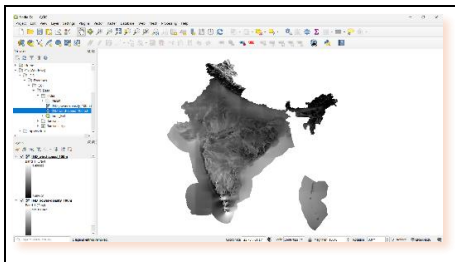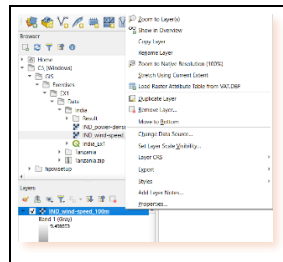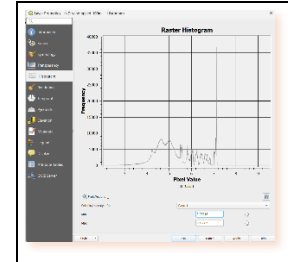# Exercise 1: To visualise wind power potential and aspects that relate to wind energy utilisation in a country of your choice.
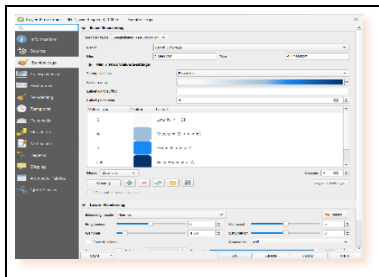

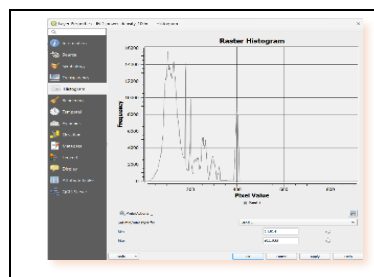**Step 1:** Open QGIS→ Open .Tif file form browser
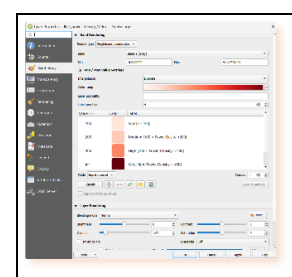

Step 2: Right Click on Layer → Properties

Step 3: Properties → Histogram

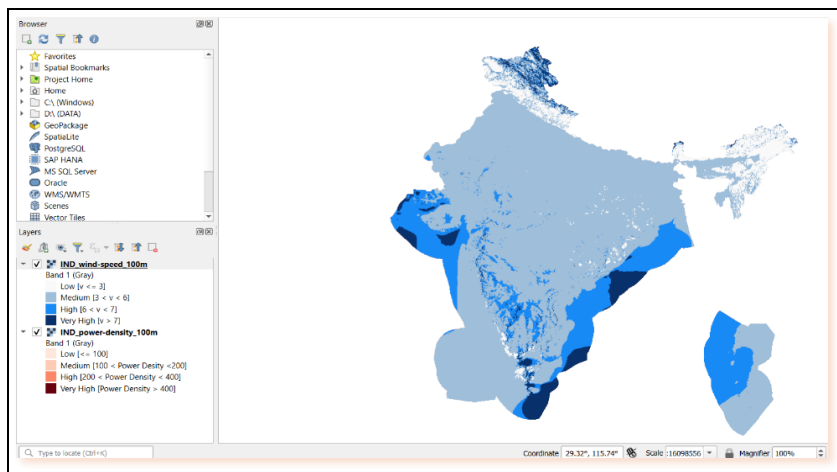**Step 4:** Properties → Symbology
Step 6: Symbology Windowmenu

Step 5: Properties → Histrogram

(Figure 1.1: Average Wind Speed at a Hight of 100 m)

Country	India
Download Wind Data	Energy data info
Content of Data	Wind Speed and Power Density

In a Figure 1.1, you can see the approach used to find the solution for average wind speed at a height of 100 meters. Specifically, in Step 3, my first approach involved analysing the data using a histogram and dividing it into four categories: Low, Medium, High, and Very High. The categories are based on wind speed values as follows:

Low: Less than 3 m/s
Medium: Between 3 and 6 m/s
High: Between 6 and 7 m/s
Very High: Greater than 7 m/s

In Step 4, I applied this classification in the Symbology menu, as you can see in the image.

In a Figure 1.2, you can see the approach used to find the solution for average power density at a height of 100 meters. I followed same approach of Figure 1.1, see in step 5 and step 6.

Low: Less than 100 W/m^2
Medium: Between 100 and 200 W/m^2
High: Between 200 and 400 W/m^2
Very High: Greater than 400 W/m^2

(Figure 1.2: Average Power Density at a Hight of 100 m)

Exercise 2: Download and visualise the wind speed and power density map for Denmark. Consider type of symbology and choice of colours. Add the csv-file containing wind turbines. Visualise the wind turbines in Denmark by: Installed Capacity and Manufacturer. Use the methods Unique Values, Graduated Symbols, Graduated Colours etc. Add a grid, North arrow etc to your map.

Step 1: Open QGIS → Open .Tif files of Wind speed and Power density map for Denmark, **Step 2**: Project → Properties [See Fig. 2.1, Change coordinates reference system, Used **ETRS89 / UTM zone 32N**], **Step 3:** Right click on Layer → Properties → Histogram [my first approach involved analysing the data using a histogram] → Symbology [dividing it into categories, names and different colours]. I didn't include photos of step 2 and 3 because it has included already in Exercise 1. I added only final look photos, see in Fig 2.2 [Wind speed] and 2.3 [Power density].
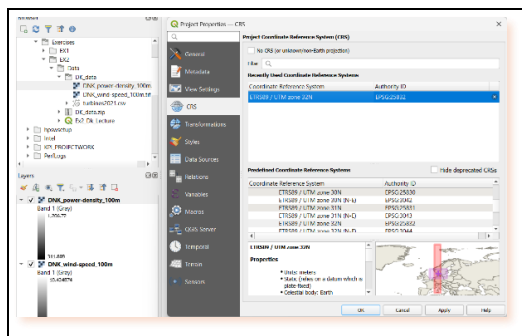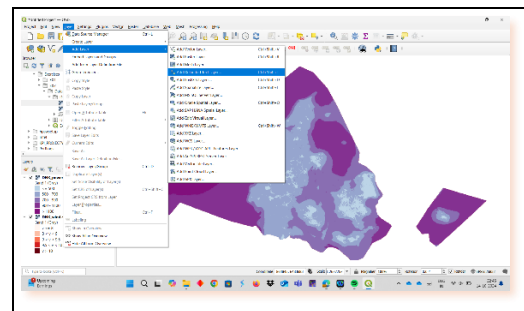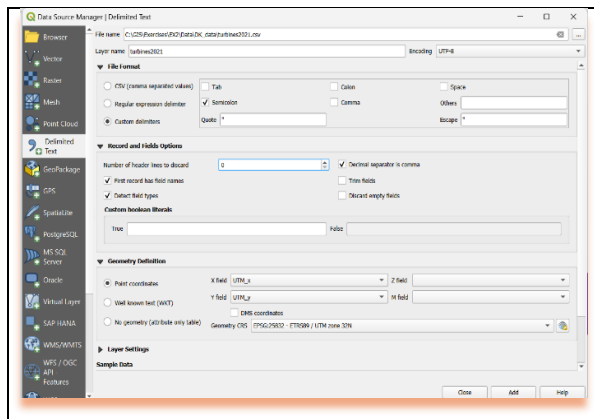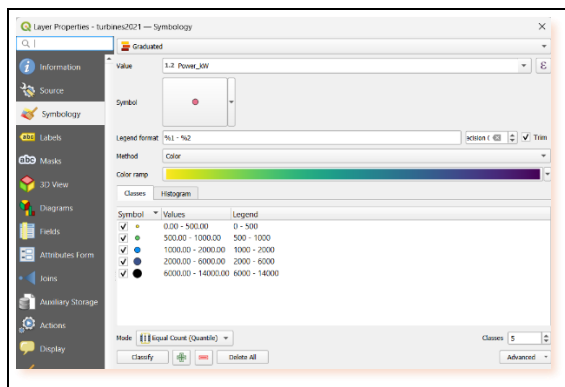

(Figure 2.1)
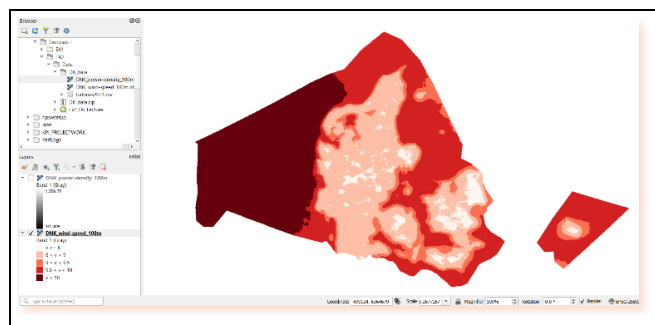
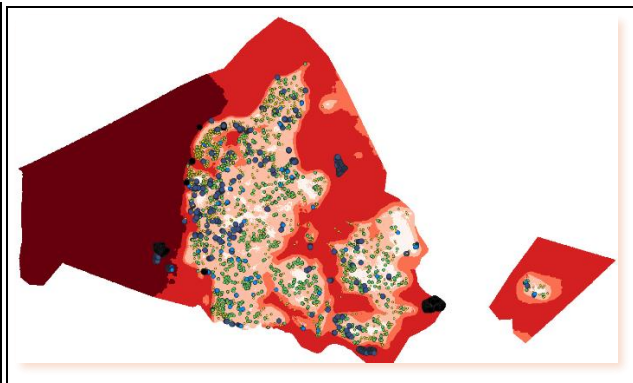**(Figure 2.2)**
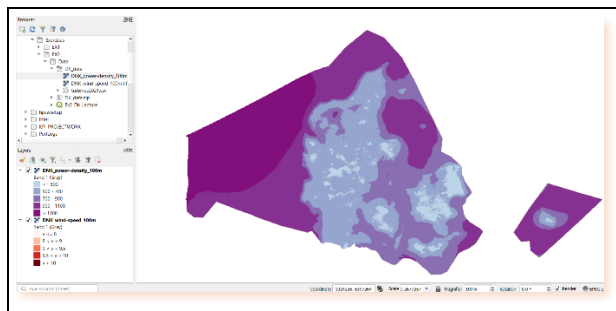
(Figure 2.3)

(Figure 2.4)

(Figure 2.5)

Step 4: Layer → Add Layer → Add Delimited Test Layer [See fig. 2.4 and 2.5], Here basically added .csv file of containing Wind turbine. Before added
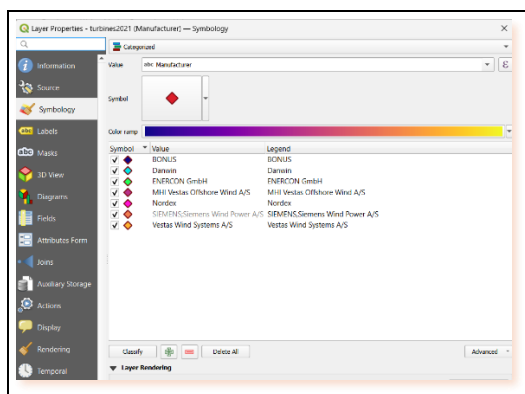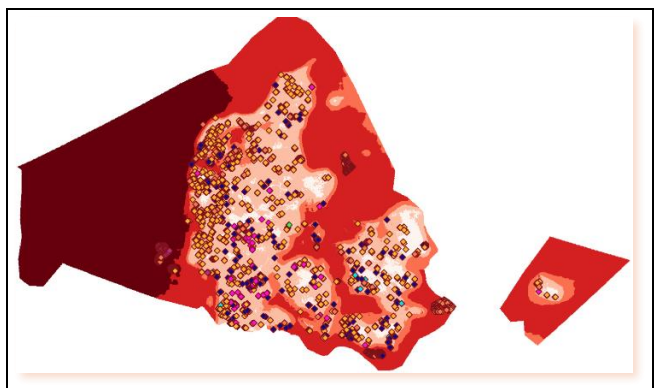
Step 5:

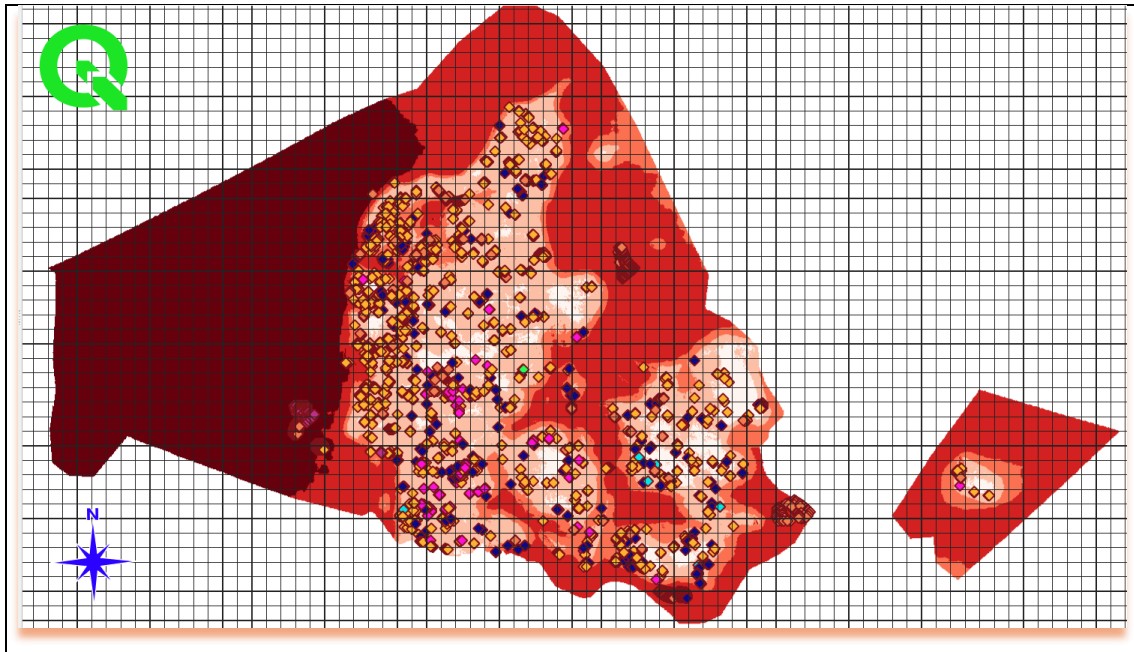**(Figure 2.6)**

(Figure 2.7)
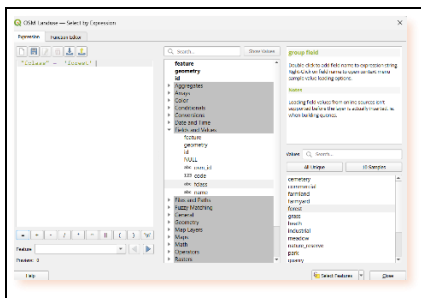
Step 6:

(Figure 2.8)
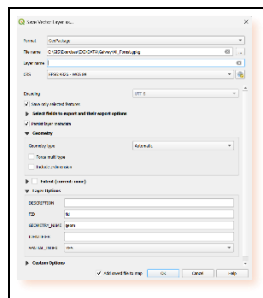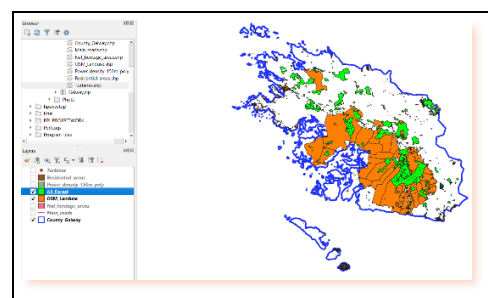

(Figure 2.9)

Step 8:

(Figure 2.10)

Exercise 3: Find potential wind energy locations in County Galway, Ireland

(Figure 3.1)

(Figure 3.2)
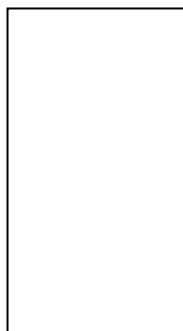

(Figure 3.3)
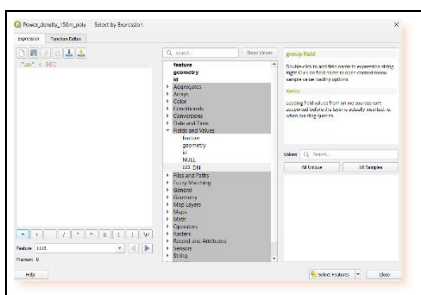
(Figure 3.4)
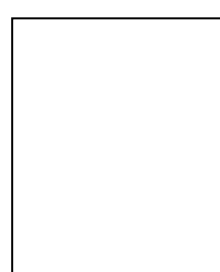
(Figure 3.5)

(Figure 3.6)
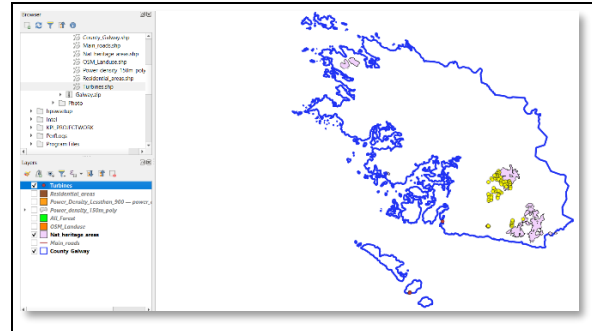
(Figure 3.7)
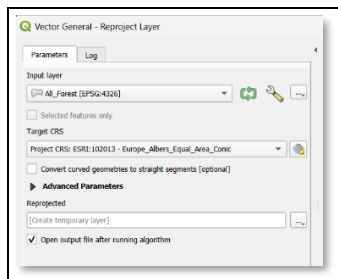
(Figure 3.8)
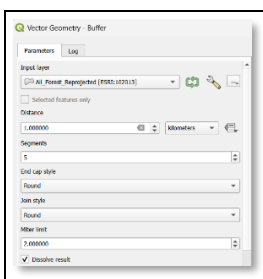
(Figure 3.9)
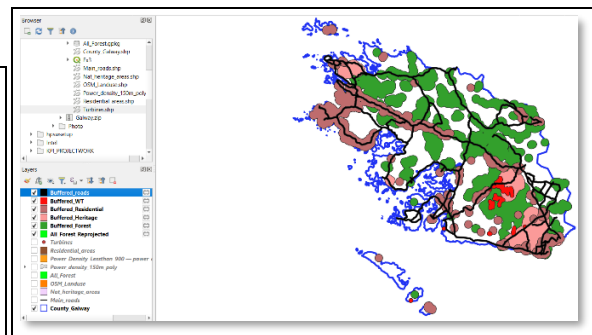
(Figure 3.10)
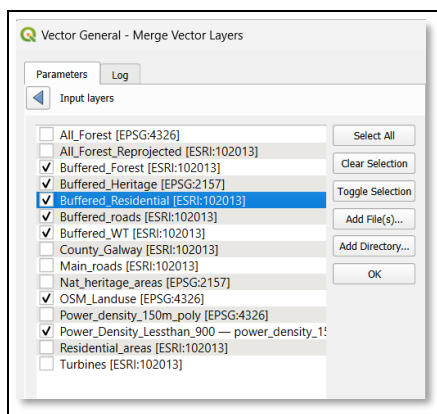
(Figure 3.11)
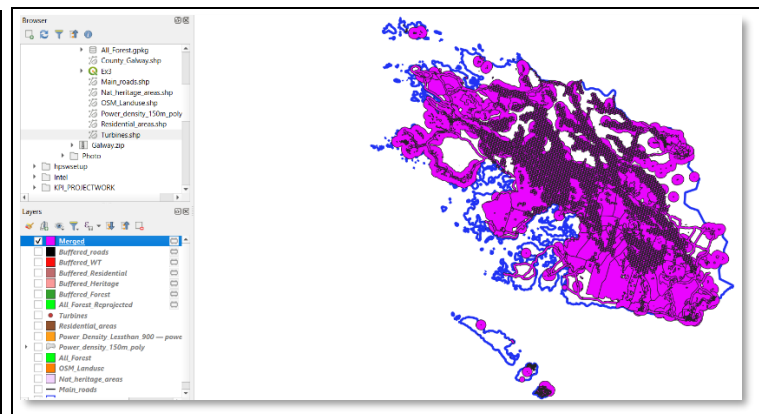
(Figure 3.12)

(Figure 3.13)

(Figure 3.14)