# QGIS Activity

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## 1 Introduction

In this in-class activity, we got familiarised with some basic QGIS usage and features.

## 2 Output

### 2.1 Indian Districts

For this image, we imported the Indian political map and assigned random colours to each of the districts.

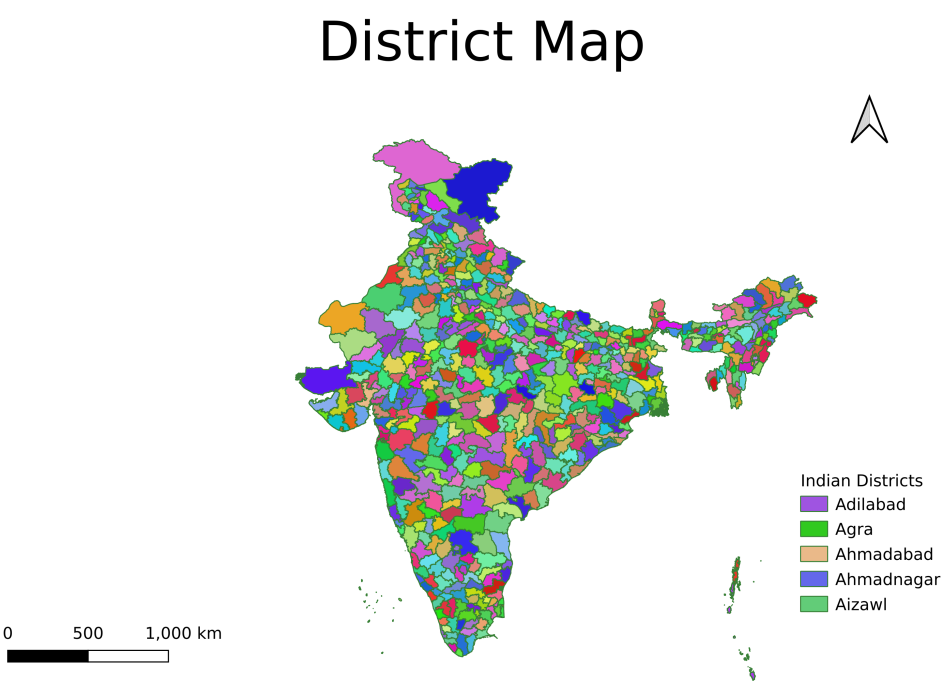



Figure 1: District Map of India

## 2.2 Classifying LULC

In this task, we classified the LULC in the KRB region on the basis of spectral readings.

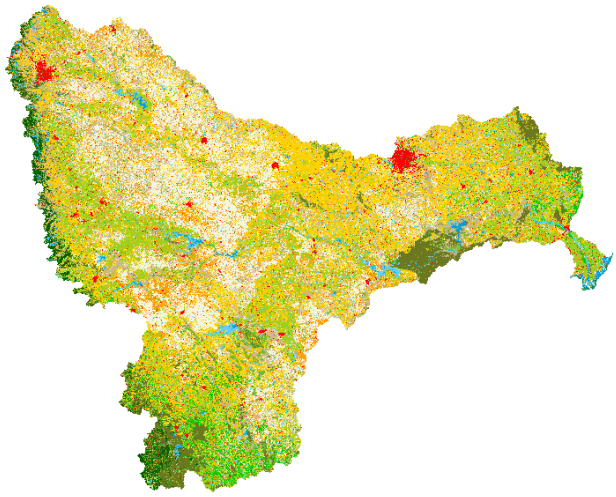


Figure 2: LULC

| Value | Description | Color | Red,Green,Blue |
|---|---|---|---|
| 1 | Built-up | | 255,0,0 |
| 2 | Kharif Crop | | 255,209,0 |
| 3 | Rabi Crop | | 255,158,0 |
| 4 | Zaid Crop | | 158,81,43 |
| 5 | Double/Triple Crop | | 158,207,31 |
| 6 | Current Fallow | | 245,245,219 |
| 7 | Plantation | | 0,204,0 |
| 8 | Evergreen Forest | | 0,94,0 |
| 9 | Deciduous Forest | | 107,120,31 |
| 10 | Degraded/Scrub Forest | | 115,184,43 |
| 11 | Littoral Swamp | | 5,130,94 |
| 12 | Grassland | | 184,234,120 |
| 13 | Shifting Cultivation | | 158,31,235 |
| 14 | Wasteland | | 209,181,133, |
| 15 | Rann | | 191,191,191 |
| 16 | Waterbodies max | | 94,209,242 |
| 17 | Waterbodies min | | 0,158,222 |
| 18 | Snow Cover | | 255,191,196 |

Figure 3: LULC Classes

## 2.3 Querying Data

In this task, we queried the aforementioned KRB data to only highlight Evergreen and Deciduous Forests.

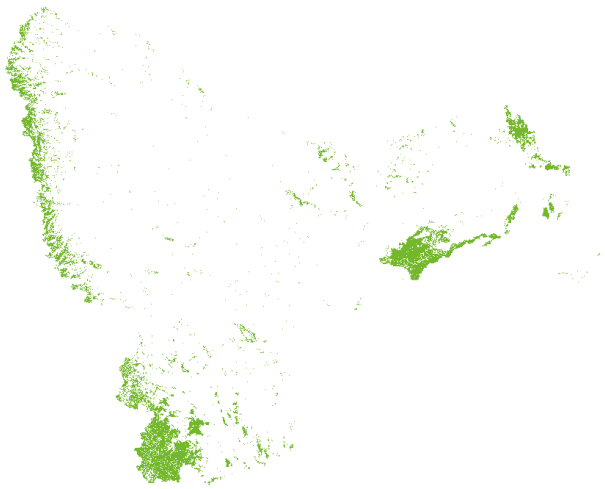
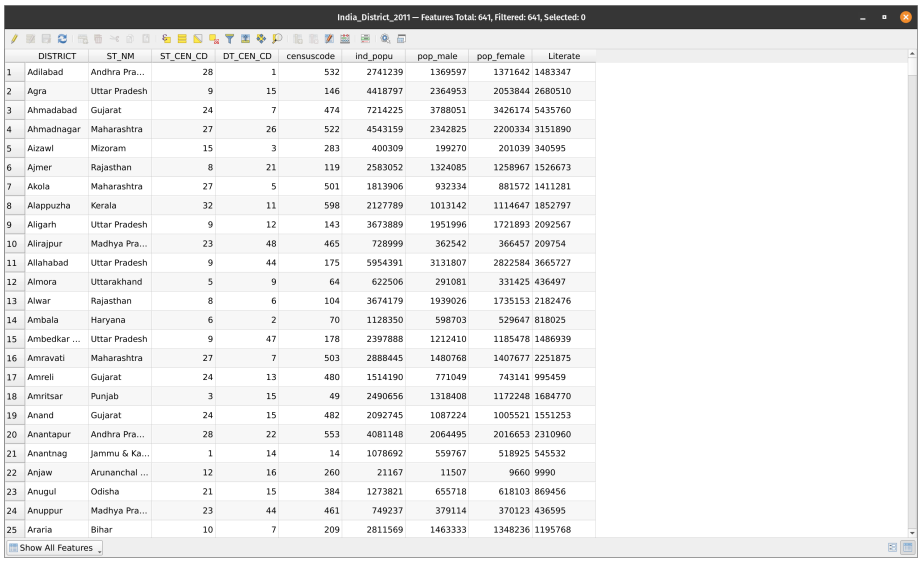


Figure 4: Query: Evergreen/Deciduous Forests in KRB

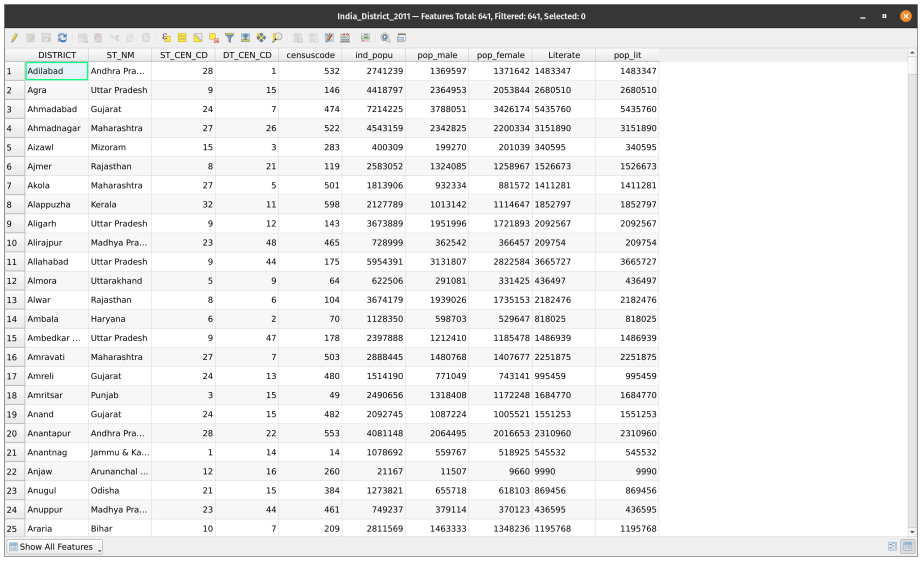
## 2.4 Join with External Data

In this task, we imported a csv file containing 2011 Census data and joined the Literacy numbers into the Attribute Table of the Vector layer.




| | DISTRICT | ST_NM | ST_CEN_CD | DT_CEN_CD | censuscode | ind_popu | pop_male | pop_female | Literate |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Adilabad | Andhra Pra... | 28 | 1 | 532 | 2741239 | 1369597 | 1371642 | 1483347 |
| 2 | Agra | Uttar Pradesh | 9 | 15 | 146 | 4418797 | 2364953 | 2053844 | 2680510 |
| 3 | Ahmadabad | Gujarat | 24 | 7 | 474 | 7214225 | 3788051 | 3426174 | 5435760 |
| 4 | Ahmadnagar | Maharashtra | 27 | 26 | 522 | 4543159 | 2342825 | 2200334 | 3151890 |
| 5 | Aizawl | Mizoram | 15 | 3 | 283 | 400309 | 199270 | 201039 | 340595 |
| 6 | Ajmer | Rajasthan | 8 | 21 | 119 | 2583052 | 1324085 | 1258967 | 1526673 |
| 7 | Akola | Maharashtra | 27 | 5 | 501 | 1813906 | 932334 | 881572 | 1411281 |
| 8 | Alappuzha | Kerala | 32 | 11 | 598 | 2127789 | 1013142 | 1114647 | 1852797 |
| 9 | Aligarh | Uttar Pradesh | 9 | 12 | 143 | 3673889 | 1951996 | 1721893 | 2092567 |
| 10 | Alirajpur | Madhya Pra... | 23 | 48 | 465 | 728999 | 362542 | 366457 | 209754 |
| 11 | Allahabad | Uttar Pradesh | 9 | 44 | 175 | 5954391 | 3131807 | 2822584 | 3665727 |
| 12 | Almora | Uttarakhand | 5 | 9 | 64 | 622506 | 291081 | 331425 | 436497 |
| 13 | Alwar | Rajasthan | 8 | 6 | 104 | 3674179 | 1939026 | 1735153 | 2182476 |
| 14 | Ambala | Haryana | 6 | 2 | 70 | 1128350 | 598703 | 529647 | 818025 |
| 15 | Ambedkar ... | Uttar Pradesh | 9 | 47 | 178 | 2397888 | 1212410 | 1185478 | 1486939 |
| 16 | Amravati | Maharashtra | 27 | 7 | 503 | 2888445 | 1480768 | 1407677 | 2251875 |
| 17 | Amreli | Gujarat | 24 | 13 | 480 | 1514190 | 771049 | 743141 | 995459 |
| 18 | Amritsar | Punjab | 3 | 15 | 49 | 2490656 | 1318408 | 1172248 | 1684770 |
| 19 | Anand | Gujarat | 24 | 15 | 482 | 2092745 | 1087224 | 1005521 | 1551253 |
| 20 | Anantapur | Andhra Pra... | 28 | 22 | 553 | 4081148 | 2064495 | 2016653 | 2310960 |
| 21 | Anantnag | Jammu & Ka... | 1 | 14 | 14 | 1078692 | 559767 | 518925 | 545532 |
| 22 | Anjaw | Arunanchal ... | 12 | 16 | 260 | 21167 | 11507 | 9660 | 9990 |
| 23 | Anugul | Odisha | 21 | 15 | 384 | 1273821 | 655718 | 618103 | 869456 |
| 24 | Anuppur | Madhya Pra... | 23 | 44 | 461 | 749237 | 379114 | 370123 | 436595 |
| 25 | Araria | Bihar | 10 | 7 | 209 | 2811569 | 1463333 | 1348236 | 1195768 |

Figure 5: Attribute Table with new joined column 'Literate'




| | DISTRICT | ST_NM | ST_CEN_CD | DT_CEN_CD | censuscode | ind_popu | pop_male | pop_female | Literate | pop_lit |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Adilabad | Andhra Pra... | 28 | 1 | 532 | 2741239 | 1369597 | 1371642 | 1483347 | 1483347 |
| 2 | Agra | Uttar Pradesh | 9 | 15 | 146 | 4418797 | 2364953 | 2053844 | 2680510 | 2680510 |
| 3 | Ahmadabad | Gujarat | 24 | 7 | 474 | 7214225 | 3788051 | 3426174 | 5435760 | 5435760 |
| 4 | Ahmadnagar | Maharashtra | 27 | 26 | 522 | 4543159 | 2342825 | 2200334 | 3151890 | 3151890 |
| 5 | Aizawl | Mizoram | 15 | 3 | 283 | 400309 | 199270 | 201039 | 340595 | 340595 |
| 6 | Ajmer | Rajasthan | 8 | 21 | 119 | 2583052 | 1324085 | 1258967 | 1526673 | 1526673 |
| 7 | Akola | Maharashtra | 27 | 5 | 501 | 1813906 | 932334 | 881572 | 1411281 | 1411281 |
| 8 | Alappuzha | Kerala | 32 | 11 | 598 | 2127789 | 1013142 | 1114647 | 1852797 | 1852797 |
| 9 | Aligarh | Uttar Pradesh | 9 | 12 | 143 | 3673889 | 1951996 | 1721893 | 2092567 | 2092567 |
| 10 | Alirajpur | Madhya Pra... | 23 | 48 | 465 | 728999 | 362542 | 366457 | 209754 | 209754 |
| 11 | Allahabad | Uttar Pradesh | 9 | 44 | 175 | 5954391 | 3131807 | 2822584 | 3665727 | 3665727 |
| 12 | Almora | Uttarakhand | 5 | 9 | 64 | 622506 | 291081 | 331425 | 436497 | 436497 |
| 13 | Alwar | Rajasthan | 8 | 6 | 104 | 3674179 | 1939026 | 1735153 | 2182476 | 2182476 |
| 14 | Ambala | Haryana | 6 | 2 | 70 | 1128350 | 598703 | 529647 | 818025 | 818025 |
| 15 | Ambedkar ... | Uttar Pradesh | 9 | 47 | 178 | 2397888 | 1212410 | 1185478 | 1486939 | 1486939 |
| 16 | Amravati | Maharashtra | 27 | 7 | 503 | 2888445 | 1480768 | 1407677 | 2251875 | 2251875 |
| 17 | Amreli | Gujarat | 24 | 13 | 480 | 1514190 | 771049 | 743141 | 995459 | 995459 |
| 18 | Amritsar | Punjab | 3 | 15 | 49 | 2490656 | 1318408 | 1172248 | 1684770 | 1684770 |
| 19 | Anand | Gujarat | 24 | 15 | 482 | 2092745 | 1087224 | 1005521 | 1551253 | 1551253 |
| 20 | Anantapur | Andhra Pra... | 28 | 22 | 553 | 4081148 | 2064495 | 2016653 | 2310960 | 2310960 |
| 21 | Anantnag | Jammu & Ka... | 1 | 14 | 14 | 1078692 | 559767 | 518925 | 545532 | 545532 |
| 22 | Anjaw | Arunanchal ... | 12 | 16 | 260 | 21167 | 11507 | 9660 | 9990 | 9990 |
| 23 | Anugul | Odisha | 21 | 15 | 384 | 1273821 | 655718 | 618103 | 869456 | 869456 |
| 24 | Anuppur | Madhya Pra... | 23 | 44 | 461 | 749237 | 379114 | 370123 | 436595 | 436595 |
| 25 | Araria | Bihar | 10 | 7 | 209 | 2811569 | 1463333 | 1348236 | 1195768 | 1195768 |

Figure 6: Attribute Table with a new column created with name 'pop_lit'

## 2.5 Using Symbology to depict Population

In this task, we used a Colour range to depict the population in each district with darker colours depicting a larger population.

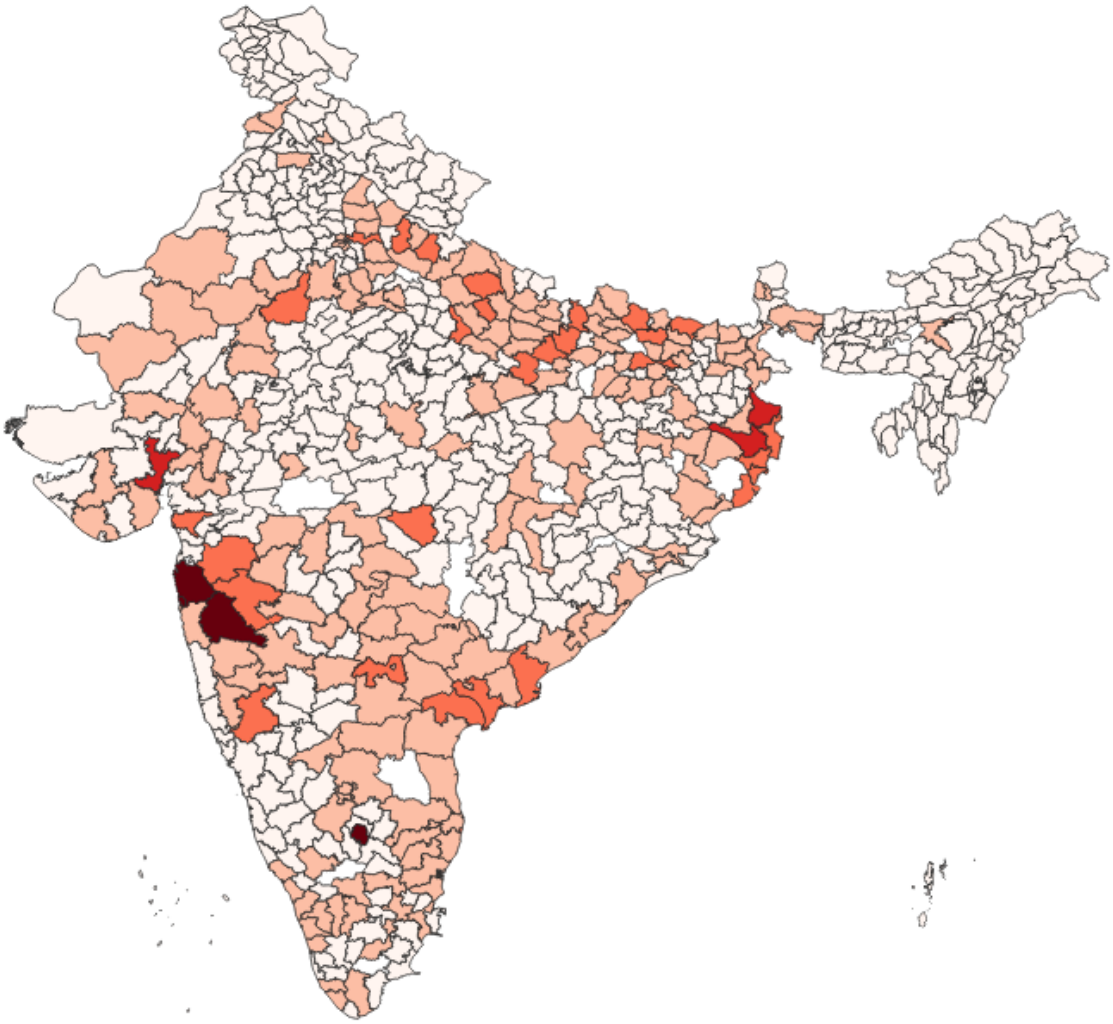


Figure 7: Population per district

## 2.6 Selecting a feature and masking

In this image, we selected a district within the KRB region. Then we used a mask to only get data from the prior selected district.

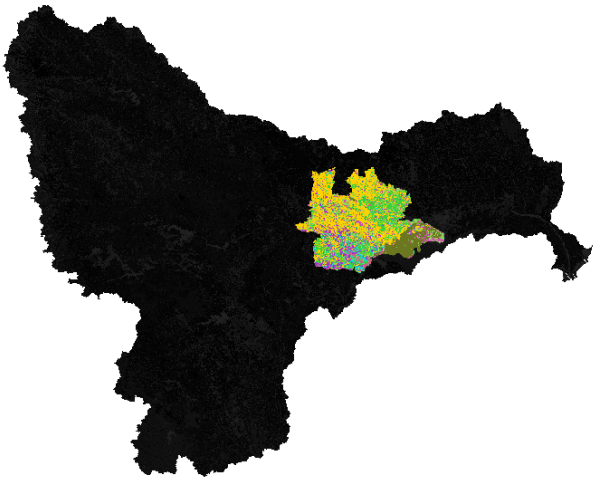


Figure 8: Selected district

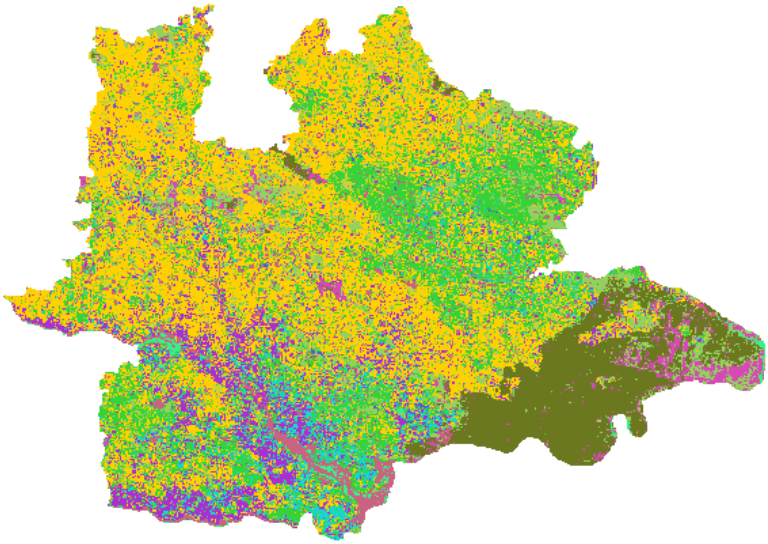


Figure 9: Masked district

## 2.7 Buffering

In this task, we learnt to use buffering and draw a buffer polygon.

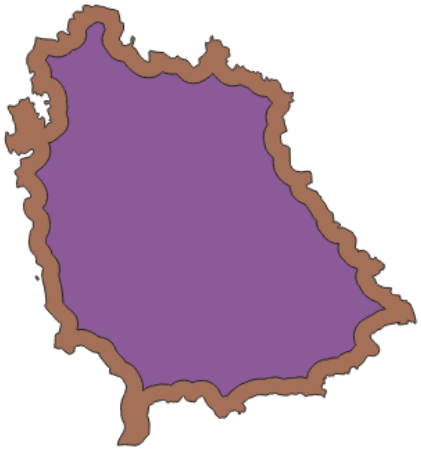
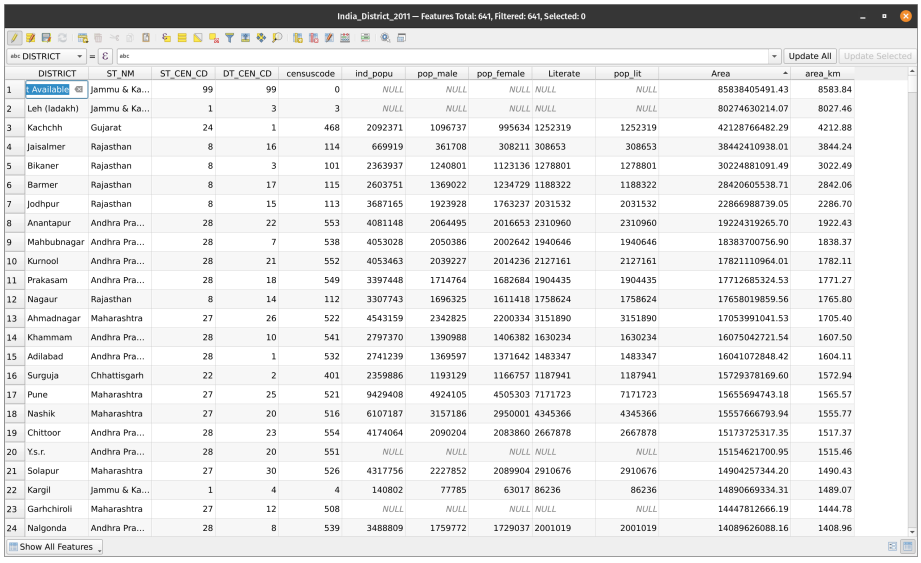


Figure 10: Buffering used in a district

## 2.8 Calculating Area

In this task, we made a new column in the Attribute table depicting area of each district.



India_District_2011 — Features Total: 641, Filtered: 641, Selected: 0

DISTRICT | Update All | Update Selected

| | DISTRICT | ST_NM | ST_CEN_CD | DT_CEN_CD | censuscode | ind_popu | pop_male | pop_female | Literate | pop_lit | Area | area_km |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Availabl | Jammu & Ka... | 99 | 99 | 0 | NULL | NULL | NULL | NULL | NULL | 85838405491.43 | 8583.84 |
| 2 | Leh (ladakh) | Jammu & Ka... | 1 | 3 | 3 | NULL | NULL | NULL | NULL | NULL | 80274630214.07 | 8027.46 |
| 3 | Kachchh | Gujarat | 24 | 1 | 468 | 2092371 | 1096737 | 995634 | 1252319 | 1252319 | 42128766482.29 | 4212.88 |
| 4 | Jaisalmer | Rajasthan | 8 | 16 | 114 | 669919 | 361708 | 308211 | 308653 | 308653 | 38442410938.01 | 3844.24 |
| 5 | Bikaner | Rajasthan | 8 | 3 | 101 | 2363937 | 1240801 | 1123136 | 1278801 | 1278801 | 30224881091.49 | 3022.49 |
| 6 | Barmer | Rajasthan | 8 | 17 | 115 | 2603751 | 1369022 | 1234729 | 1188322 | 1188322 | 28420605538.71 | 2842.06 |
| 7 | Jodhpur | Rajasthan | 8 | 15 | 113 | 3687165 | 1923928 | 1763237 | 2031532 | 2031532 | 22866988739.05 | 2286.70 |
| 8 | Anantapur | Andhra Pra... | 28 | 22 | 553 | 4081148 | 2064495 | 2016653 | 2310960 | 2310960 | 19224319265.70 | 1922.43 |
| 9 | Mahbubnagar | Andhra Pra... | 28 | 7 | 538 | 4053028 | 2050386 | 2002642 | 1940646 | 1940646 | 18383700756.90 | 1838.37 |
| 10 | Kurnool | Andhra Pra... | 28 | 21 | 552 | 4053463 | 2039227 | 2014236 | 2127161 | 2127161 | 17821110964.01 | 1782.11 |
| 11 | Prakasam | Andhra Pra... | 28 | 18 | 549 | 3397448 | 1714764 | 1682684 | 1904435 | 1904435 | 17712685324.53 | 1771.27 |
| 12 | Nagaur | Rajasthan | 8 | 14 | 112 | 3307743 | 1696325 | 1611418 | 1758624 | 1758624 | 17658019859.56 | 1765.80 |
| 13 | Ahmadnagar | Maharashtra | 27 | 26 | 522 | 4543159 | 2342825 | 2200334 | 3151890 | 3151890 | 17053991041.53 | 1705.40 |
| 14 | Khammam | Andhra Pra... | 28 | 10 | 541 | 2797370 | 1390988 | 1406382 | 1630234 | 1630234 | 16075042721.54 | 1607.50 |
| 15 | Adilabad | Andhra Pra... | 28 | 1 | 532 | 2741239 | 1369597 | 1371642 | 1483347 | 1483347 | 16041072848.42 | 1604.11 |
| 16 | Surguja | Chhattisgarh | 22 | 2 | 401 | 2359886 | 1193129 | 1166757 | 1187941 | 1187941 | 15729378169.60 | 1572.94 |
| 17 | Pune | Maharashtra | 27 | 25 | 521 | 9429408 | 4924105 | 4505303 | 7171723 | 7171723 | 15655694743.18 | 1565.57 |
| 18 | Nashik | Maharashtra | 27 | 20 | 516 | 6107187 | 3157186 | 2950001 | 4345366 | 4345366 | 15557666793.94 | 1555.77 |
| 19 | Chittoor | Andhra Pra... | 28 | 23 | 554 | 4174064 | 2090204 | 2083860 | 2667878 | 2667878 | 15173725317.35 | 1517.37 |
| 20 | Y.s.r. | Andhra Pra... | 28 | 20 | 551 | NULL | NULL | NULL | NULL | NULL | 15154621700.95 | 1515.46 |
| 21 | Solapur | Maharashtra | 27 | 30 | 526 | 4317756 | 2227852 | 2089904 | 2910676 | 2910676 | 14904257344.20 | 1490.43 |
| 22 | Kargil | Jammu & Ka... | 1 | 4 | 4 | 140802 | 77785 | 63017 | 86236 | 86236 | 14890669334.31 | 1489.07 |
| 23 | Garhchiroli | Maharashtra | 27 | 12 | 508 | NULL | NULL | NULL | NULL | NULL | 14447812666.19 | 1444.78 |
| 24 | Nalgonda | Andhra Pra... | 28 | 8 | 539 | 3488809 | 1759772 | 1729037 | 2001019 | 2001019 | 14089626088.16 | 1408.96 |

Show All Features

Figure 11: District Area