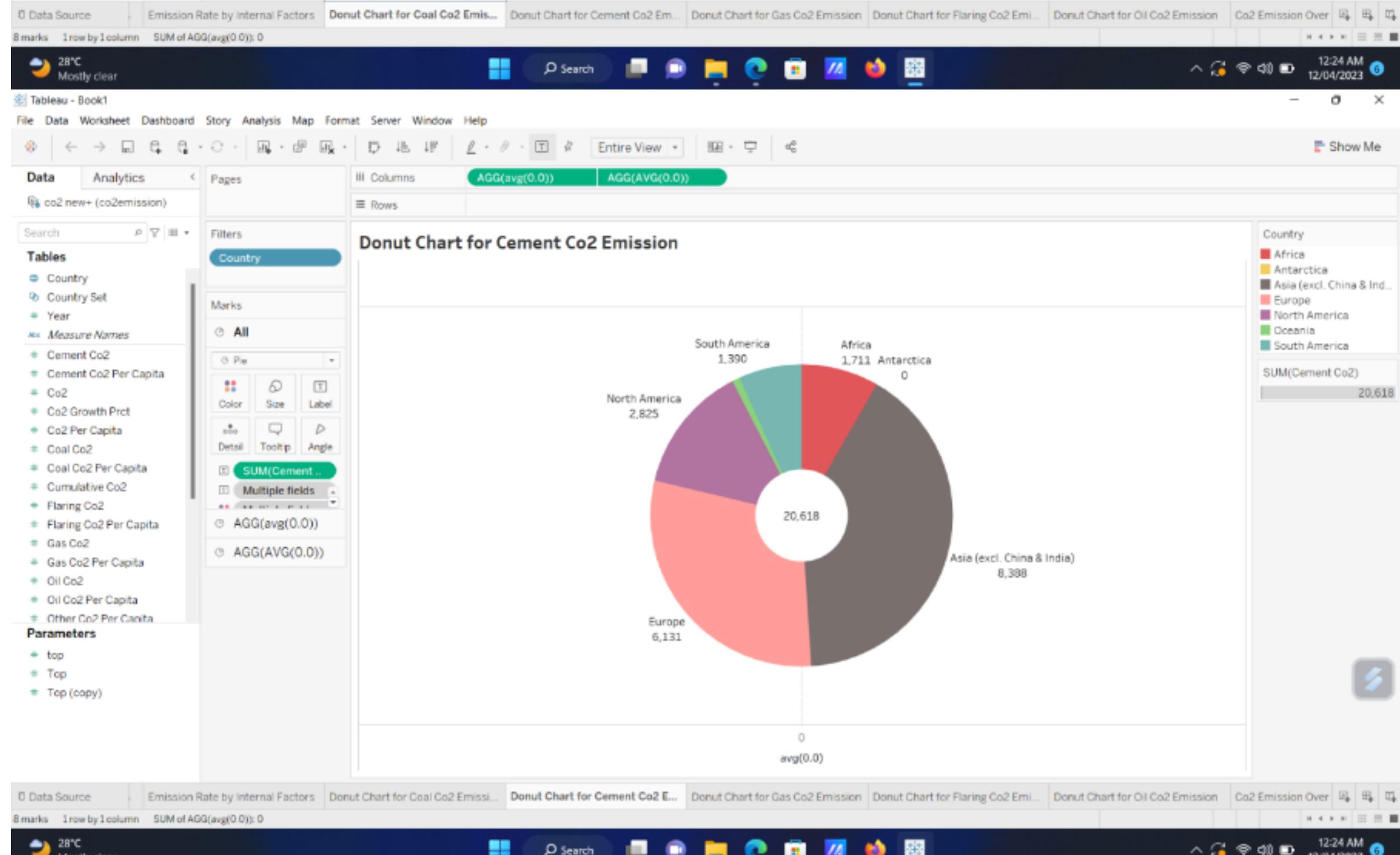
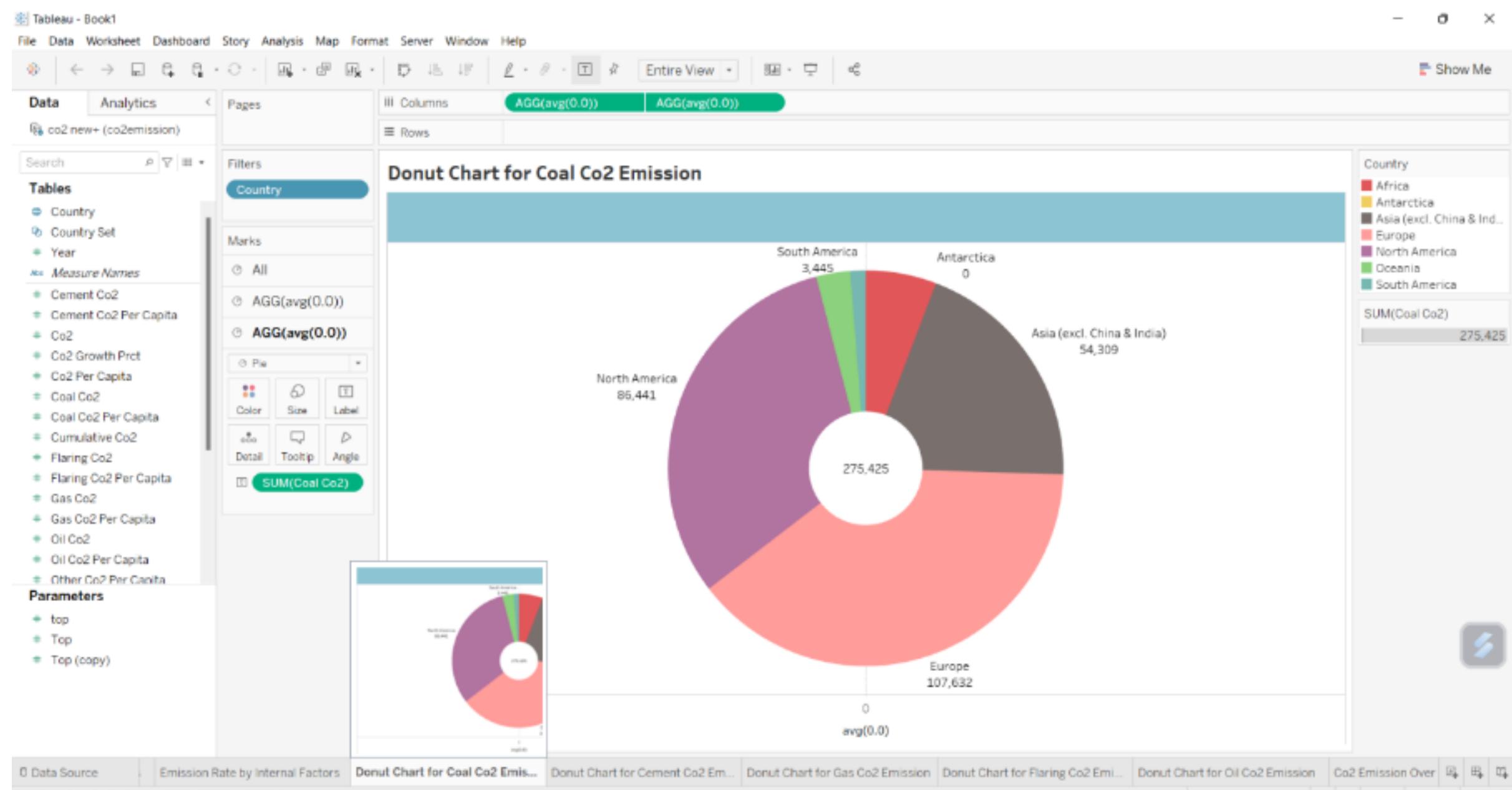


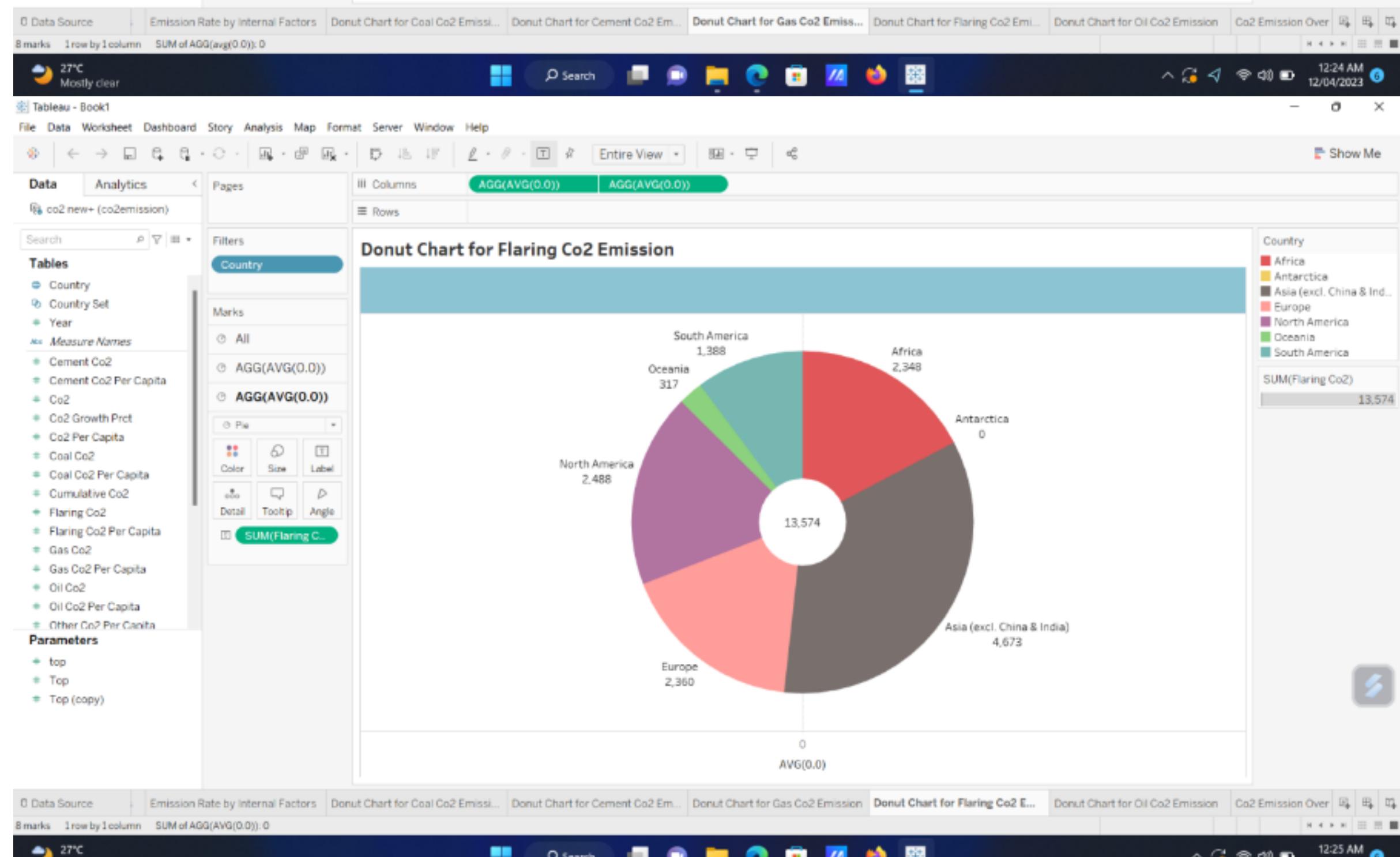
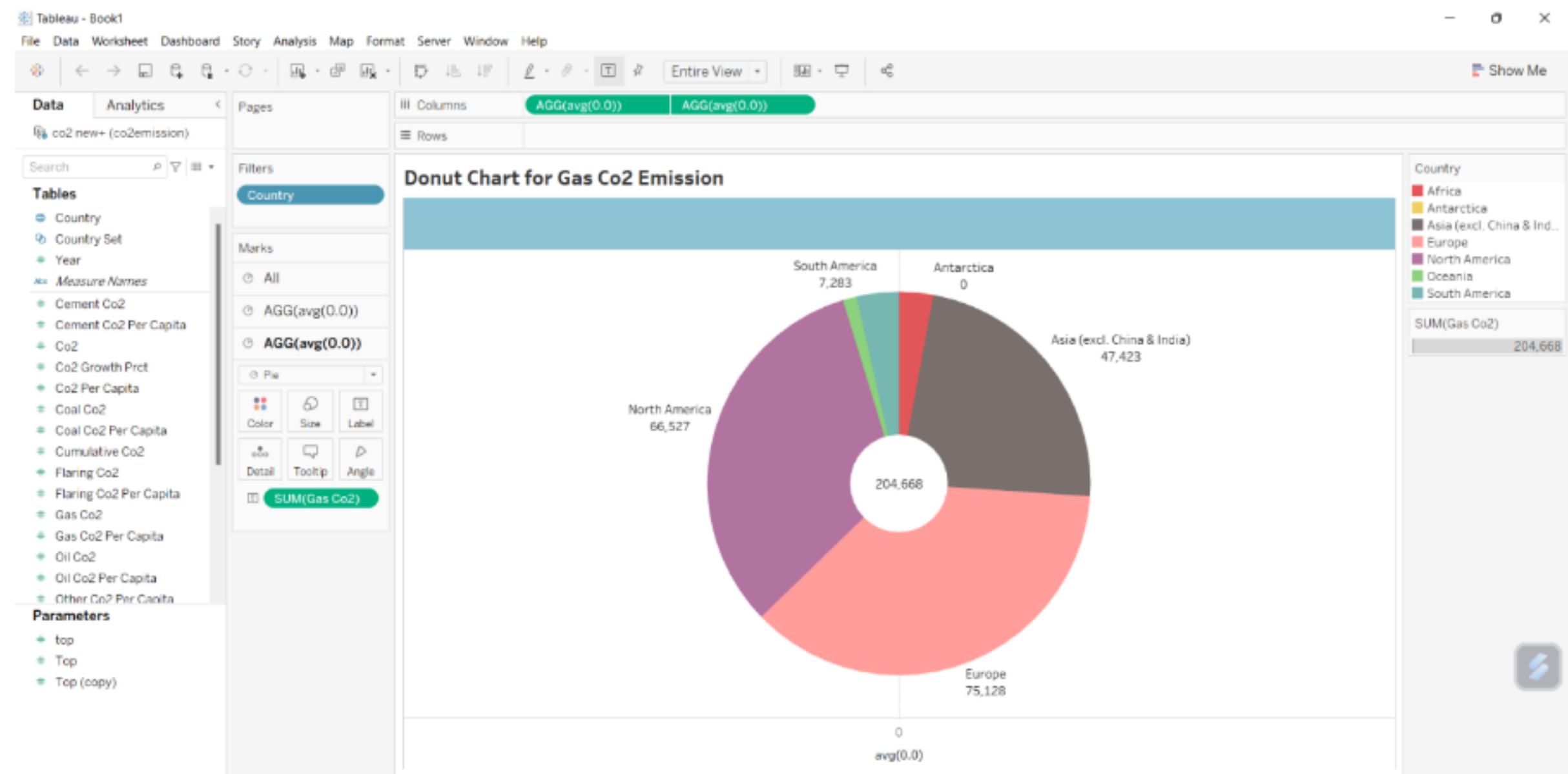


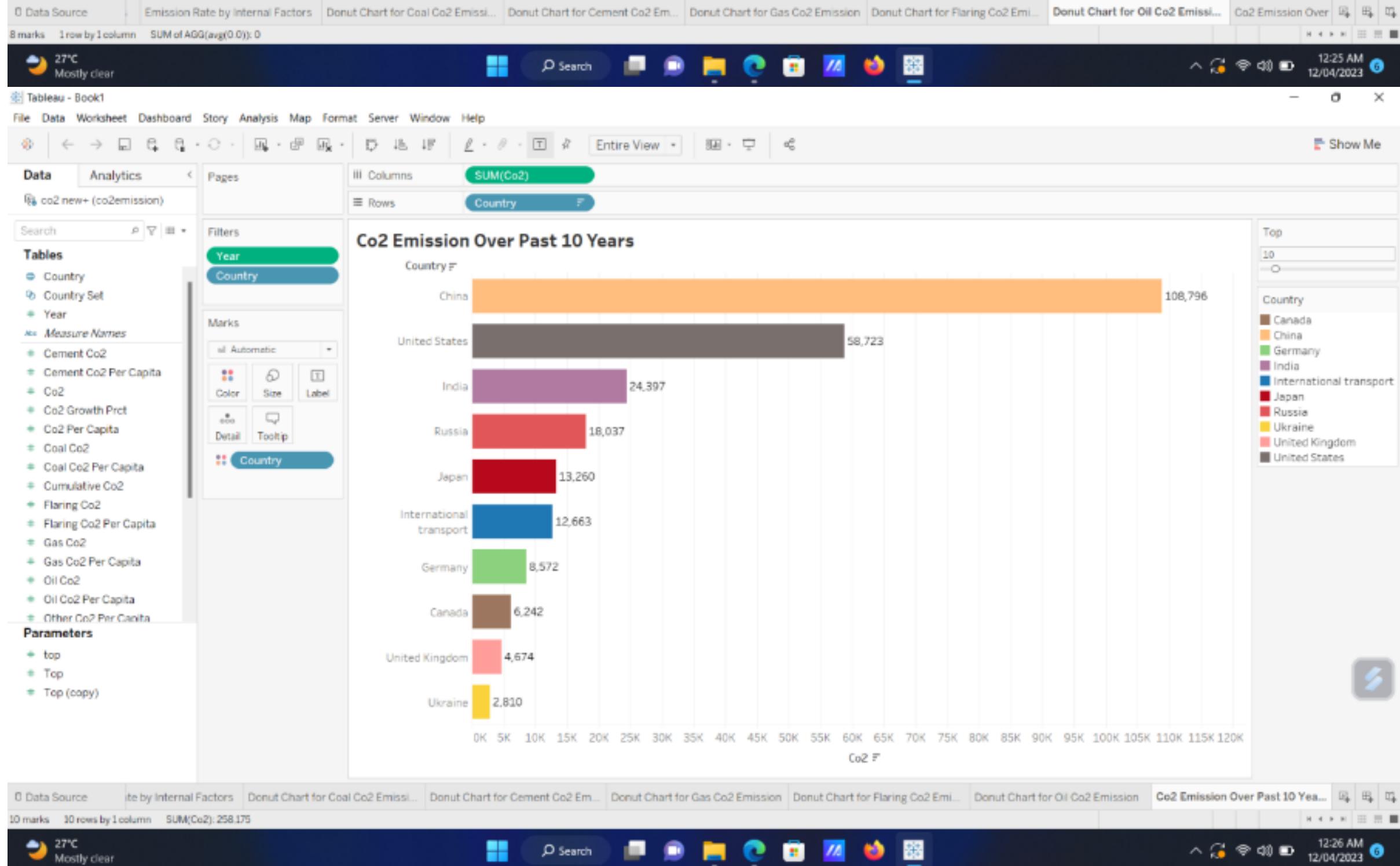
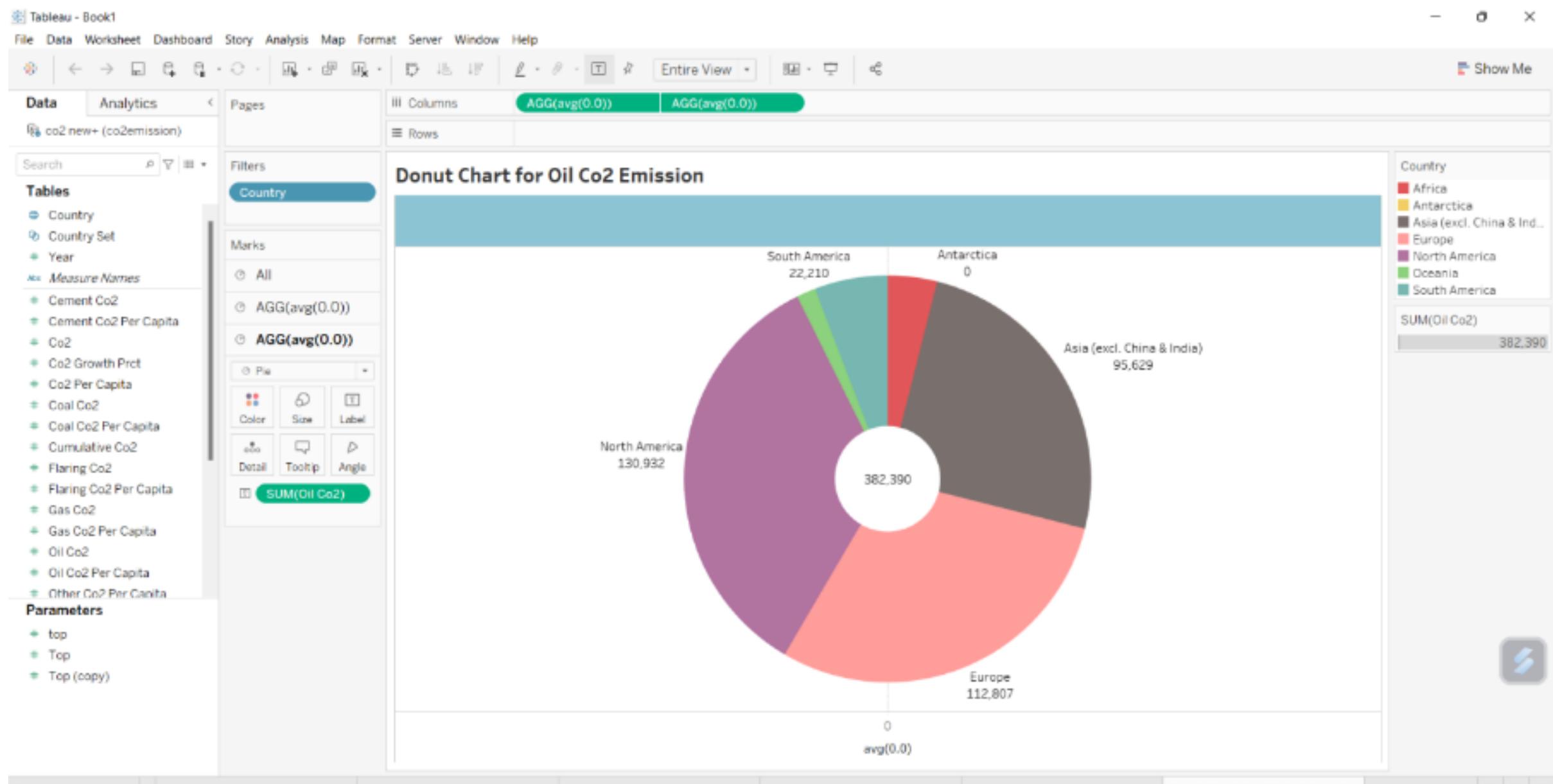


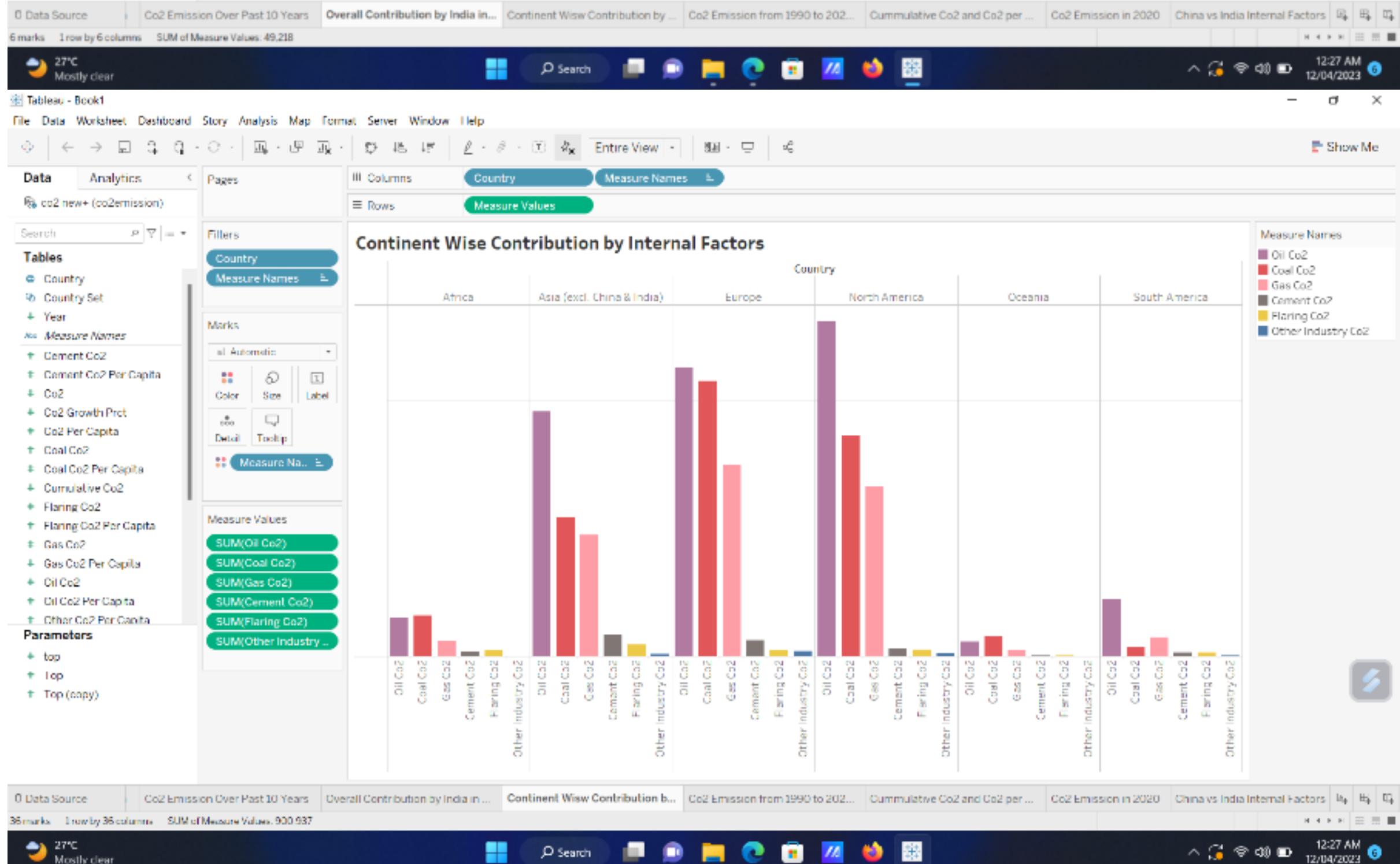
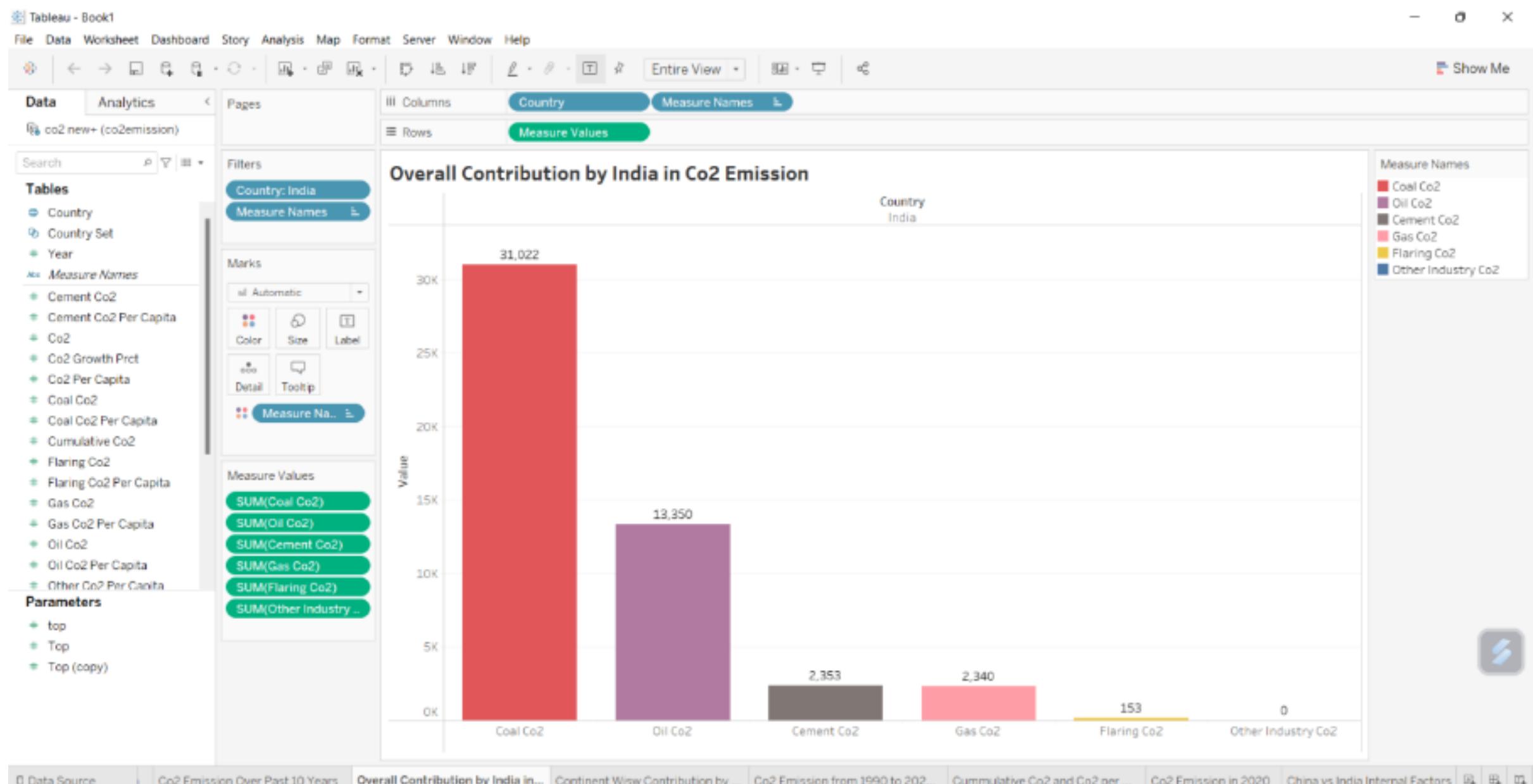


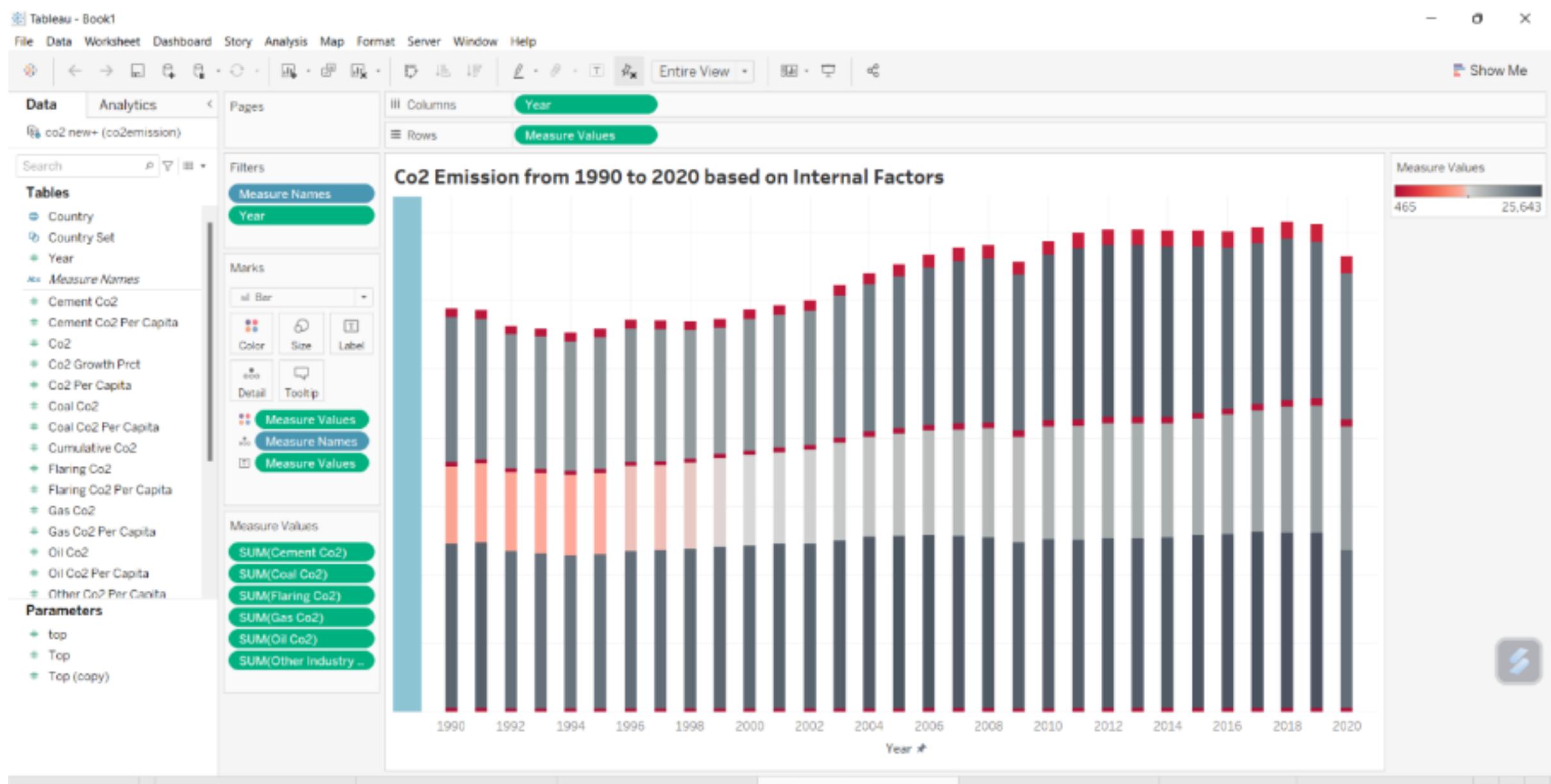












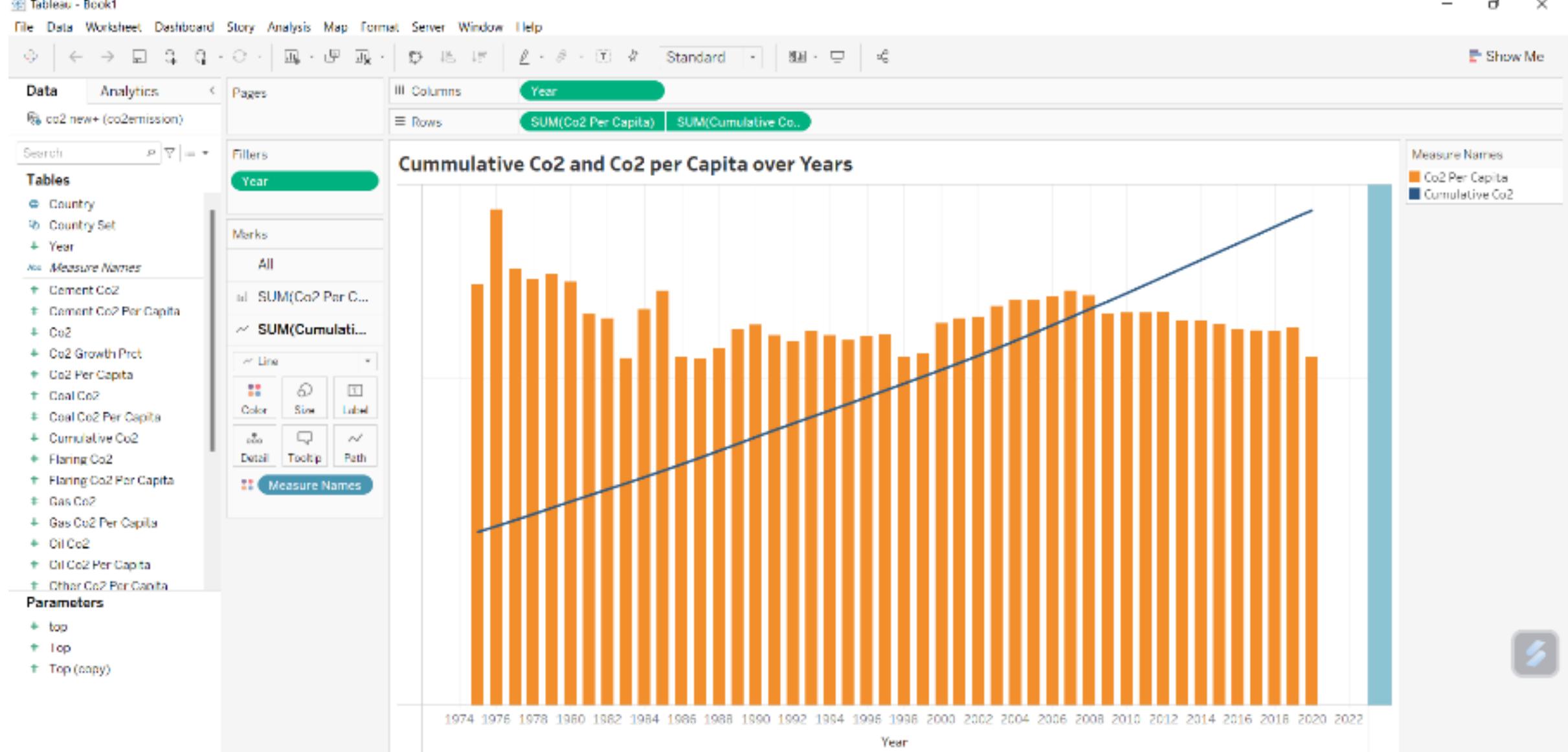
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186 marks 1 row by 1 column SUM of Measure Values: 1976.525

27°C Mostly clear

Search

12:29 AM 12/04/2023



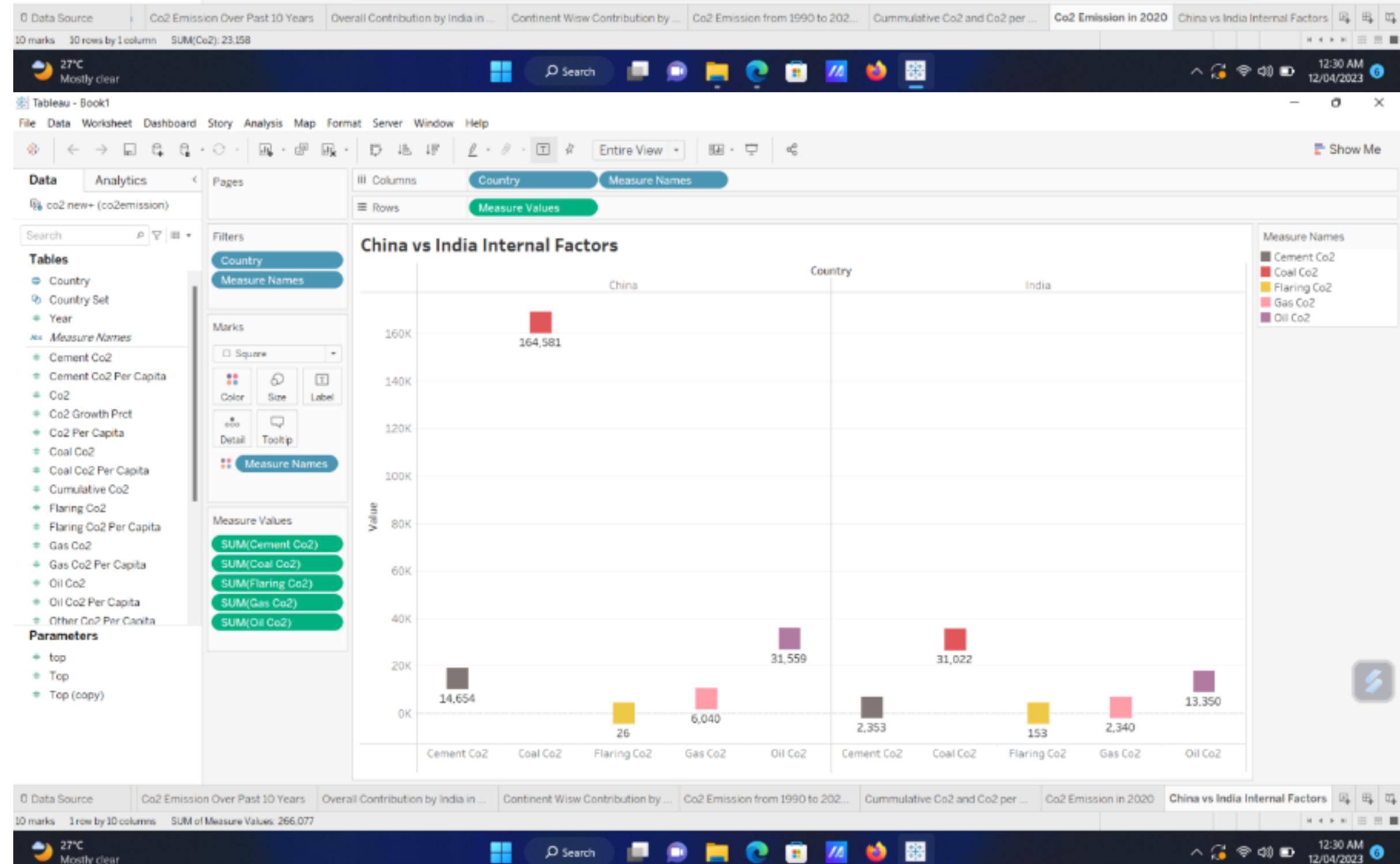
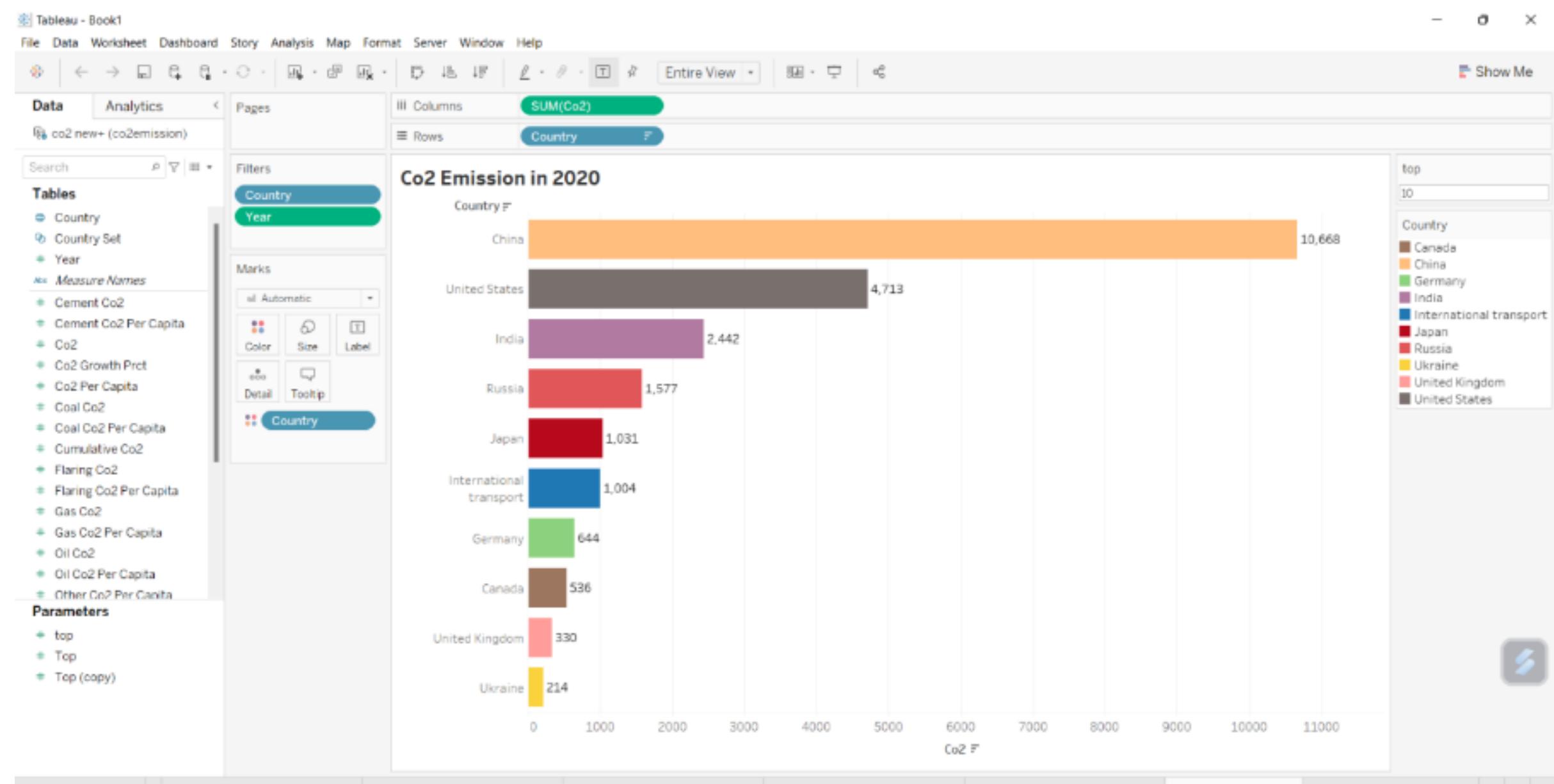
0 Data Source | Co2 Emission Over Past 10 Years | Overall Contribution by India in ... | Continent Wisw Contribution by ... | Co2 Emission from 1990 to 2020 | Cumulative Co2 and Co2 per ... | Co2 Emission in 2020 | China vs India Internal Factors | H B

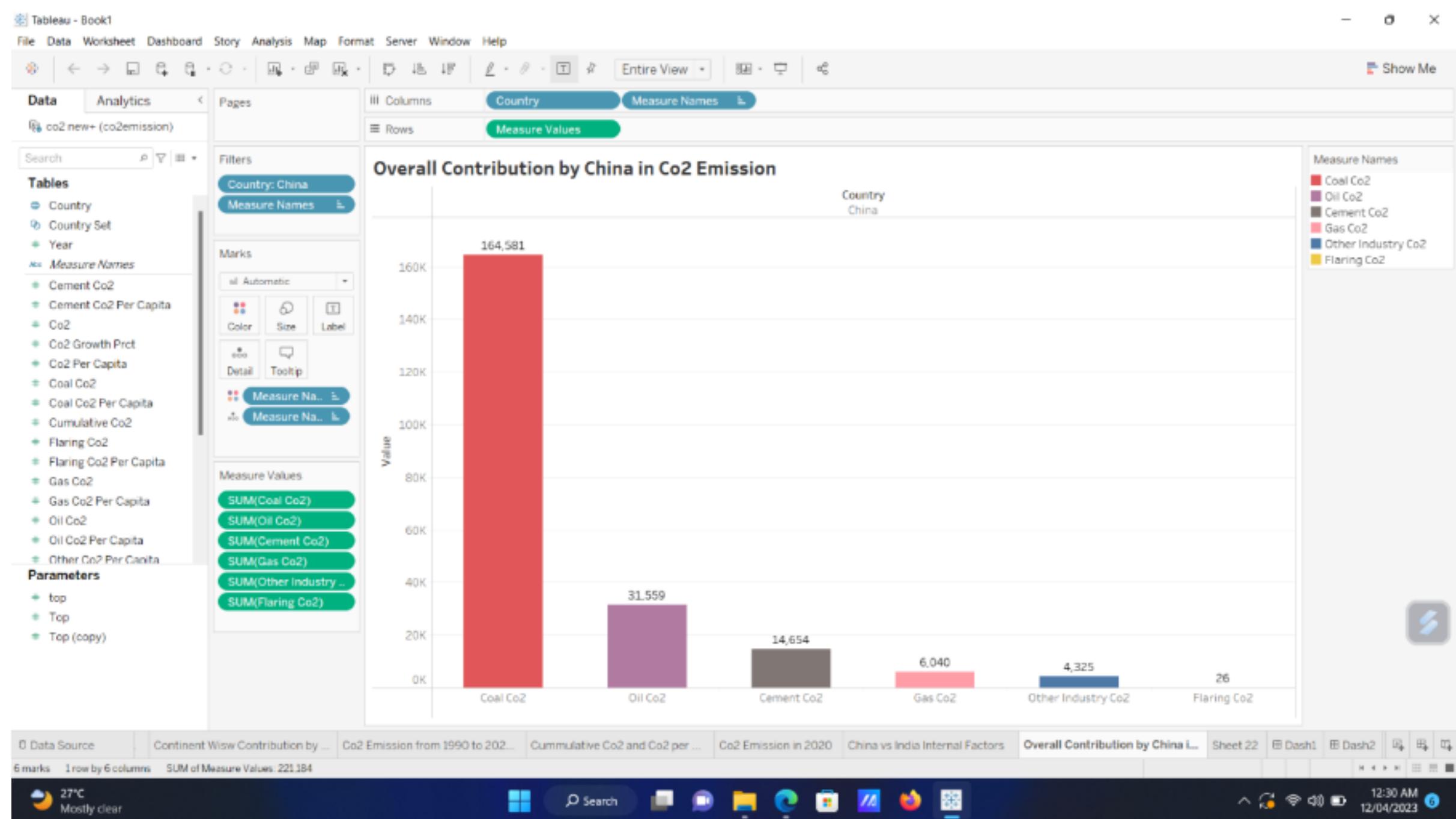
92 marks 1 row by 1 column SUM(Co2 Per Capita): 54,531.6

27°C Mostly clear

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4. ADVANTAGES & DISADVANTAGES

ADVANTAGES

- ☒ **Green plants grow faster with more CO₂.**
- ☒ Many also become more drought- resistant because higher CO₂ levels allow plants to use water more efficiently.
- ☒ More abundant vegetation from increased CO₂ is already apparent.

Disadvantages

- ☒ High carbon dioxide levels can cause **poor air quality** and can even extinguish pilot lights on gas-powered appliances.
- ☒ Nevertheless, the main disadvantages of MEA in CO₂ absorption are that **MEA is volatile and prone to oxidative degradation and thermal degradation, leading to a large amount of solvent loss** .
- ☒ Carbon dioxide (CO₂) released into the oceans as a result of water pollution by nutrients – a major source of this greenhouse gas that

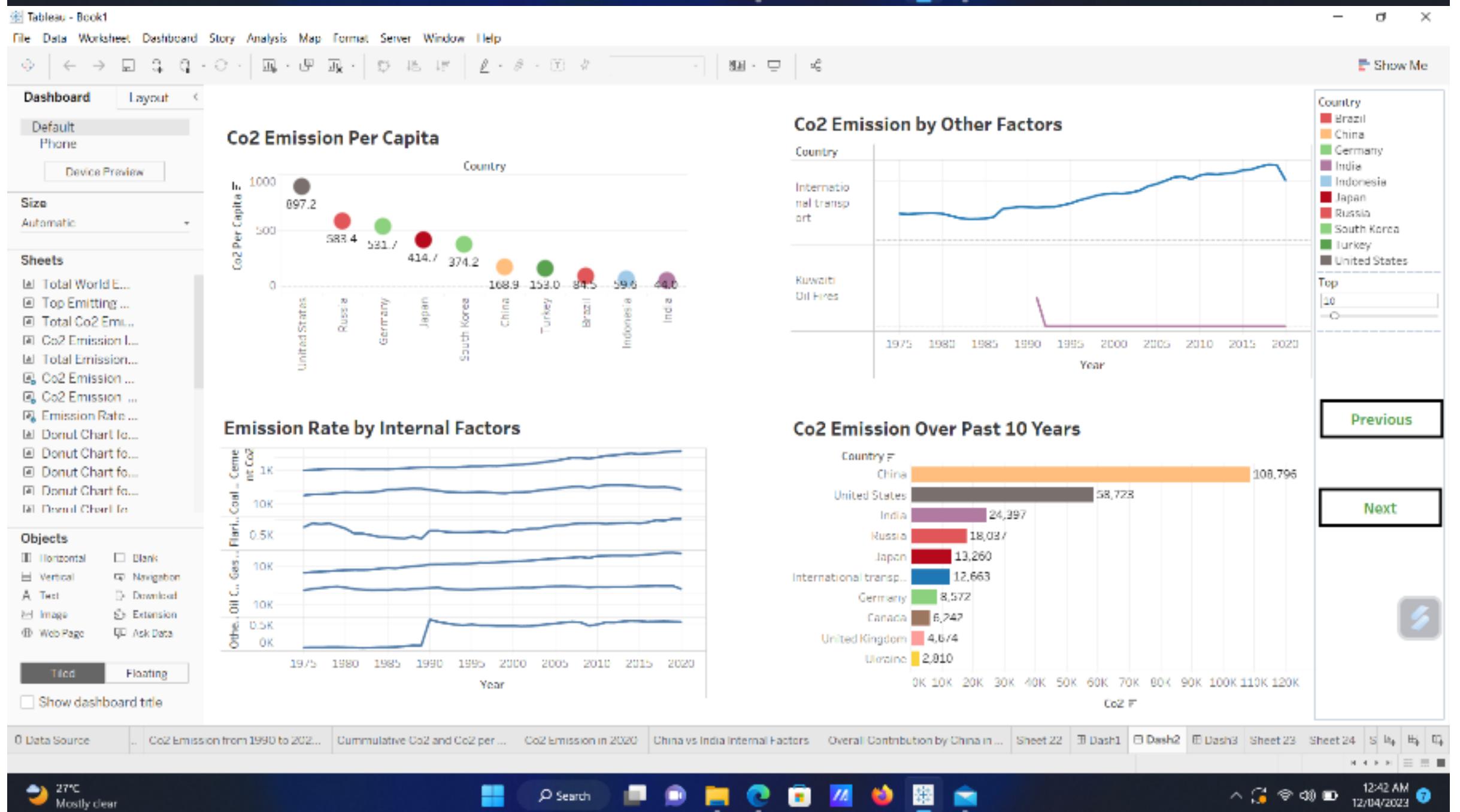
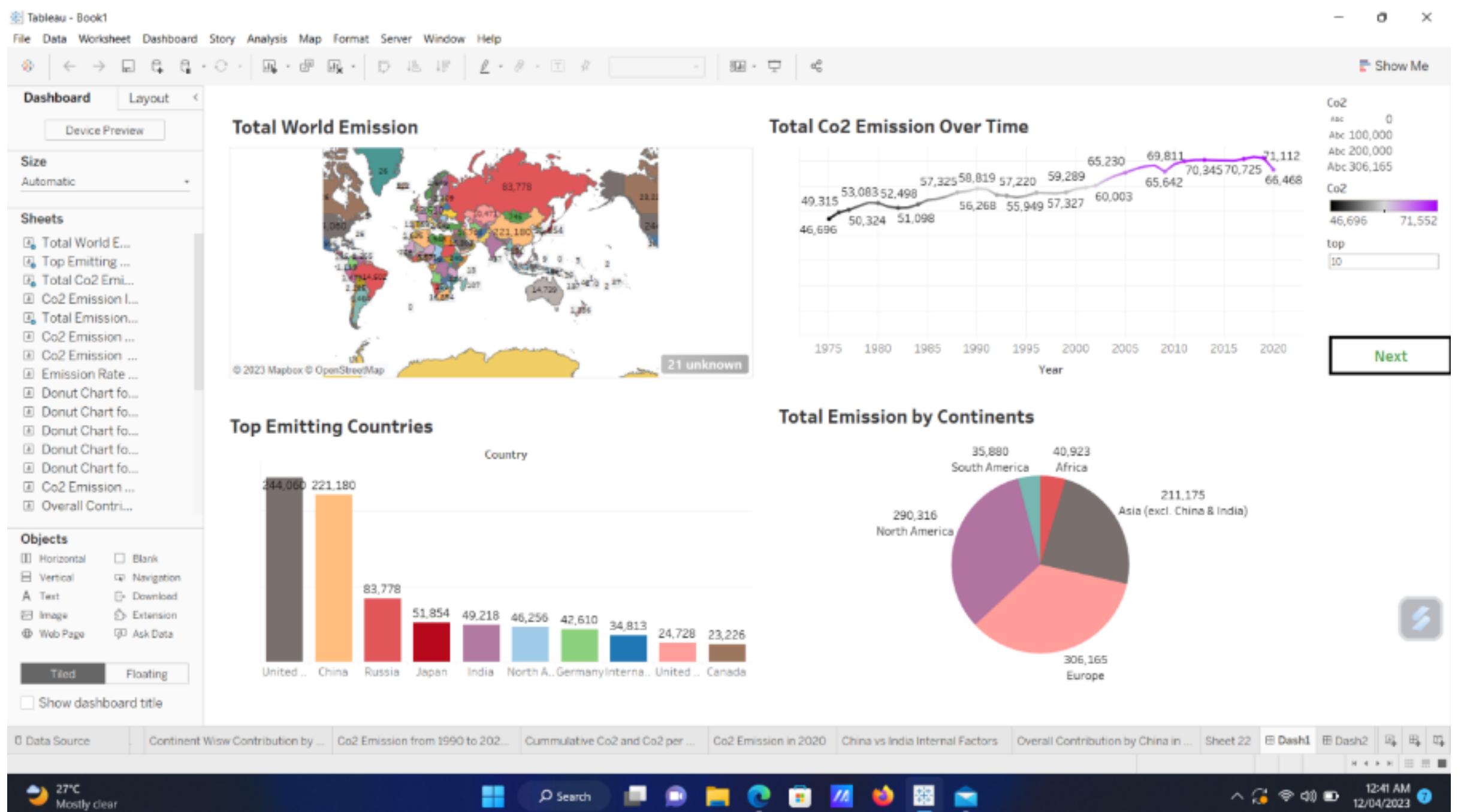
gets little public attention — is **enhancing the unwanted changes in ocean acidity due to atmospheric increases in CO₂**.

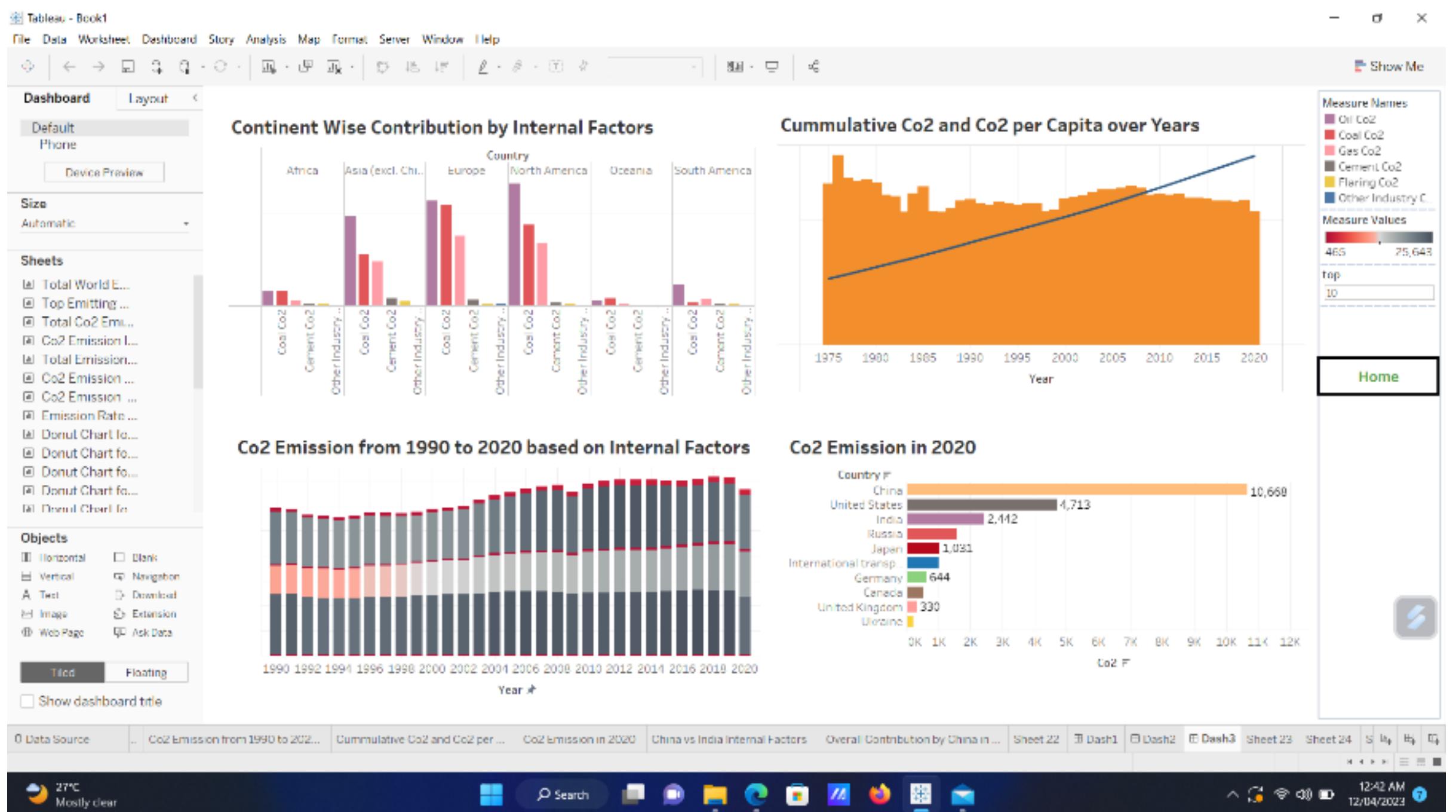
5.APPLICATIONS

New opportunities to use carbon dioxide (CO₂) in the development of products and services are capturing the attention of governments, industry and the investment community interested in mitigating climate change as well as in other factors, including technology leadership and supporting a circular economy. This analysis considers the near-term market potential for five key categories of CO₂-derived products and services: fuels, chemicals, building materials from minerals, building materials from waste, and CO₂ use to enhance the yields of biological processes.

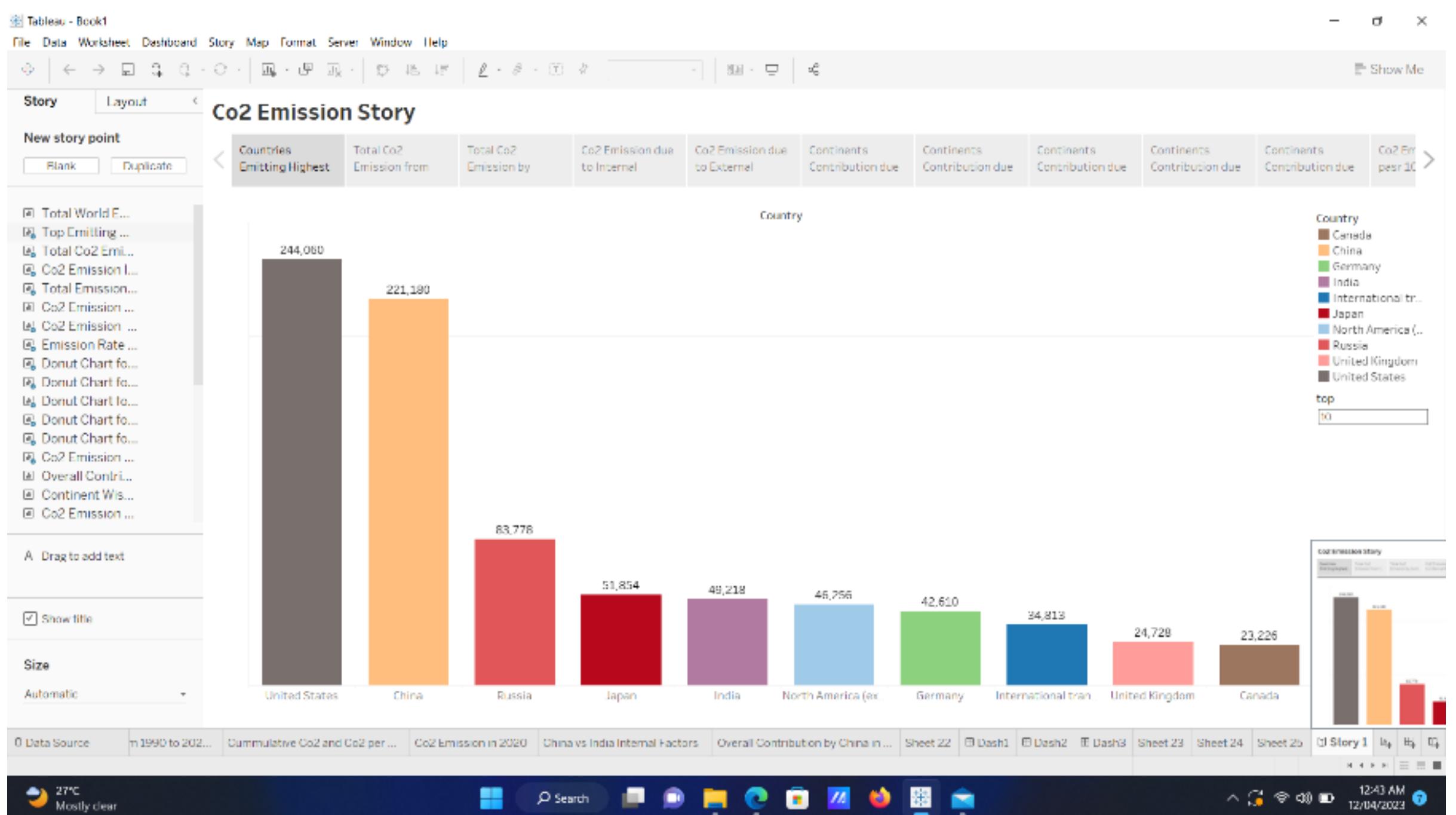
6.CONCLUSION

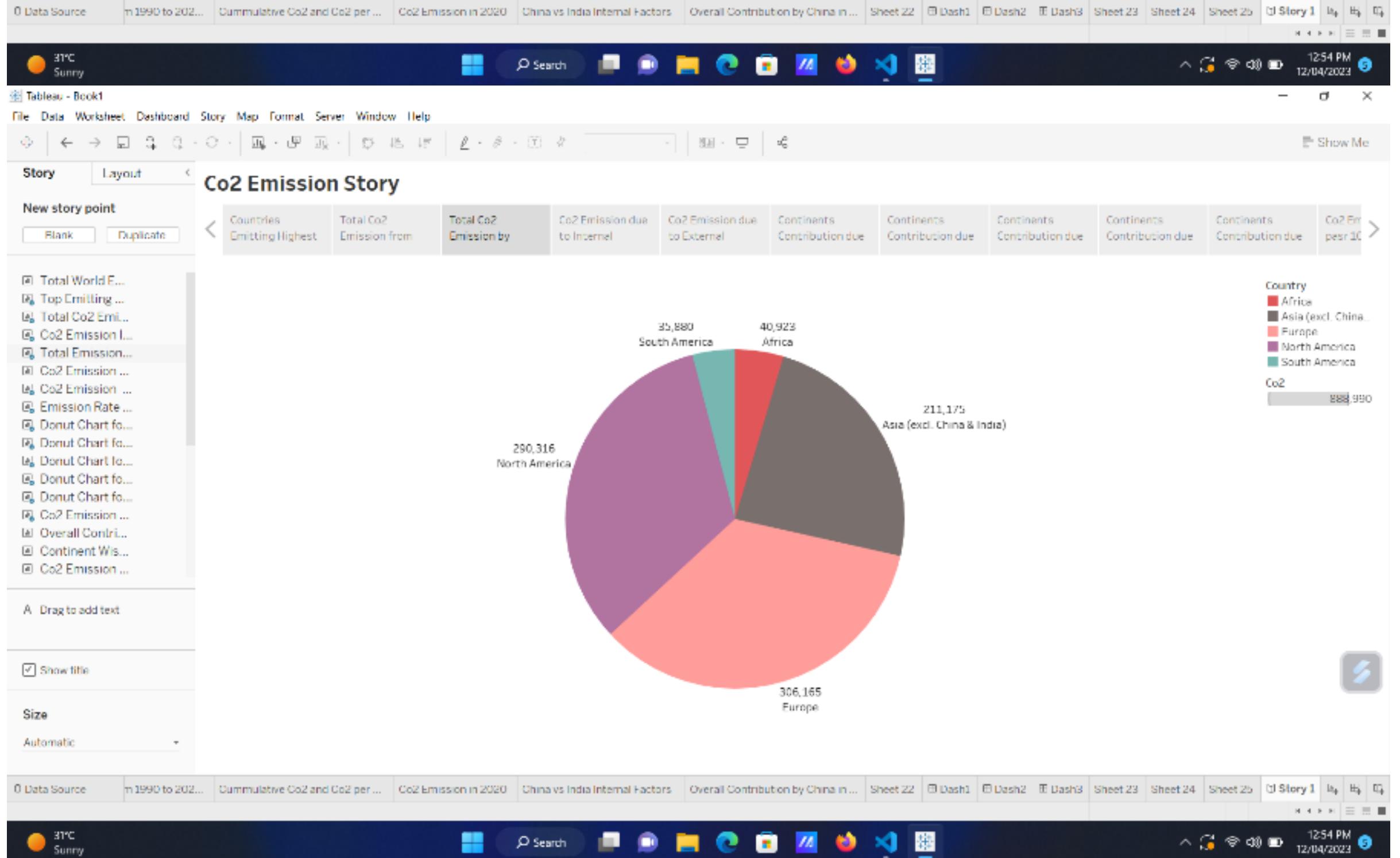
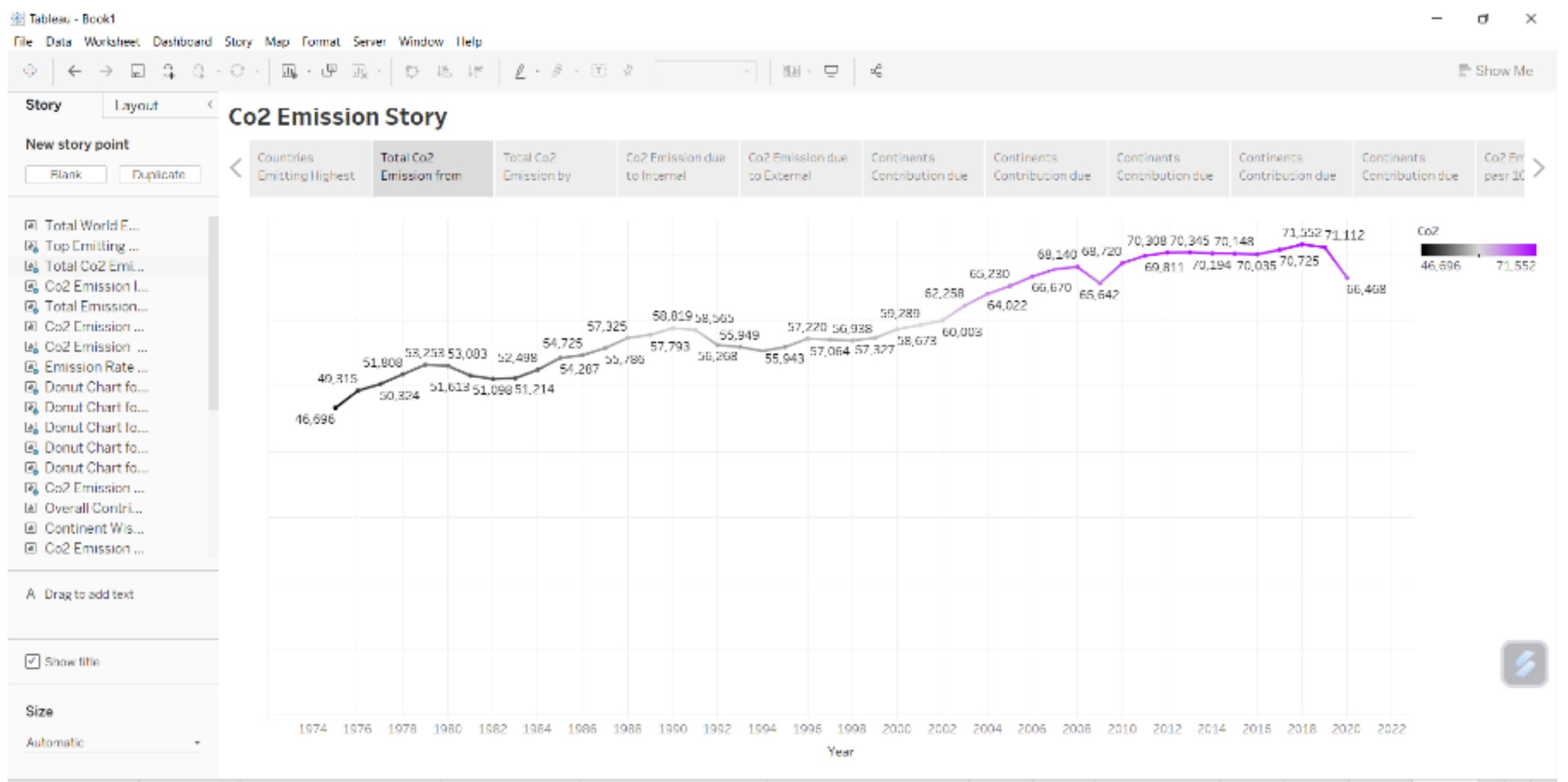
Dashboard

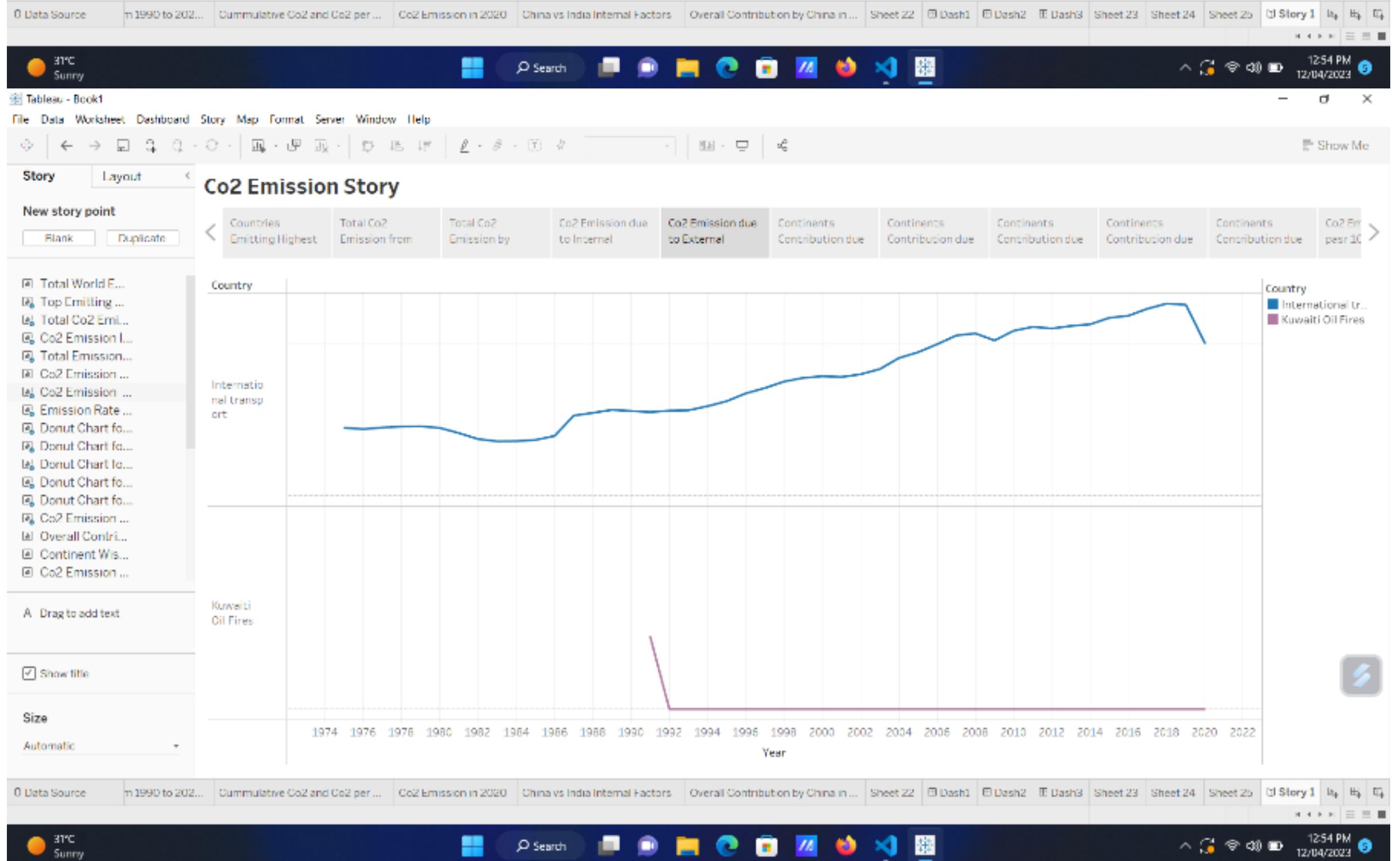
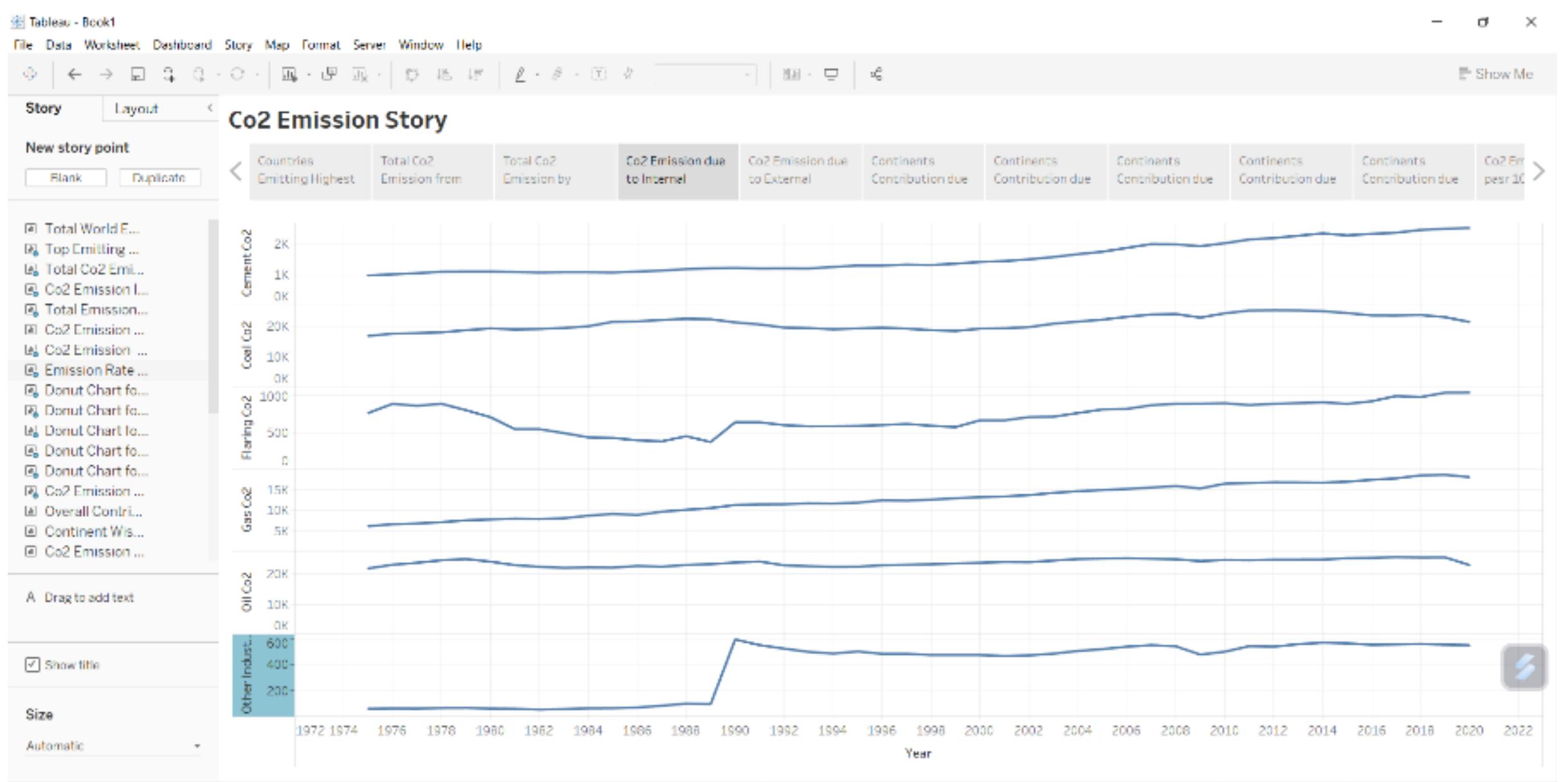


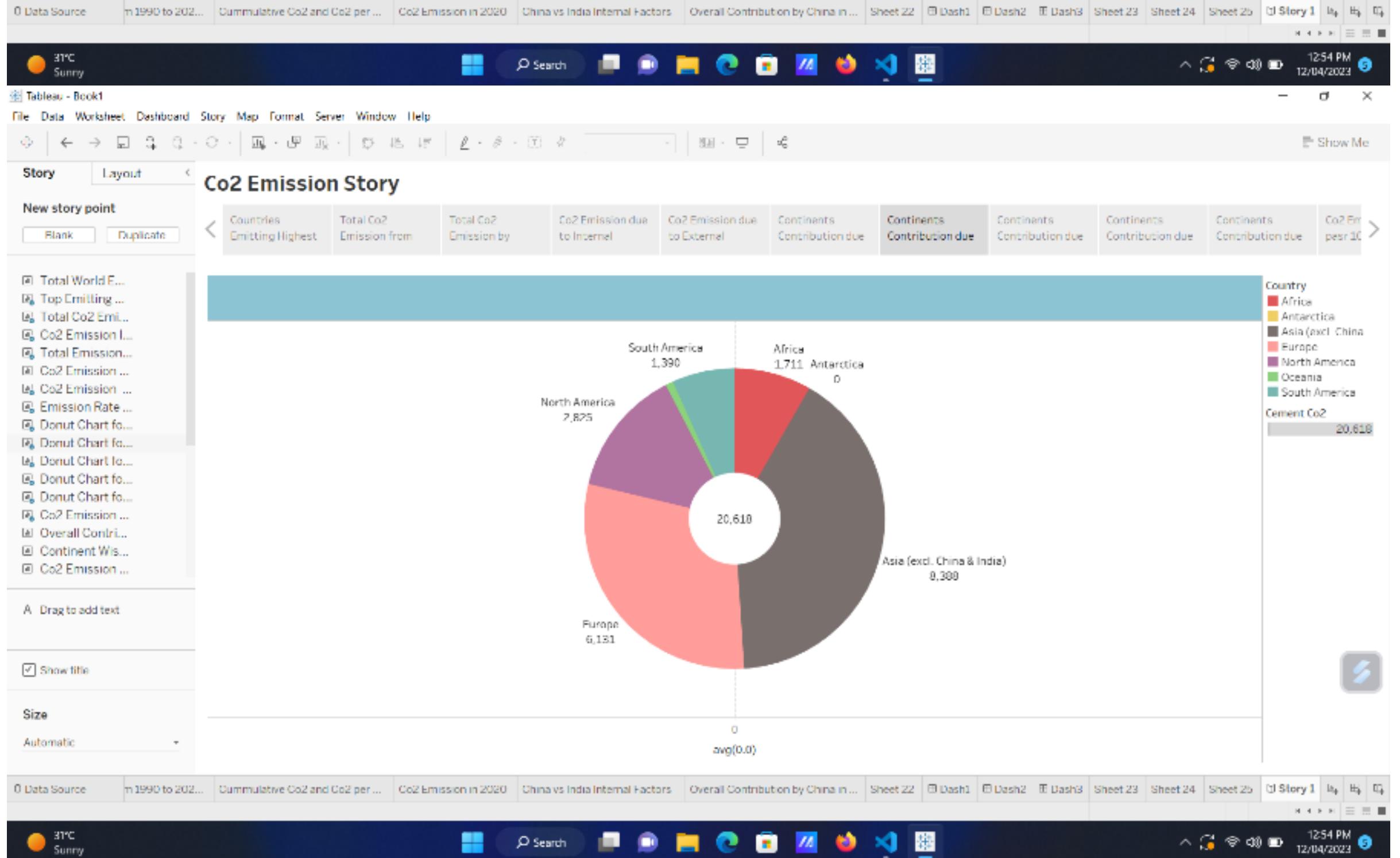
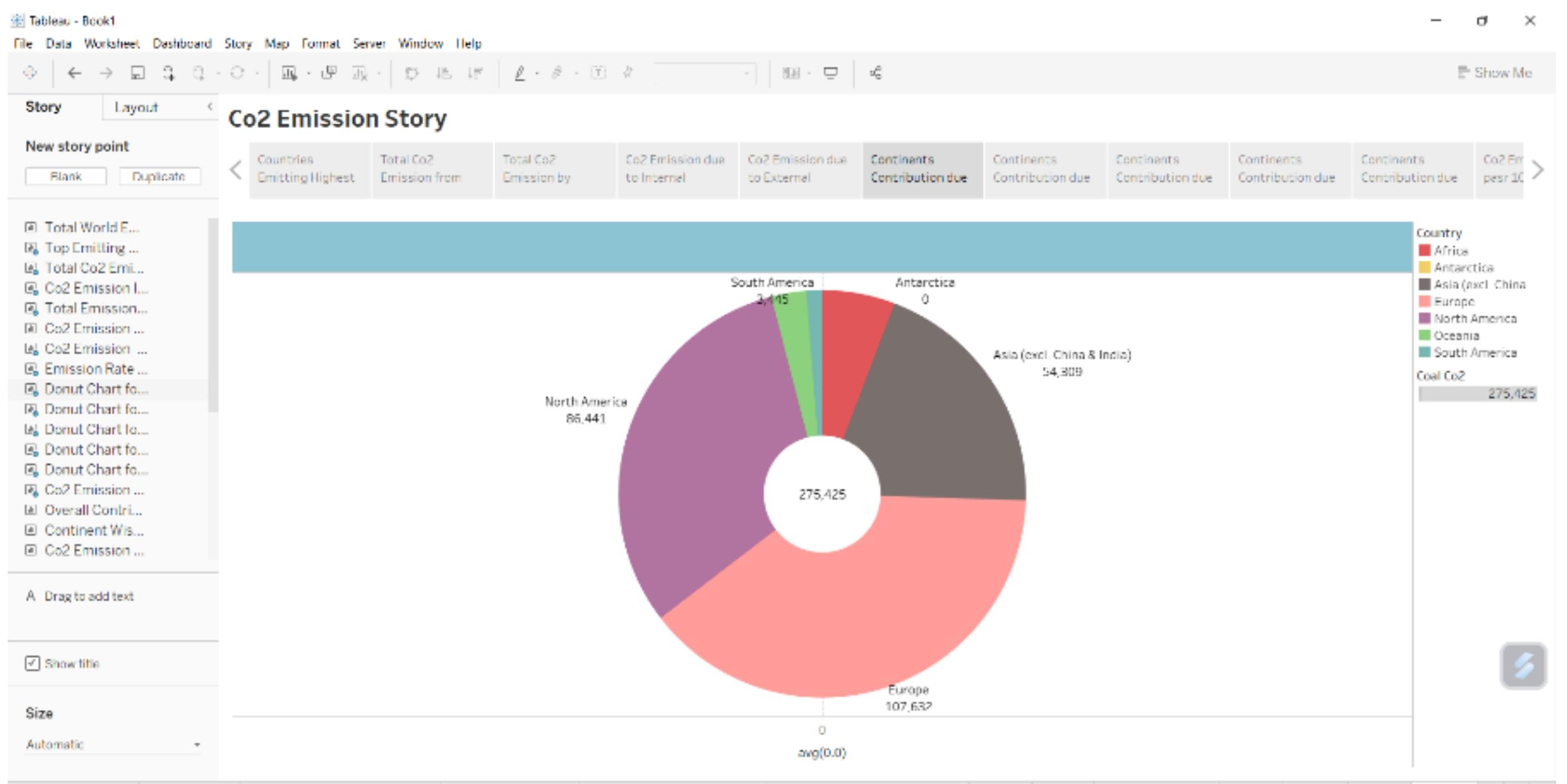


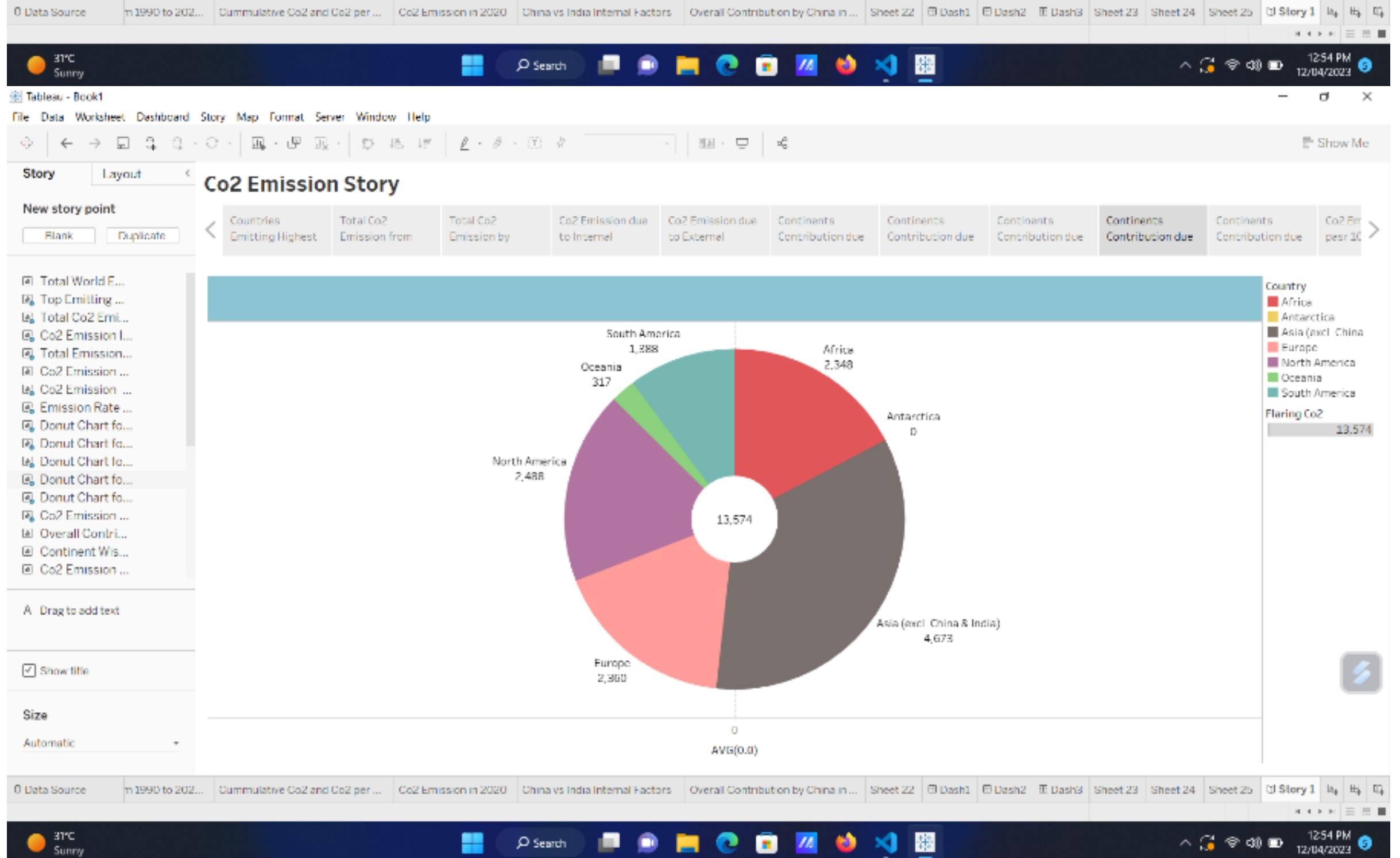
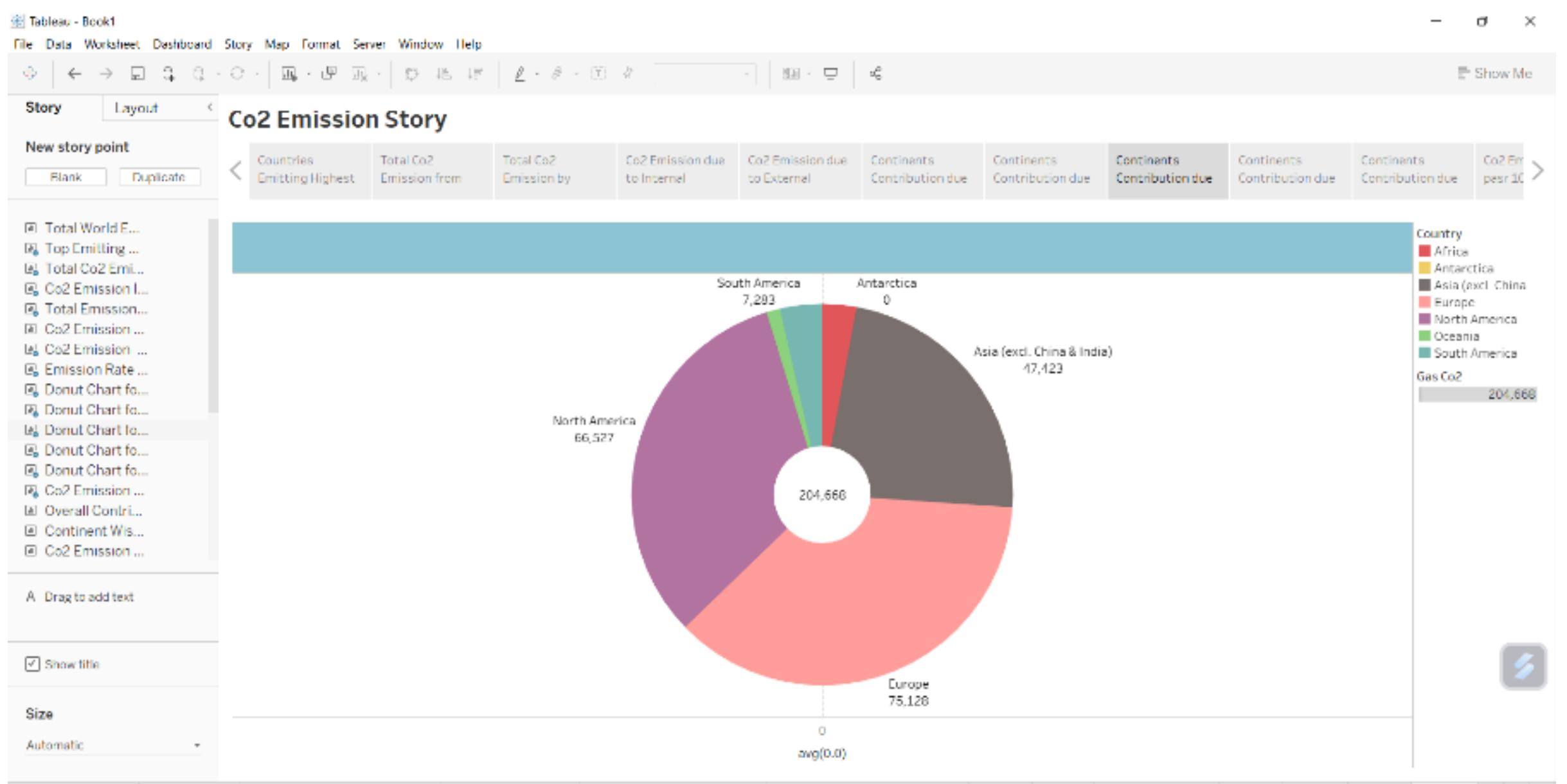
Story

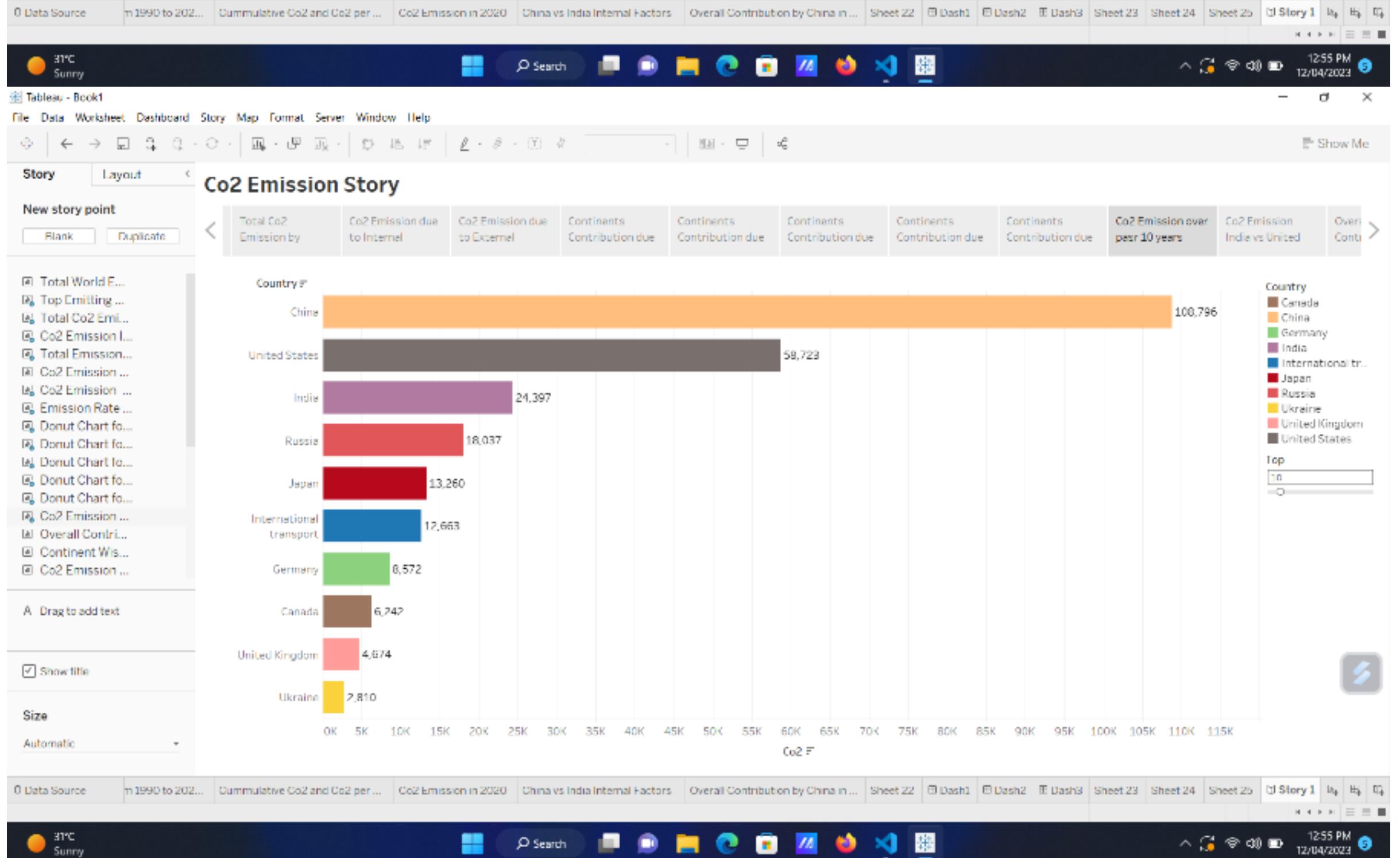
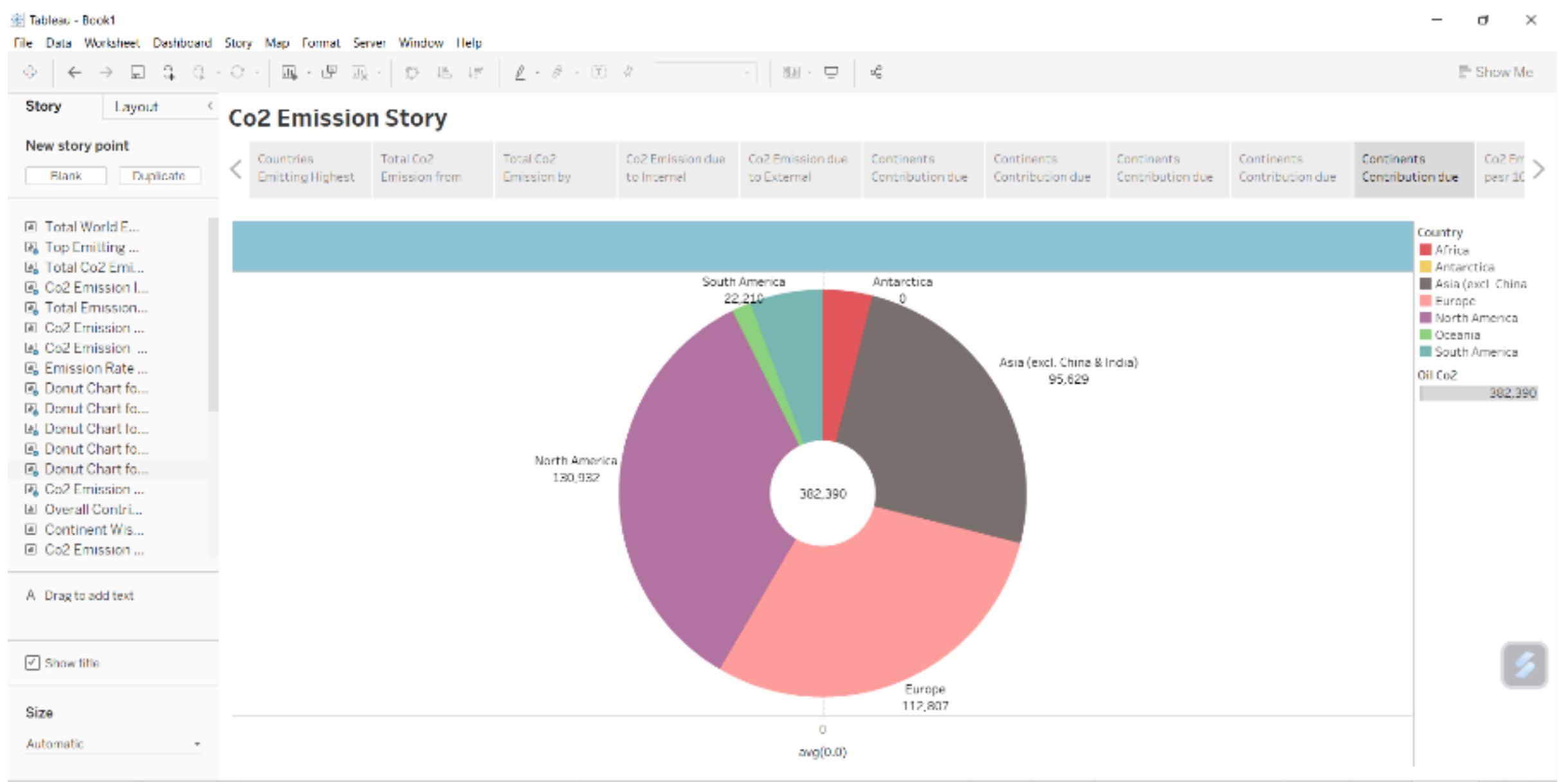


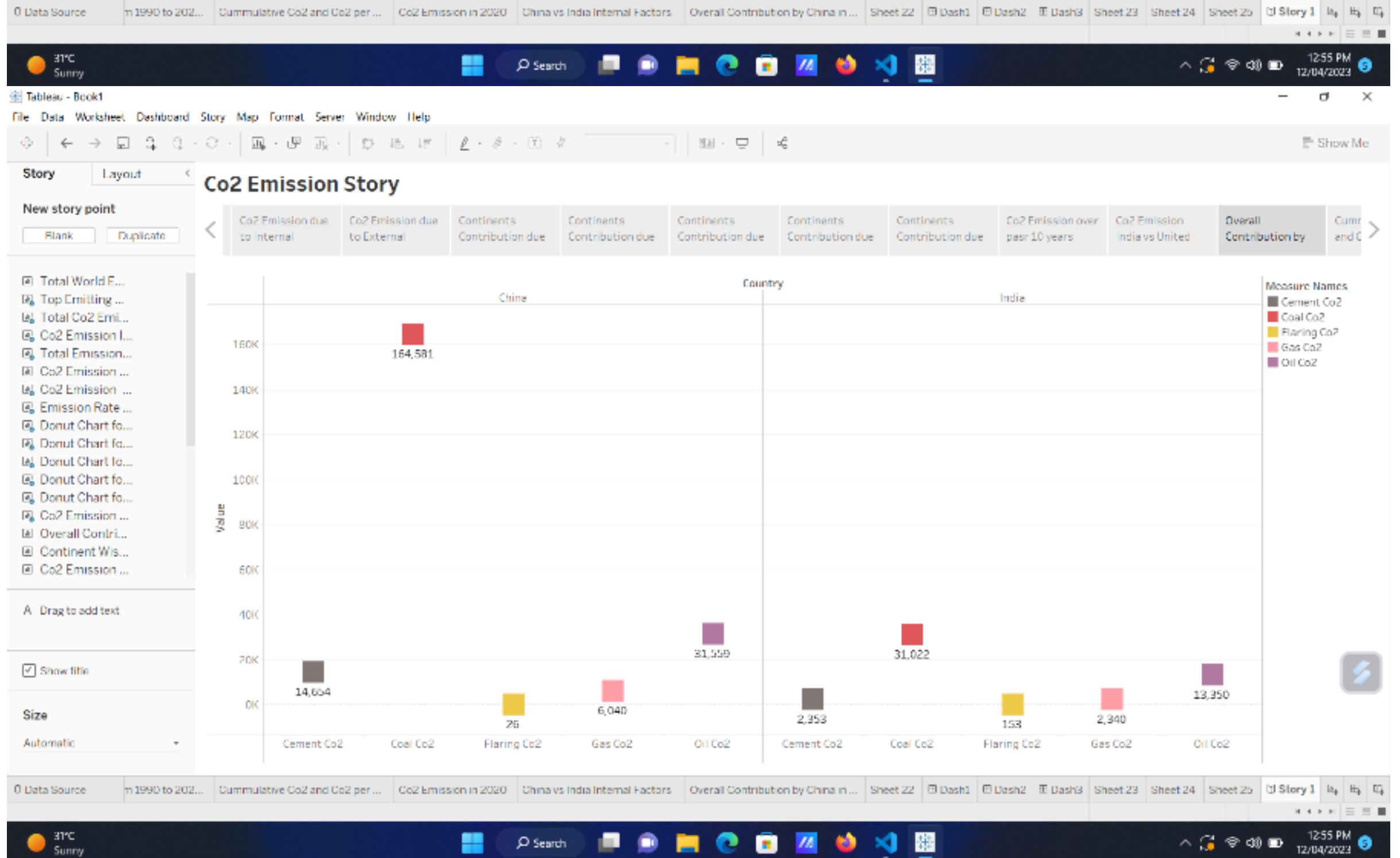
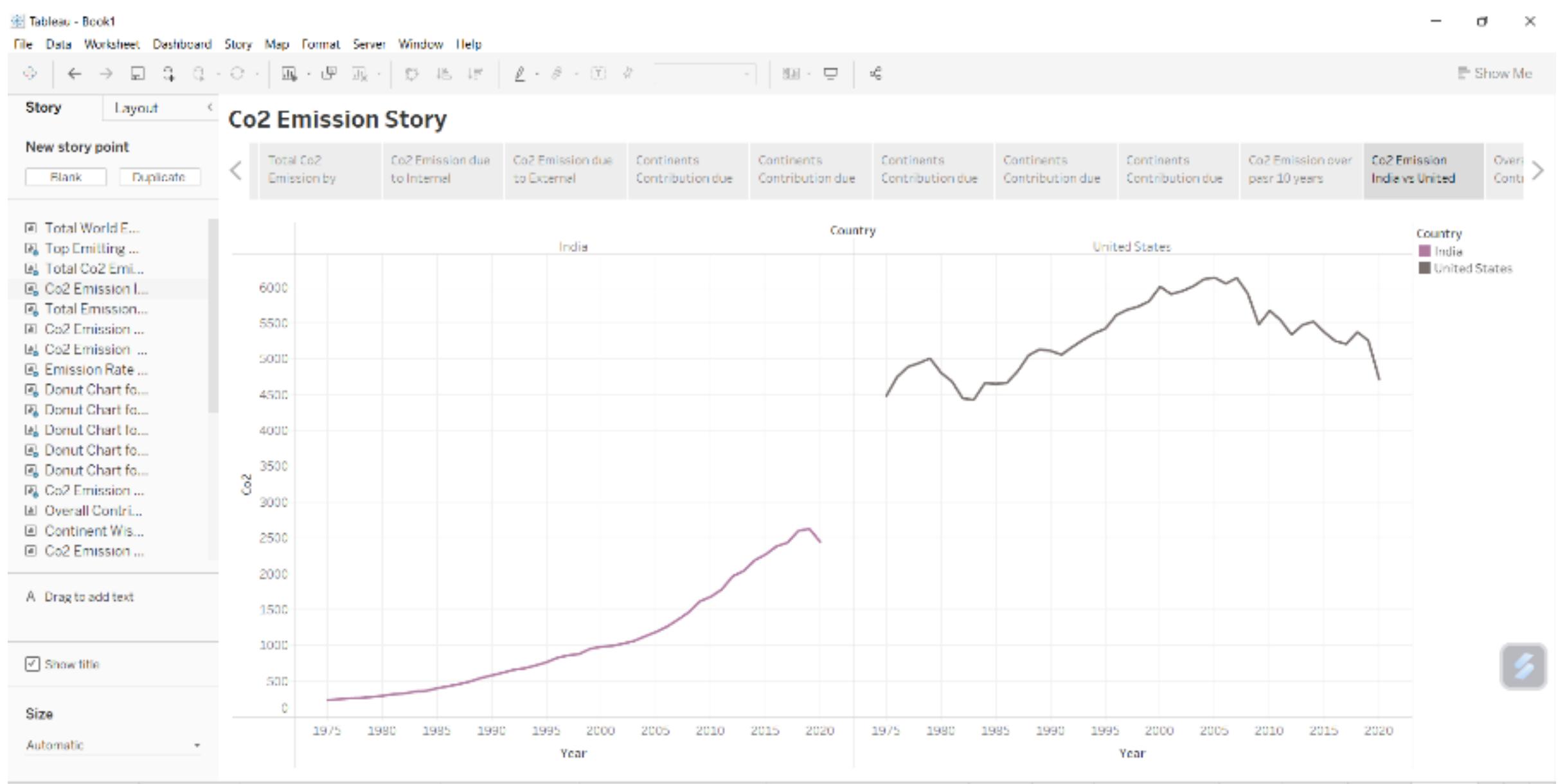


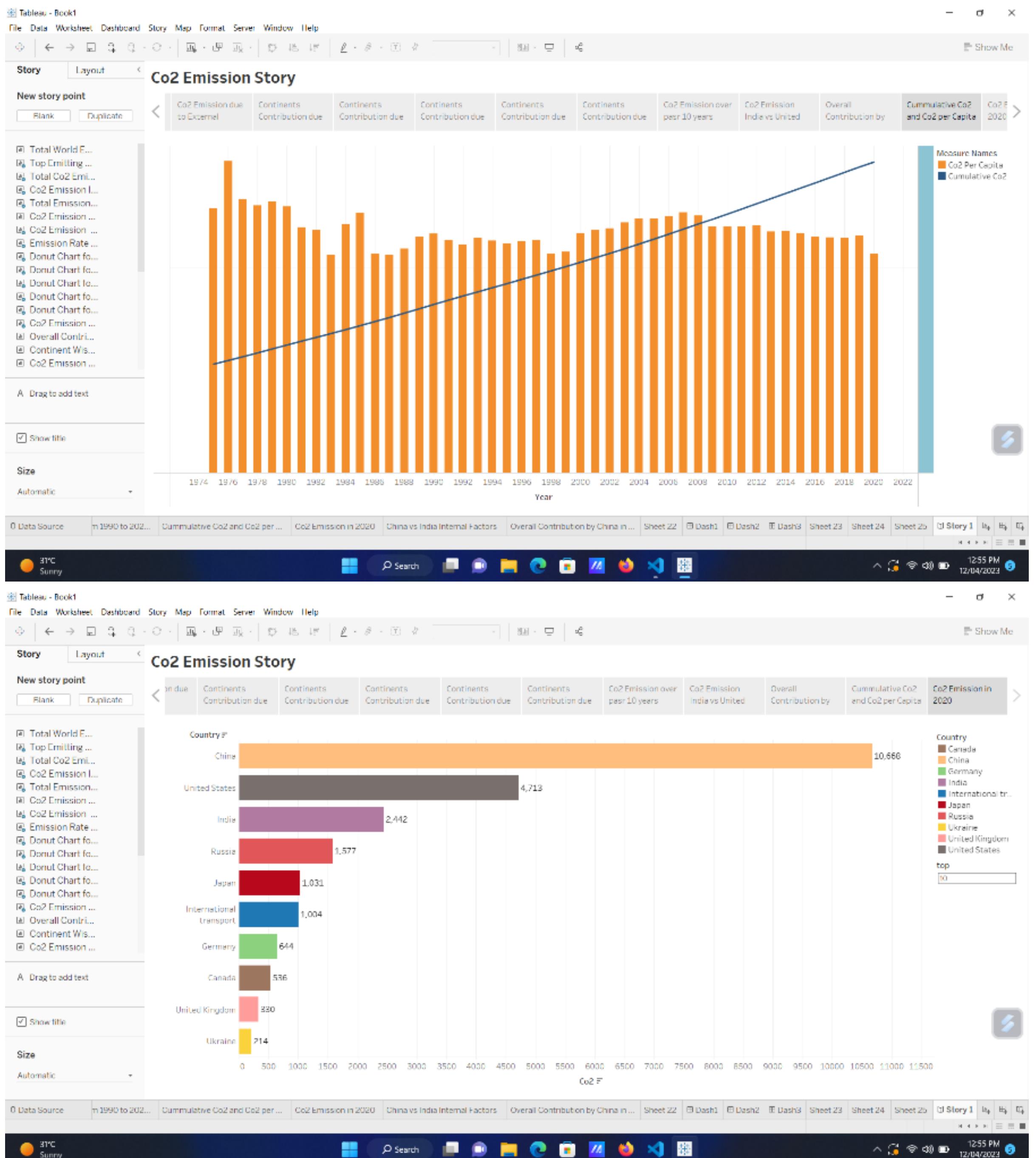












7. FUTURE SCOPE

- ☒ In the Annual Energy Outlook 2022 (AEO2022) Reference case, which assumes no changes to current laws or regulations, the U.S. Energy Information Administration (EIA) projects that U.S. energy-related carbon dioxide (CO₂) emissions will fall to **4.5 billion metric tons in 2037**, or 6% below the energy-related CO₂ ...

- ☒ CO₂ can also **replace fossil fuels as a raw material in chemicals and polymers.**
- ☒ Less energy-intensive pathways include reacting CO₂ with minerals or waste streams, such as iron slag, to form carbonates for building materials.
- ☒ The future market potential for CO₂-derived products and services is difficult to assess.

8. Appendix

Source Code

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

<head>
  <meta charset="utf-8">
  <meta content="width=device-width,initial-scale=1.0" name="viewport">

  <title>Global Co2 Emission Analysis</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|Jost: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">

<!-- Template Main CSS File -->
<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">
  <div class="container d-flex align-items-center justify-content-between">

    <h1 class="logo"></h1>
    <!-- Uncomment below if you prefer to use an image logo -->
    <!--<a href="index.html" class="logo me-auto"></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="#dash">Dashboard</a></li>
        <li><a class="nav-link scrollto" href="#services">Story</a></li>
        <li><a class="nav-link scrollto" href="#portfolio">Visualizations</a></li>
        <li><a class="nav-link scrollto" href="#report">Report</a></li>
        <li><a class="nav-link scrollto" href="#contact">Contact</a></li>
      </ul>
    </nav>
  </div>
</header>

```

```

        </ul>
        <i class="bi bi-listmobile-nav-toggle"></i>
    </nav>
    <!--.navbar-->

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

<!-- ===== Hero Section ===== -->
<section id="hero" class="d-flex align-items-center">

    <div class="container">
        <div class="row">
            <div class="col-lg-6 d-flex flex-column justify-content-center pt-4 pt-lg-0 order-2
order-lg-1" data-aos="fade-up" data-aos-delay="200">
                <h1>Welcome to Global Co2 Emission Analysis for Year 2020</h1>
                <h2>Carbon dioxide emissions are the primary driver of global climate change.
It's widely recognised that to avoid the worst impacts of climate change, the world
needs to urgently reduce emissions.</h2>
                <div class="d-flex justify-content-center justify-content-lg-start">
                    <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"></a>
                </div>
            </div>
            <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="zoom-in"
data-aos-delay="200">
                
            </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 include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.
        </p>
        <p>
          Global carbon dioxide (CO2) emissions from fossil fuels and industry have increased considerably since 2000, and in 2019 reached a record high of 36.7 billion metric tons of CO2. In 2020, the COVID-19 pandemic caused global CO2 emissions to plummet five percent to 34.81 billion metric tons.</p>
        <p>
          Historically, major global events cause emission reductions. The 2009 global recession caused worldwide CO2 emissions to fall by approximately 460 million metric tons. But this pales in comparison to the emission reductions in 2020. Countries around the world were put under strict lockdowns, meaning transportation and industrial activities were significantly reduced. CO2 emission levels in India dropped for the first time in four decades in the year ending March 2020. Global CO2 emissions per capita also experienced a substantial decline in 2020, falling to an average of 4.47 metric tons per person.</p>
        </div>
      </div>

    </div>
  </div>
</section>
<!-- End About Us Section -->
```

```
<!-- ===== Why Us Section =====-->
<section id="dash" class="">
  <div class="container-fluid" data-aos="fade-up">
    <div class="section-title">
      <h2>Dashboard</h2>
    </div>
    <div class='tableauPlaceholder' id='viz1672205035633' style='position: relative'><noscript><a href='#'><img alt='Dashboard 1' src='https://public.tableau.com/static/images/Co/Co2dash/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='Co2dash/Dashboard1' />
      <param name='tabs' value='no' /><param name='toolbar' value='yes' />
      <param name='static_image' value='https://public.tableau.com/static/images/Co/Co2dash/Dashboard1/1.png' />
      <param name='animate_transition' value='yes' />
      <param name='display_static_image' value='yes' />
      <param name='toolbar' value='no' />
      <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='showShareOptions' value='false' />
    </object>
  </div>
  <script type='text/javascript'>
    var divElement = document.getElementById('viz1672205035633');
    var vizElement = divElement.getElementsByTagName('object')[0];
    if(divElement.offsetWidth>800){
      vizElement.style.width = '100%';
      vizElement.style.height = (divElement.offsetWidth*0.75) + 'px';
    } else if(divElement.offsetWidth>500){
      vizElement.style.width = '90%';
      vizElement.style.height = (divElement.offsetWidth*0.75) + 'px';
    } else{
      vizElement.style.width = '100%';
      vizElement.style.height = '1477px';
    }
    var scriptElement = document.createElement('script');
```

```
        scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
        vizElement.parentNode.insertBefore(scriptElement, vizElement);
    </script>

</div>

<!--End Why Us Section-->
<section id="services" class="services">
    <div class="container" data-aos="fade-up">
        <div class="section-title">
            <h2>Story</h2>
        </div>

        <div class='tableauPlaceholder' id='viz1672206123585' style='position: relative'>
            <noscript><a href="#"><img alt='CO2 Emission Story' src='https://public.tableau.com/static/images/G4/G4Q8N94F4/1_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='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></div>
            <script type='text/javascript'>
                var divElement = document.getElementById('viz1672206123585');
                var vizElement = divElement.getElementsByTagName('object')[0];
                vizElement.style.width = '100%';
                vizElement.style.height = (divElement.offsetWidth * 0.75) + 'px';
                var scriptElement = document.createElement('script');
                scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
            </script>
        </div>
    </div>
</section>
```

```
vizElement.parentNode.insertBefore(scriptElement,vizElement);  
    </script>  
  
    </div>  
  </section>  
  
  <!-- ===== Skills Section =====-->  
  
  <!-- End Skills Section-->  
  
  <!-- End Services Section-->  
  
  <!-- ===== Cta Section =====-->  
  
  <!-- End Cta Section-->  
  
  <!-- ===== Portfolio Section =====-->  
  <section id="portfolio" class="portfolio">  
    <div class="container" data-aos="fade-up">  
  
      <div class="section-title">  
        <h2>Visualizations</h2>  
  
      </div>  
  
      <div class="row portfolio-container">  
  
        <div class="col-lg-4 col-md-6 portfolio-item filter-web">  
          <div class="portfolio-wrap">  
              
            <div class="portfolio-info">  
              <h4>Image 1</h4>  
  
              <div class="portfolio-links">  
                <a href="assets/img/portfolio/p1.jpg" data-gallery="portfolioGallery" class="portfolio-lightbox" title="Web 3"><i class="bx bx-plus"></i></a>  
  
              </div>  
            </div>  
          </div>  
        </div>  
      </div>  
    </div>
```

```
<div class="col-lg-4 col-md-6 portfolio-item filter-web">
  <div class="portfolio-wrap">
    
    <div class="portfolio-info">
      <h4>Image 2</h4>

      <div class="portfolio-links">
        <a href="assets/img/portfolio/p1.jpg" data-gallery="portfolioGallery"
           class="portfolio-lightbox" title="Web 3"><i class="bx bx-plus"></i></a>

      </div>
    </div>
  </div>
<div class="col-lg-4 col-md-6 portfolio-item filter-web">
  <div class="portfolio-wrap">
    
    <div class="portfolio-info">
      <h4>Image 3</h4>

      <div class="portfolio-links">
        <a href="assets/img/portfolio/p1.jpg" data-gallery="portfolioGallery"
           class="portfolio-lightbox" title="Web 3"><i class="bx bx-plus"></i></a>

      </div>
    </div>
  </div>
<div class="col-lg-4 col-md-6 portfolio-item filter-web">
  <div class="portfolio-wrap">
    
    <div class="portfolio-info">
      <h4>Image 5</h4>
      <div class="portfolio-links">
        <a href="assets/img/portfolio/p5.jpg" data-gallery="portfolioGallery"
           class="portfolio-lightbox" title="Web 3"><i class="bx bx-plus"></i></a>

      </div>
    </div>
  </div>
</div>
```

```
<div class="col-lg-4 col-md-6 portfolio-item filter-web">
    <div class="portfolio-wrap">
        
        <div class="portfolio-info">
            <h4>Image 6</h4>
            <div class="portfolio-links">
                <a href="assets/img/portfolio/p5.jpg" data-gallery="portfolioGallery"
                    class="portfolio-lightbox" title="Web 3"><i class="bx bx-plus"></i></a>
            </div>
        </div>
    </div>
<div class="col-lg-4 col-md-6 portfolio-item filter-web">
    <div class="portfolio-wrap">
        
        <div class="portfolio-info">
            <h4>Image 4</h4>
            <div class="portfolio-links">
                <a href="assets/img/portfolio/p5.jpg" data-gallery="portfolioGallery"
                    class="portfolio-lightbox" title="Web 3"><i class="bx bx-plus"></i></a>
            </div>
        </div>
    </div>
</div>

</div>
</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">
                
            </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>  
  
<div class="row content">  
    <div class="col-md-5" data-aos="fade-right">  
          
    </div>  
    <div class="col-md-7 pt-5" data-aos="fade-left">  
        <h3>Continents Contribution towards Co2 Emission</h3>  
        <br>  
        <p class="fst-italic">  
            Asia is the highest Co2 Emitting continent among the other continents.  
        </p>  
        <p class="fst-italic">  
            Europe is the second highest Co2 Emitting continent.  
        </p>  
        <p class="fst-italic">  
            Antarctica is the lowest Co2 Emitting continent because of low human  
activity/existence in the continent.  
        </p>  
  
    </div>  
    <br>  
    <br>  
    <div class="row content">  
        <div class="col-md-5" data-aos="fade-right">  
            
```

```
</div>
<div class="col-md-7 pt-5" data-aos="fade-left">
    <h3>Overall India Contribution towards Co2 Emission</h3>
    <br>
    <p class="fst-italic">
        Coal is the highest factor of Co2 Emission.
    </p>
    <p class="fst-italic">
        Oil is the second highest Co2 Emitting factor.
    </p>
</div>
</div>
<div class="row content">
    <div class="col-md-5 order-1 order-md-2" data-aos="fade-left">
        
    </div>
    <div class="col-md-7 pt-5 order-2 order-md-1" data-aos="fade-right">
        <h3>Overall Co2 Emission overtime</h3>
        <br>
        <p class="fst-italic">
            Co2 Emission in 1975 was 67324 (in metric tons).
        </p>
        <p class="fst-italic">
            Co2 Emission in 2019 was 128423 (in metric tons) which was highest in
            the past years.
        </p>
        <p class="fst-italic">
            Co2 Emission in 2020 was found to be 121593 (in metric tons).
        </p>
    </div>
</div>

</div>
</div>

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

<!-- ===== Team Section ===== -->
```

```
<!--End Team Section-->
```

```
<!--===== Pricing Section =====-->
```

```
<!--End Pricing Section-->
```

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

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

```
    <div class="section-title">
      <h2>Contact</h2>
    </div>
```

```
    <div class="row">
```

```
      <div class="col-lg-5 d-flex align-items-stretch">
        <div class="info">
          <div class="address">
            <i class="bi bi-geo-alt"></i>
            <h4>Location:</h4>
            <p>SmartBridge, Hyderabad, Andhra Pradesh, India</p>
          </div>
```

```
          <div class="email">
            <i class="bi bi-envelope"></i>
            <h4>Email:</h4>
            <p>info@smartbridge.com<br>contact@smartbridge.com</p>
          </div>
```

```
          <div class="phone">
            <i class="bi bi-phone"></i>
            <h4>Call:</h4>
            <p>+11 1234 1234<br>+11 4321 4321</p>
          </div>
```

```
    </div>
```

```
  </div>
```

```
<div class="col-lg-7 mt-5 mt-lg-0 d-flex align-items-stretch">
    <form action="forms/contact.php" method="post" role="form"
class="php-email-form">
        <div class="row">
            <div class="form-group col-md-6">
                <label for="name">Your Name</label>
                <input type="text" name="name" class="form-control" id="name"
required>
            </div>
            <div class="form-group col-md-6">
                <label for="email">Your Email</label>
                <input type="email" class="form-control" name="email" id="email"
required>
            </div>
        </div>
        <div class="form-group">
            <label for="subject">Subject</label>
            <input type="text" class="form-control" name="subject" id="subject"
required>
        </div>
        <div class="form-group">
            <label for="message">Message</label>
            <textarea class="form-control" name="message" rows="10"
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>
</section>
<!-- End Contact Section -->
```

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

<!-- ===== Footer ===== -->
<footer id="footer">

    <div class="footer-top">
        <div class="container">

            </div>
        </div>

    <div class="container footer-bottom clearfix">
        <div class="copyright">
            © Copyright <strong><span>Arsha</span></strong>. All Rights Reserved
        </div>
        <div class="credits">
            <!-- All the links in the footer should remain intact. -->
            <!-- You can delete the links only if you purchased the pro version. -->
            <!-- Licensing information: https://bootstrapmade.com/license/ -->
            <!-- Purchase the pro version with working PHP/AJAX contact form:
https://bootstrapmade.com/arsha-free-bootstrap-html-template-corporate/ -->
            Designed by <a href="https://bootstrapmade.com/">Indra Prakash</a>
        <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>
</footer>
```

```
<!-- End Footer -->

<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/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>
```