



RAJASTHAN WETLAND ATLAS



8.1.8 Rajasthan

Total 12625 wetlands have been mapped at 1:50,000 scale in the state. In addition, 34123 small wetlands (< 2.25 ha) have also been identified. Total wetland area estimated is 782314 ha that is around 2.29 per cent of the geographic area (Table 29). River/Stream contributed 39.95% to the total wetland area. The reservoir/barrage with 190600 ha (24.36% area) is the second major wetland category. Area under tank/pond is 151027 ha (19.31%). Graphical distribution of wetland type is shown in Figure 27.

Open water spread is more during in post-monsoon (368129 ha) than during pre-monsoon (158696 ha). Aquatic vegetation is slightly more during pre-monsoon (5166 ha) than in post-monsoon (4102 ha). The qualitative turbidity of water is low in both the seasons. Wetland map of the state is shown in Plate 30.

Table 29: Area estimates of wetlands in Rajasthan

| Sr. No. | Wettcode | Wetland Category | Number of wetlands | Total wetland area | % of wetland area | Area in ha | |
|---------|-------------|-----------------------------------|--------------------|--------------------|-------------------|------------------------------|------------------|
| | | | | | | Open Water Post-monsoon area | Pre-monsoon area |
| | 1100 | Inland Wetlands - Natural | | | | | |
| 1 | 1101 | Lake/Pond | 65 | 38269 | 4.89 | 28122 | 21711 |
| 2 | 1105 | Waterlogged | 61 | 16856 | 2.15 | 12933 | 5091 |
| 3 | 1106 | River/Stream | 648 | 312570 | 39.95 | 52080 | 28021 |
| | 1200 | Inland Wetlands -Man-made | | | | | |
| 4 | 1201 | Reservoir/Barrage | 979 | 190600 | 24.36 | 165938 | 71546 |
| 5 | 1202 | Tank/Pond | 10731 | 151027 | 19.31 | 100594 | 18659 |
| 6 | 1203 | Waterlogged | 101 | 7636 | 0.98 | 4423 | 1284 |
| 7 | 1204 | Salt pan | 39 | 12283 | 1.57 | 4030 | 2433 |
| | | Total - Inland | 12624 | 729241 | 93.22 | 368120 | 148745 |
| | 2100 | Coastal Wetlands - Natural | | | | | |
| 8 | 2104 | Intertidal mud flat | 1 | 18950 | 2.42 | 9 | 9951 |
| | | Total - Coastal | 1 | 18950 | 2.42 | 9 | 9951 |
| | | Sub-Total | 12625 | 748191 | 95.64 | 368129 | 158696 |
| | | Wetlands (<2.25 ha) | 34123 | 34123 | 4.36 | - | - |
| | | Total | 46748 | 782314 | 100.00 | 368129 | 158696 |

| | | |
|--------------------------------------|------|------|
| Area under Aquatic Vegetation | 4102 | 5166 |
|--------------------------------------|------|------|

| Area under turbidity levels | | |
|------------------------------------|--------|--------|
| Low | 294322 | 107553 |
| Moderate | 40945 | 7390 |
| High | 32862 | 43753 |

District-wise wetland area estimates in Rajasthan

There are 32 districts in the state. The wetlands occupy as high as 6.94% of geographic area (Bhilwara), and as low as 0.08% (Churu). Reservoir/Barrage and tank/pond are the dominate wetland types in almost all districts. Jalore is the only district containing coastal wetlands, which includes mudflats. District-wise wetland area estimates is given in Table 30 and graphical distribution of wetlands is shown in Figure 28. District-wise area of wetlands (type-wise) in the state is given in Table 31.

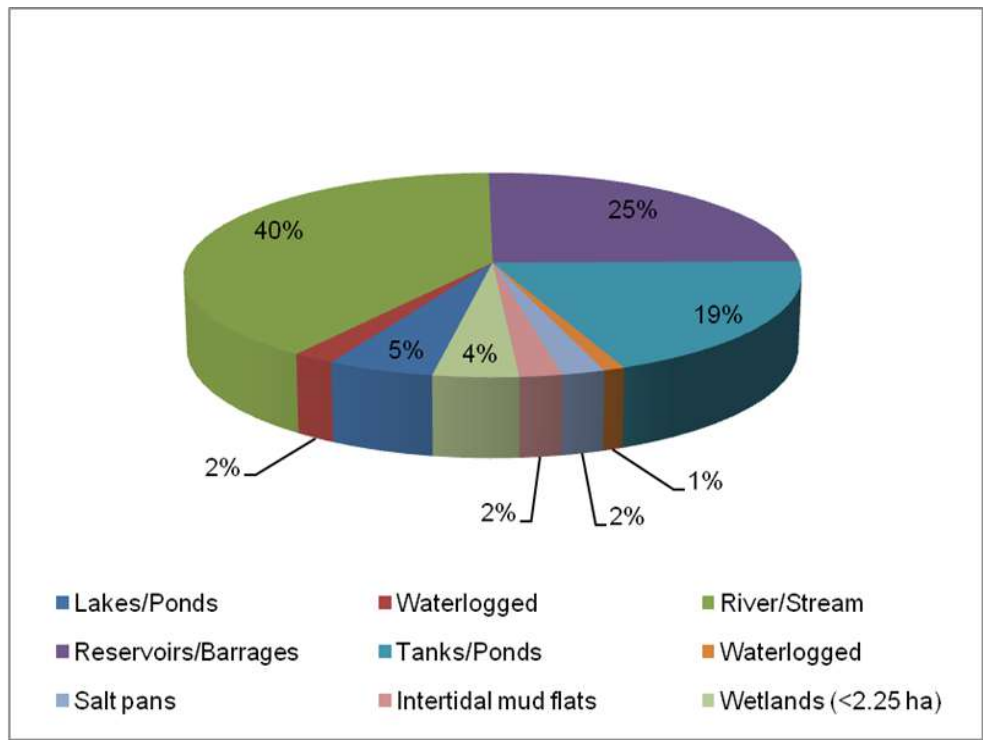


Figure 27: Type-wise wetland distribution in Rajasthan

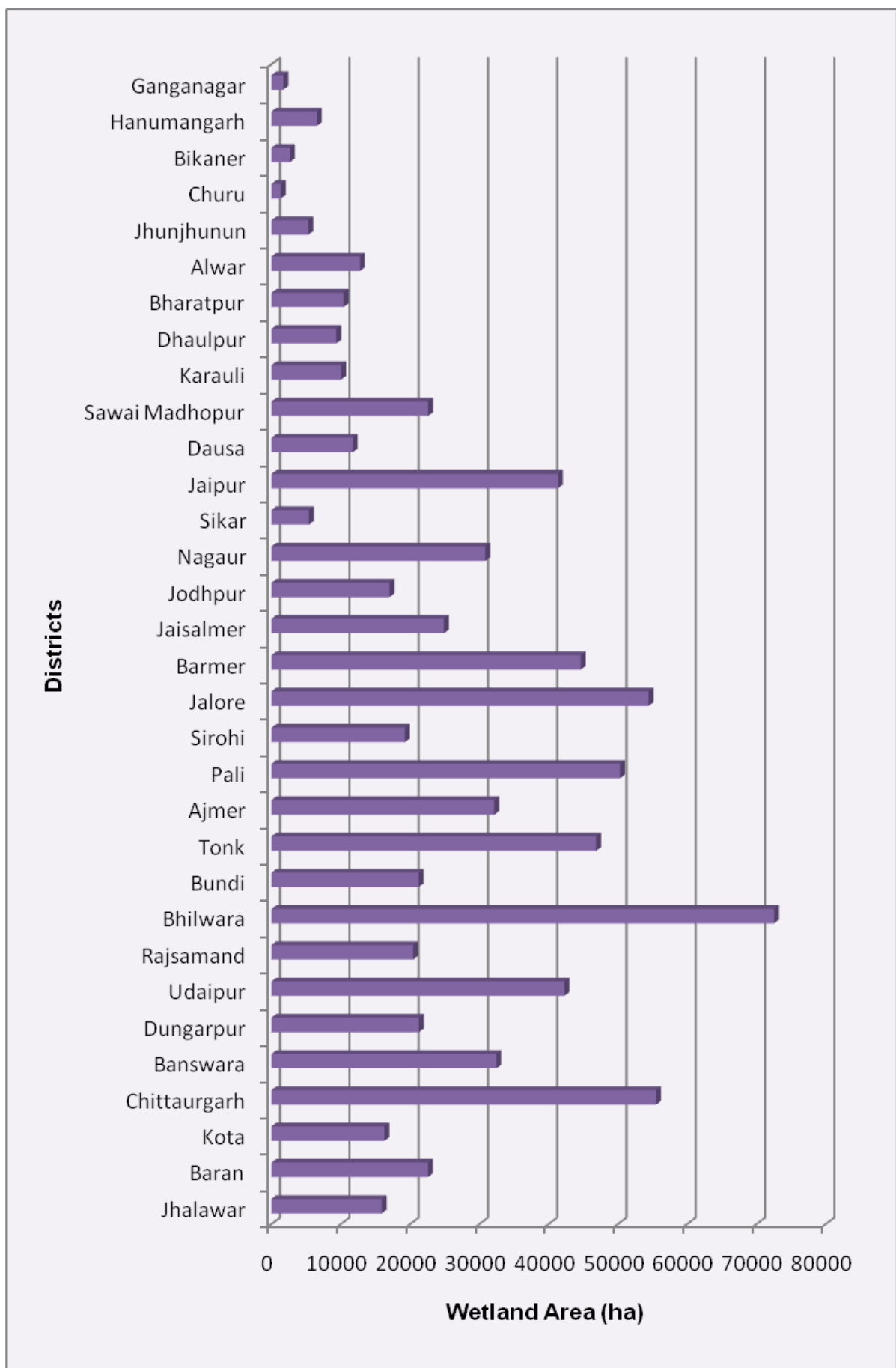


Figure 28: District-wise graphical distribution of wetlands in Rajasthan

Table 30: District-wise area of wetlands in Rajasthan

| District code | District | Geographic area * | Wetland area | % of total wetland area | % of district geographic area | Open water | | Aquatic Vegetation | | Turbidity (Post-monsoon) | | | Turbidity (Pre-monsoon) | | |
|---------------|----------------|-------------------|---------------|-------------------------|-------------------------------|---------------|---------------|--------------------|-------------|--------------------------|--------------|--------------|-------------------------|-------------|--------------|
| | | | | | | Post-monsoon | Pre-monsoon | Post-monsoon | Pre-monsoon | Low | Moderate | High | Low | Moderate | High |
| | | | | | | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) |
| 1 | Ganganagar | 7984 | 1708 | 0.22 | 0.21 | 175 | 158 | - | - | 100 | 30 | 45 | 158 | - | - |
| 2 | Hanumangarh | 12645 | 6549 | 0.84 | 0.52 | 513 | 2197 | - | - | 435 | - | 78 | 2171 | - | 26 |
| 3 | Bikaner | 27244 | 2666 | 0.34 | 0.10 | 778 | 255 | - | - | 759 | - | 19 | 255 | - | - |
| 4 | Churu | 16830 | 1368 | 0.17 | 0.08 | 108 | 66 | - | - | 98 | 5 | 5 | 56 | - | 10 |
| 5 | Jhunjhunun | 5928 | 5319 | 0.68 | 0.90 | 57 | 60 | - | - | 16 | - | 41 | 23 | - | 37 |
| 6 | Alwar | 8380 | 12774 | 1.63 | 1.52 | 3192 | 747 | 16 | - | 2091 | 219 | 882 | 615 | - | 132 |
| 7 | Bharatpur | 5066 | 10415 | 1.33 | 2.06 | 2959 | 619 | 2250 | 4 | 2716 | 66 | 177 | 446 | 173 | - |
| 8 | Dhaulpur | 3084 | 9370 | 1.20 | 3.04 | 4296 | 3108 | 86 | 58 | 4269 | - | 27 | 2970 | - | 138 |
| 9 | Karauli | 5530 | 10042 | 1.28 | 1.82 | 4384 | 2457 | 29 | 59 | 4339 | 15 | 30 | 2168 | 268 | 21 |
| 10 | Sawai Madhopur | 4500 | 22606 | 2.89 | 5.02 | 7121 | 3395 | 7 | 10 | 6162 | 191 | 768 | 3088 | - | 307 |
| 11 | Dausa | 3429 | 11720 | 1.50 | 3.42 | 1281 | 485 | - | 22 | 512 | 254 | 515 | 107 | 2 | 376 |
| 12 | Jaipur | 11152 | 41352 | 5.29 | 3.71 | 10854 | 8673 | 82 | 13 | 2506 | 4864 | 3484 | 772 | 120 | 7781 |
| 13 | Sikar | 7732 | 5388 | 0.69 | 0.70 | 1192 | 473 | - | 28 | 337 | - | 855 | 154 | - | 319 |
| 14 | Nagaur | 17718 | 30876 | 3.95 | 1.74 | 12971 | 10080 | - | - | 894 | 4275 | 7802 | 203 | 91 | 9786 |
| 15 | Jodhpur | 22850 | 17032 | 2.18 | 0.75 | 1381 | 254 | - | - | 1107 | - | 274 | 254 | - | - |
| 16 | Jaisalmer | 38401 | 24876 | 3.18 | 0.65 | 16988 | 5526 | - | - | 14655 | 1711 | 622 | 5526 | - | - |
| 17 | Barmer | 28387 | 44638 | 5.71 | 1.57 | 13769 | 5925 | - | 150 | 13575 | - | 194 | 1979 | 36 | 3910 |
| 18 | Jalore | 10640 | 54440 | 6.96 | 5.12 | 9024 | 8992 | 43 | 42 | 7263 | 121 | 1640 | 634 | 140 | 8218 |
| 19 | Sirohi | 5136 | 19259 | 2.46 | 3.75 | 6147 | 739 | - | 348 | 5535 | 272 | 340 | 234 | 505 | - |
| 20 | Pali | 12387 | 50304 | 6.43 | 4.06 | 16823 | 2173 | 141 | 463 | 10867 | 2907 | 3049 | 1883 | 84 | 206 |
| 21 | Ajmer | 8481 | 32167 | 4.11 | 3.79 | 14663 | 2928 | 153 | 98 | 12562 | 1010 | 1091 | 1360 | 32 | 1536 |
| 22 | Tonk | 7194 | 46875 | 5.99 | 6.52 | 26016 | 15337 | 6 | - | 23594 | 576 | 1846 | 12882 | 370 | 2085 |
| 23 | Bundi | 5550 | 21238 | 2.71 | 3.83 | 12701 | 4104 | 108 | 36 | 9583 | 1013 | 2105 | 3498 | 127 | 479 |
| 24 | Bhilwara | 10455 | 72563 | 9.27 | 6.94 | 46994 | 4377 | 37 | 1125 | 35667 | 8888 | 2439 | 4130 | 148 | 99 |
| 25 | Rajsamand | 3853 | 20435 | 2.61 | 5.30 | 11445 | 2355 | 19 | 146 | 10504 | 690 | 251 | 1062 | 736 | 557 |
| 26 | Udaipur | 13430 | 42292 | 5.41 | 3.15 | 26524 | 13066 | 75 | 190 | 25514 | 869 | 141 | 11848 | 754 | 464 |
| 27 | Dungarpur | 3770 | 21278 | 2.72 | 5.64 | 15625 | 8537 | 120 | 367 | 15153 | 452 | 20 | 8526 | - | 11 |
| 28 | Banswara | 5037 | 32468 | 4.15 | 6.45 | 24334 | 11620 | 137 | 624 | 19572 | 4676 | 86 | 5768 | 167 | 5685 |
| 29 | Chittaurgarh | 10856 | 55537 | 7.10 | 5.12 | 45192 | 27867 | 126 | 1128 | 41020 | 3340 | 821 | 26410 | 114 | 1343 |
| 30 | Kota | 5446 | 16316 | 2.09 | 3.00 | 10055 | 5709 | 140 | 177 | 7634 | 1735 | 686 | 5408 | 219 | 82 |
| 31 | Baran | 6955 | 22602 | 2.89 | 3.25 | 10553 | 3114 | 365 | 8 | 7479 | 937 | 2148 | 2281 | 741 | 92 |
| 32 | Jhalawar | 6219 | 15911 | 2.03 | 2.56 | 10014 | 3300 | 162 | 70 | 7804 | 1829 | 381 | 684 | 2563 | 53 |
| | Total | 342269 | 782384 | 100.00 | 2.29 | 368129 | 158696 | 4102 | 5166 | 294322 | 40945 | 32862 | 107553 | 7390 | 43753 |

* Data Source: <http://nic.in>

Table 31: District-wise area of wetlands (type-wise) in Rajasthan

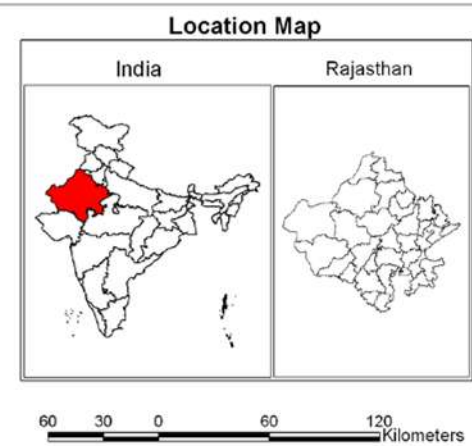
| District code | District | Geographic area * | Wetland Type | | | | | | | | Sub-total | Wetlands (<2.25 ha) | Total |
|---------------|----------------|-------------------|--------------|-----------------------|---------------|-------------------|---------------|------------------------|--------------|---------------------|---------------|---------------------|---------------|
| | | | 1101 | 1105 | 1106 | 1201 | 1202 | 1203 | 1204 | 2104 | | | |
| | | | Lake/pond | Waterlogged (Natural) | River/Stream | Reservoir/Barrage | Tank/Pond | Waterlogged (Man-made) | Salt pan | Intertidal mud flat | | | |
| (sq. km) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | (ha) | | |
| 1 | Ganganagar | 7984 | - | - | - | - | 360 | - | - | - | 360 | 1346 | 1706 |
| 2 | Hanumangarh | 12645 | - | - | 3966 | - | 1397 | - | - | - | 5363 | 1186 | 6549 |
| 3 | Bikaner | 27244 | - | - | - | 190 | 750 | 543 | 5 | - | 1488 | 1178 | 2666 |
| 4 | Churu | 16830 | - | - | 23 | 154 | 117 | - | 683 | - | 977 | 391 | 1368 |
| 5 | Jhunjhunun | 5928 | - | - | 4929 | - | 80 | - | - | - | 5009 | 310 | 5319 |
| 6 | Alwar | 8380 | 798 | - | 7066 | 949 | 2891 | - | - | - | 11704 | 1070 | 12774 |
| 7 | Bharatpur | 5066 | - | - | 3067 | 1217 | 1568 | 3042 | - | - | 8894 | 1521 | 10415 |
| 8 | Dhaulpur | 3084 | - | - | 6786 | 1551 | 691 | - | - | - | 9028 | 342 | 9370 |
| 9 | Karauli | 5530 | 99 | - | 6270 | 1231 | 1679 | - | - | - | 9279 | 763 | 10042 |
| 10 | Sawai Madhopur | 4500 | 22 | - | 15981 | 3957 | 1860 | - | - | - | 21820 | 786 | 22606 |
| 11 | Dausa | 3429 | - | - | 8685 | 1299 | 1513 | - | - | - | 11497 | 223 | 11720 |
| 12 | Jaipur | 11152 | 8350 | - | 23598 | 2926 | 3774 | - | 1650 | - | 40298 | 1054 | 41352 |
| 13 | Sikar | 7732 | - | - | 3359 | 1264 | 369 | - | 26 | - | 5018 | 370 | 5388 |
| 14 | Nagaur | 17718 | 16024 | - | 7016 | 1352 | 1450 | - | 3030 | - | 28872 | 2004 | 30876 |
| 15 | Jodhpur | 22850 | 81 | - | 8284 | 725 | 1798 | - | 4471 | - | 15359 | 1673 | 17032 |
| 16 | Jaisalmer | 38401 | 81 | 7826 | 2367 | 97 | 8976 | 3394 | - | - | 22741 | 2135 | 24876 |
| 17 | Barmer | 28387 | 155 | 4283 | 19700 | 187 | 11189 | 657 | 1589 | 5294 | 43054 | 1584 | 44638 |
| 18 | Jalore | 10640 | - | 4741 | 27601 | 3813 | 2864 | - | 357 | 13656 | 53032 | 1408 | 54440 |
| 19 | Sirohi | 5136 | 132 | - | 10887 | 4565 | 2960 | - | - | - | 18544 | 715 | 19259 |
| 20 | Pali | 12387 | 323 | 6 | 27216 | 13178 | 8144 | - | - | - | 48867 | 1437 | 50304 |
| 21 | Ajmer | 8481 | 1464 | - | 6928 | 6599 | 14682 | - | 472 | - | 30145 | 2022 | 32167 |
| 22 | Tonk | 7194 | 39 | - | 12126 | 22692 | 10169 | - | - | - | 45026 | 1849 | 46875 |
| 23 | Bundi | 5550 | - | - | 10205 | 6905 | 3529 | - | - | - | 20639 | 599 | 21238 |
| 24 | Bhilwara | 10455 | 1293 | - | 18004 | 19020 | 31970 | - | - | - | 70287 | 2213 | 72500 |
| 25 | Rajsamand | 3853 | 1367 | - | 6805 | 6518 | 5008 | - | - | - | 19698 | 732 | 20430 |
| 26 | Udaipur | 13430 | 6908 | - | 14373 | 13944 | 6295 | - | - | - | 41520 | 772 | 42292 |
| 27 | Dungarpur | 3770 | 363 | - | 4865 | 10829 | 4403 | - | - | - | 20460 | 818 | 21278 |
| 28 | Banswara | 5037 | - | - | 9956 | 18858 | 3211 | - | - | - | 32025 | 443 | 32468 |
| 29 | Chittaurgarh | 10856 | 226 | - | 9360 | 35786 | 9145 | - | - | - | 54517 | 1020 | 55537 |
| 30 | Kota | 5446 | 447 | - | 10780 | 1238 | 3171 | - | - | - | 15636 | 680 | 16316 |
| 31 | Baran | 6955 | 51 | - | 14570 | 4479 | 2635 | - | - | - | 21735 | 867 | 22602 |
| 32 | Jhalawar | 6219 | 46 | - | 7797 | 5077 | 2379 | - | - | - | 15299 | 612 | 15911 |
| | Total | 92691 | 38269 | 16856 | 312570 | 190600 | 151027 | 7636 | 12283 | 18950 | 748191 | 34123 | 782314 |

* Data Source: <http://nic.in>



| Symbol | Typecode | Level I | Level II | Level III |
|--------|----------|-------------------------|-----------------|--------------------------------|
| | | Inland Wetlands | | |
| | | | Natural | |
| | 1101 | | | Lakes/Ponds |
| | 1102 | | | Ox-bow lakes/ Cut-off meanders |
| | 1103 | | | High altitude wetlands |
| | 1104 | | | Reverine wetlands |
| | 1105 | | | Waterlogged |
| | 1106 | | | River/Stream |
| | | | Man-made | |
| | 1201 | | | Reservoirs/Barrages |
| | 1202 | | | Tanks/Ponds |
| | 1203 | | | Waterlogged |
| | 1204 | | | Salt pans |
| | | Coastal Wetlands | | |
| | | | Natural | |
| | 2101 | | | Lagoons |
| | 2102 | | | Creeks |
| | 2103 | | | Sand/Beach |
| | 2104 | | | Intertidal mud flats |
| | 2105 | | | Salt marsh |
| | 2106 | | | Mangroves |
| | 2107 | | | Coral reefs |
| | | | Man-made | |
| | 2201 | | | Salt pans |
| | 2202 | | | Aquaculture ponds |

- Legend**
- Wetlands (<2.25ha)
 - Drainage (line)
 - Major Roads
 - Railway
 - Settlements
 - Town/Settlements
 - District Boundary
 - State Boundary
 - International Boundary



Data Source :
 IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

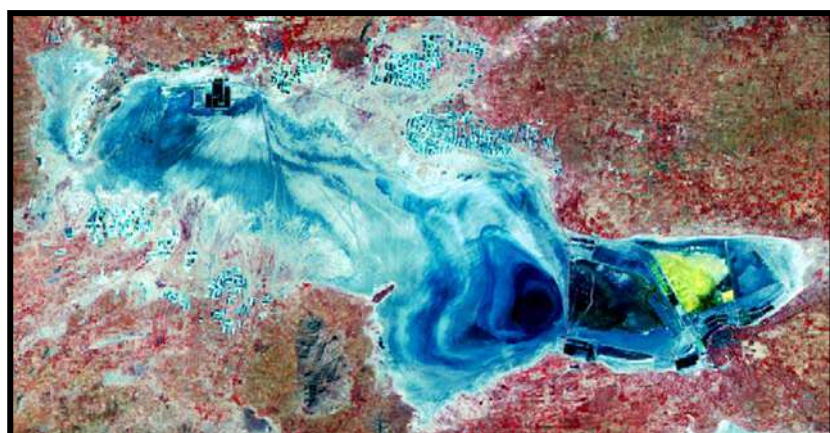
Prepared By :
 Space Applications Centre (ISRO), Ahmedabad
 and
 State Remote Sensing Application Centre, Jodhpur

Sponsored By :
 Ministry of Environment and Forests
 Government of India

Plate 30: Wetland map of Rajasthan

9.12 Sambhar Lake (Ramsar Site)

| | |
|--------------|---|
| Name | Sambhar Lake |
| Location | 26°52'31" to 27°01'57" N Latitude and 74°53'47" to 75°13'41" E Longitude |
| Area | 24294 ha (Wetland Area) |
| Wetland Type | Lake |
| Climate | Average annual rainfall : 500 mm Average annual temperature range from a maximum of 36.7° C and a minimum of 11.7° C. |
| Description | Sambhar lake is a Ramsar site and it is a typical shallow saline wetland of Rajasthan located near Sambhar village. The average depth is 3 meters in the monsoon while in pre-monsoon it becomes very shallow (< 100 cm). During monsoon season it receives rain water from its catchments. The flora and fauna mainly represent of fresh water during monsoon season while season proceeds the water becomes saline. Fresh water flora of monsoon season will be replaced by fresh water flora and fauna mainly plankton population. A large part of the lake dry up during summer to accelerate mining activity of ground water for manufacturing of salt . There are thousands of salt plan constructed at the periphery of the Sambar Lake. |
| Vegetation | The vegetation present in the catchment area in mostly <i>xerophytic</i> type. Shoreline vegetation includes the halophytes <i>Suaeda fruticosa</i> , <i>Salsola baryosma</i> and <i>Cressa cretica</i> . The most dominant algae in Sambhar lake and the salt pans are <i>Dunaliella salina</i> (dominant saline algae of the lake), <i>Chlmydomonas sp.</i> , <i>Anabaena sp.</i> , and <i>Aphanothece halophytica</i> . |
| Fauna | Zooplankton studies are limited. In depth studies were made to record avifauna of the lake. Every year thousands of migratory birds visit the lake and feed on plankton and fish fry. Some of the common birds recorded are: lesser flamingo, greater flamingo, tufted duck, pochard, white pelican, brown-headed gull, black-headed gull, herring gull, redshank, greenshank, common sandpiper, blackwinged stilt, pintail, shoveler, dabchick, purple moorhen, demoiselle crane, large Indian pratincole, and avocet. |
| Turbidity | Low - High |



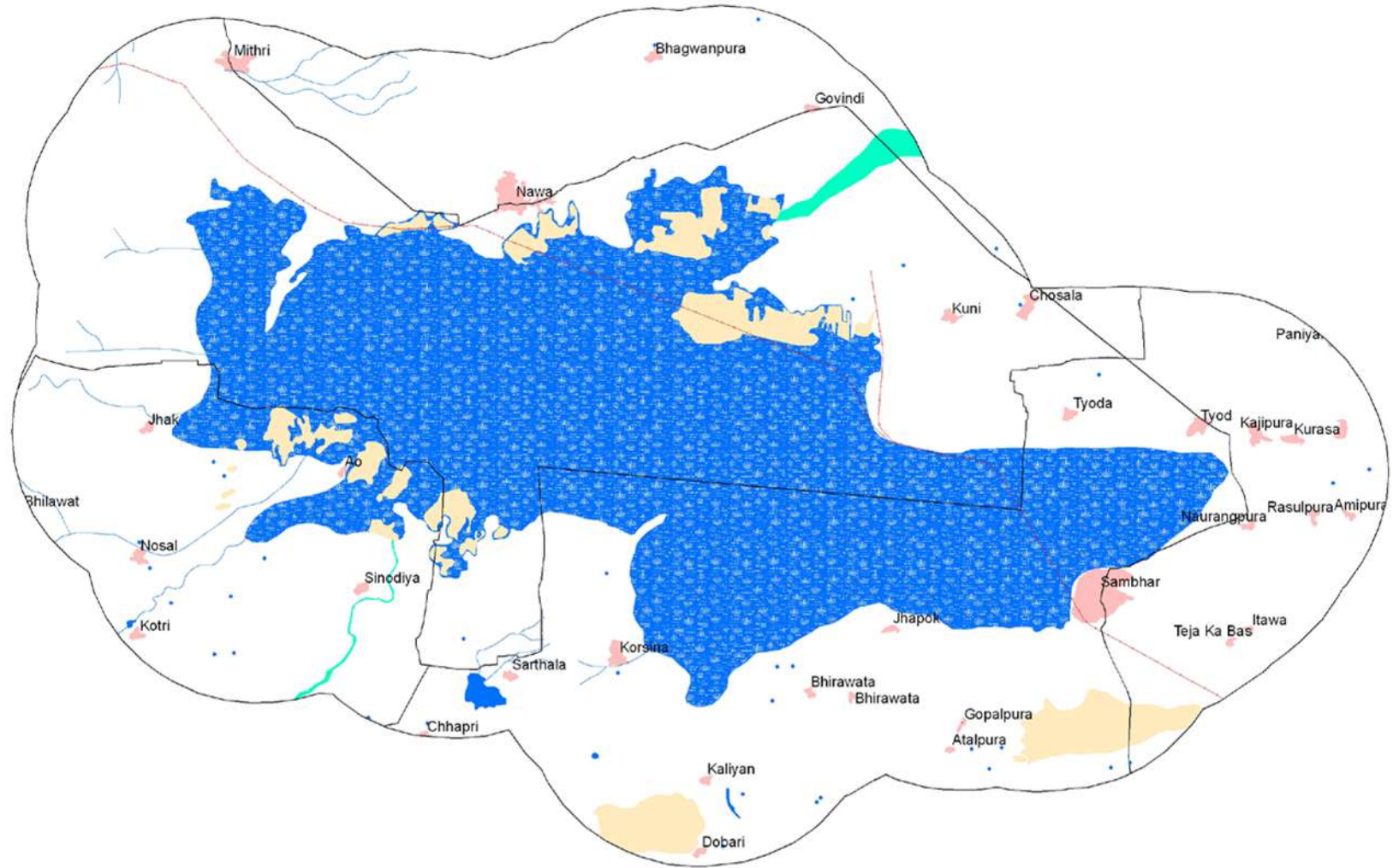
Post-monsoon data (2006)



Pre-monsoon data (2007)

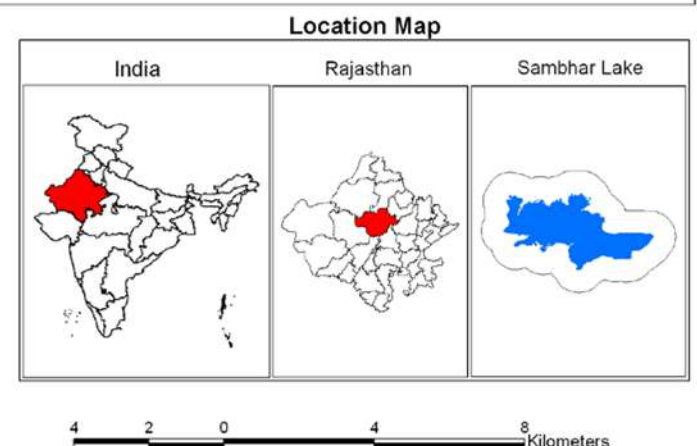


Plate 94: Sambhar Lake



| Symbol | Typecode | Level I | Level II | Level III |
|--------|----------|-------------------------|----------|--------------------------------|
| | | Inland Wetlands | | |
| | | | Natural | |
| ■ | 1101 | | | Lakes/Ponds |
| ■ | 1102 | | | Ox-bow lakes/ Cut-off meanders |
| ■ | 1103 | | | High altitude wetlands |
| ■ | 1104 | | | Reverine wetlands |
| ■ | 1105 | | | Waterlogged |
| ■ | 1106 | | | River/Stream |
| | | | Man-made | |
| ■ | 1201 | | | Reservoirs/Barrages |
| ■ | 1202 | | | Tanks/Ponds |
| ■ | 1203 | | | Waterlogged |
| ■ | 1204 | | | Salt pans |
| | | Coastal Wetlands | | |
| | | | Natural | |
| ■ | 2101 | | | Lagoons |
| ■ | 2102 | | | Creeks |
| ■ | 2103 | | | Sand/Beach |
| ■ | 2104 | | | Intertidal mud flats |
| ■ | 2105 | | | Salt marsh |
| ■ | 2106 | | | Mangroves |
| ■ | 2107 | | | Coral reefs |
| | | | Man-made | |
| ■ | 2201 | | | Salt pans |
| ■ | 2202 | | | Aquaculture ponds |

- Legend**
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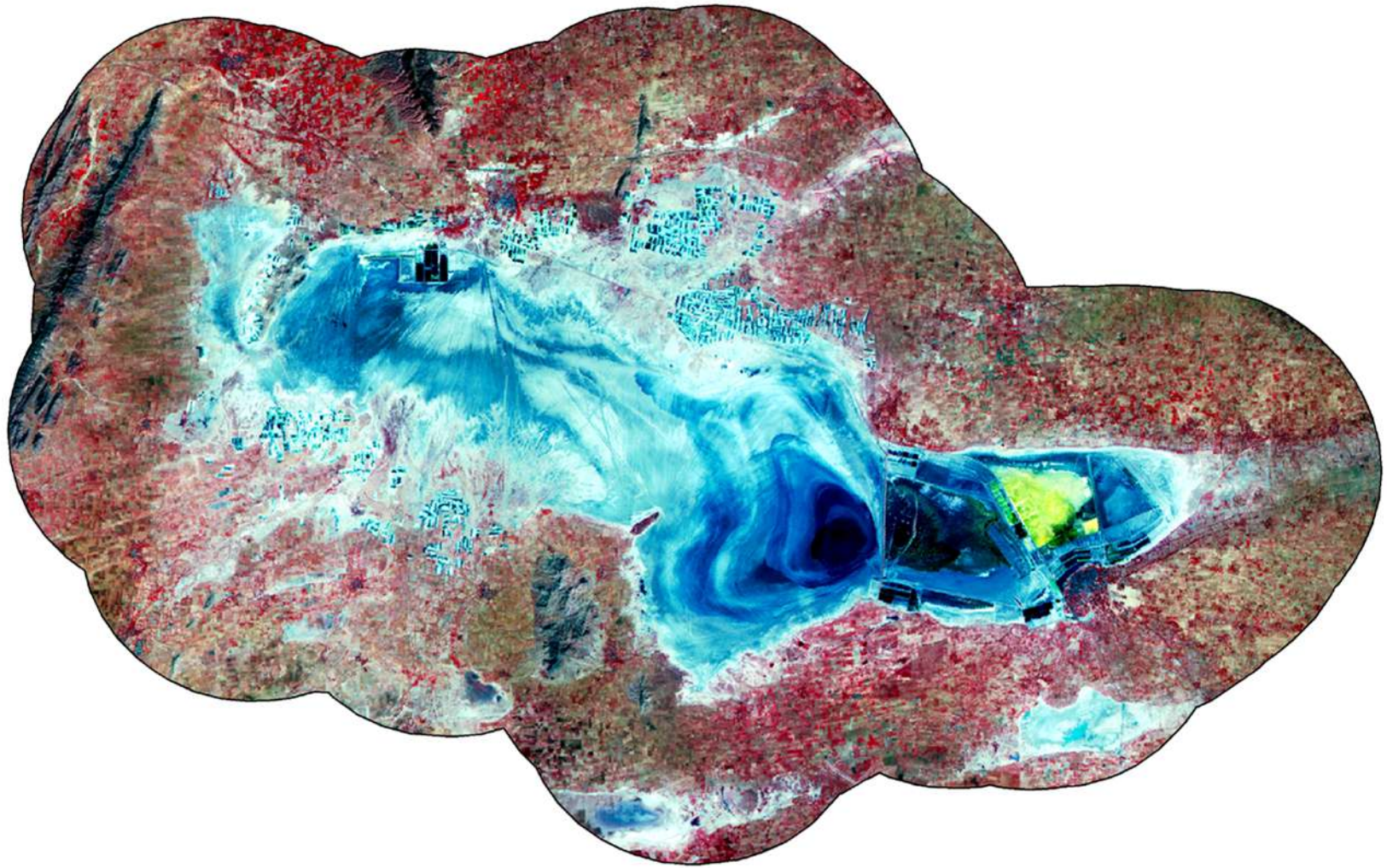


Data Source :
 IRS P6 LISS III data (Pre-monsoon and Post-monsoon Season 2006-07)

Prepared By :
 Space Applications Centre (ISRO), Ahmedabad
 and
 State Remote Sensing Application Centre, Jodhpur

Sponsored By :
 Ministry of Environment and Forests
 Government of India

Plate 95: Wetland map - 5 km buffer area of Sambhar Lake



IRS P6 LISS-III Post-monsoon data (2006).

Plate 96: IRS LISS III FCC - 5 km buffer area of Sambhar Lake