

RC Assessment Raw Data: Surat

| Clusters | No. | Indicators | Surat City Resilience Strategy 2011 | | Surat Resilience Strategy 2017 (RC100) | | Surat RC Achievements | |
|----------------------------|-----|---|-------------------------------------|-----------|--|-----------------|-----------------------|--------------|
| | | | Score | Reference | Score | Reference | Score | Reference |
| Public Participation | 1 | Educate developers and the public about hazard mitigation | 2 | (p43-45) | 2 | (p41-42, 59-61) | 2 | a |
| | 2 | Encourage community involvement and citizen participation | 1 | (p45) | 2 | (p71-76) | 2 | b |
| | 3 | Learn collectively from past urban hazards | 3 | general | 3 | general | 1 | [1](p9-12) |
| Social Service | 4 | Enforce security and laws to reduce crimes | | | 1 | (p70) | 2 | c |
| | 5 | Set ensured human security for providing basic living needs | 1 | (p45) | 2 | (p29-34) | | |
| | 6 | Assist vulnerable neighborhoods and populations (increase social equity) | 1 | (p45) | 2 | (p33-34) | | |
| | 7 | Enhance robust public health systems and emergency medical care | 2 | (p45) | 2 | (p78-80) | 2 | d |
| Robust Economics | 8 | Diversify livelihoods that can mitigate business interruption impacts | | | 2 | (p51-52) | | |
| | 9 | Adopt sustainable economic initiatives | | | | | 2 | e |
| | 10 | Use/facilitate alternative energy (solar, wind, etc. to reduce greenhouse gas emission) | 3 | (p46) | 2 | (p60,66) | | |
| Hazard Management | 11 | Identify, monitor, and assess hazards and vulnerability | 3 | general | 3 | general | 2 | [1] (p34-35) |
| | 12 | Build effective emergency response services/initiatives | | | | | 2 | [1] (p34-35) |
| | 13 | Enhance building hazard resistance by appropriate construction regulations | 1 | (p44) | 2 | (p63-64) | | |
| | 14 | Land use and planning management for natural hazard prone areas | 3 | (p25-27) | | | 2 | f |
| Institutional Optimization | 15 | Increase capacity of governmental institutions by wide collaboration | 2 | (p45) | 1 | (p76) | | |
| | 16 | Adopt a flexible planning system and adaptive design process | | | | | | |
| | 17 | Employ agile city management for uncertainty and challenges | | | | | | |
| | 18 | Effective coordination with other government bodies | 2 | (p45) | 1 | (p76) | | |
| Physical/Engineering | 19 | Set robust protective infrastructure with regular maintenance | 3 | (p42-43) | 3 | (p45-48) | 3 | g |
| | 20 | Build/optimize distributed or decentralized hazard mitigation system | 1 | (p44) | 2 | (p67) | 1 | [1] (p29-31) |
| | 21 | Enhance reliable ICT infrastructure (communication network) | | | | | | |
| | 22 | Optimize sustainable urban form | 2 | (p44) | 1 | (p66) | | |
| | 23 | Provide diverse, effective, affordable, sustainable transport | 3 | (p44) | 3 | (25-28) | 2 | h |

| | | | | | | | | |
|------------------------|----|---|---|----------|---|----------|---|---|
| Natural Enhancement | 24 | Enhance effectively, conserve, manage, and protect ecosystems | | | 3 | (p63-67) | 1 | i |
| | 25 | Optimize urban blue-green ecological networks within compact cities | 2 | (p42-43) | 2 | (p45-48) | 1 | j |
| | 26 | Maintain diversity in biological systems | | | | | | |

* **Scoring Criteria:** 3 = Well elaborated /practiced; 2 = Partially included/practiced; 1 = Mentioned/practiced to a limited extent; 0 = Not mentioned or practiced at all.

Motivation and Related Plans before RC Plan

Surat city is an urbanized coastal region of Lower Tapi Basin (LTB), Gujarat and river Tapi has a mountainous catchment area having high intensity of rainfall for a smaller time period[2]. Thus, because of its location and economy, the occurrence of floods and its impending risks have been much more than the other river delta of western India. The Flood phenomenon in the lower Tapi basin has occurred frequently as in the years 1883, 1884, 1894, 1942, 1944, 1945, 1949, 1959, 1968, 1994, 1998, 2006. Surat is the one among the fastest developing urban area in the world. The cities as having been regarded as being thickly crowded, maintaining costly assets and indulging in too much of economic activities have their LULC patterns subjected to variations over a period of time, which resulted in changing the pattern of flood water movement. Surat has experienced the most devastating floods of the year 1968 and that of 2006[3].

After the devastating flood, Surat Municipal Corporation launched its special plan to deal with Tapi River. Since 2011, the word ‘resilience’ started to appear in Surat Government documents[4]. Moreover, when we established the Resilience Project Office, Mayor Diriba Kuma put forward an ambitious agenda to make Addis a resilient city in five years’ time. We want the city to be a model for the region. Addis has already been a leader in promoting climate resilience and green economy, and holds a track record of championing resilient initiatives such as a light rail system, proper sewage waste plant, solid waste management, and affordable housing. Addis has already started its resilience journey, so it is really a matter of working with stakeholders and community members to connect the dots [5].

The characteristic of Surat’s resilient strategy is its focus on laws and regulations. Maybe it is because of the nature of its government, a municipal corporation, which means the autonomous city government doesn’t have power to enforce a strategy. Instead, it has the right to make regulations, for example, restricting industrial pollution in lower Tapi river[1]. Another quite interesting part is that the main goals in the strategy (8 in 2011 version and 7 in 2017 version) are all existing main problems of the city for decades. Transport regulations and road accident mitigations, affordable housing, water supply constitute the 2017 version strategy[6]. These points could hardly related to the original meaning of resilient city.

With the help of the national program Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and the state government housing program Mukhya Mantri Gruh Yojana (MMGY), public housing provided to low-income settlements flourished [7]. The Tapi Riverfront Development and Rejuvenation Project is an initiative taken up by the Surat Municipal Corporation to develop the Tapi River (for approx. length of 33km from Kathore Bridge to ONGC Bridge) in a holistic and comprehensive manner and increase its asset value for Surat city. The council has ratified a 611.75 Crore budget to implement the program in 2019[8]. The city government has won the Netexplo Smart Cities 2020 Award by UNESCO in 2019 (<https://www.suratmunicipal.gov.in/Corporation/Awards>). Both the Federal government and UN praised the city for its continuous effort in building a resilient and smart city [9]

References:

1. State, S.M.C.o.G., *District Disaster Management Plan*. 2016, Surat Municipal Corporation of Gujarat State.
2. Waghwal, R.K. and P.G. Agnihotri, *Flood risk assessment and resilience strategies for flood risk management: A case study of Surat City*. International Journal of Disaster Risk Reduction, 2019. **40**: p. 101155.
3. Mavalankar, D., *Lessons from massive floods of 2006 in Surat city: a framework for application of MS/OR techniques to improve dam management to prevent flood*. 2008.
4. State, S.M.C.o.G., *Surat City Resilience Strategy*. 2011, Surat Municipal Corporation of Gujarat State
5. RC100. *A Milestone in Addis Ababa’s Resilience Journey*. 2017; Available from: <https://medium.com/@100ResilientCities/a-milestone-in-addis-ababas-resilience-journey-8c70a8e15e83>.
6. State, S.M.C.o.G., *Surat Resilience Strategy*. 2017, Surat Municipal Corporation of Gujarat State.
7. Raj, V., *Affordable housing as flood resilient for low income households: a case of Surat*. 2018, Centre for Urban Equity, CEPT University.

8. Pani, B., *Surat Revised Budget 2019-20*. 2020, Surat Municipal Corporation of Gujarat State.
9. Ministry of Urban Development, G.o.I., *Surat Smart City Proposal*. 2015, Ministry of Urban Development, Government of India.

^a https://projects.citiesalliance.org/projects/documents/Implementing_the_Urban_Community_Resilience_Assessment__UCRA__in_Three_Communities_in_Surat_City.pdf

^b https://projects.citiesalliance.org/projects/documents/Implementing_the_Urban_Community_Resilience_Assessment__UCRA__in_Three_Communities_in_Surat_City.pdf

^c https://www.suratmunicipal.gov.in/Content/Documents/Departments/Accounts/SMCRevisedBudget2019_20AndDraftBudget2020_21.pdf

^d <http://suratmunicipalcorporation.org:8020/News/3926.pdf>

^e https://smartnet.niua.org/sites/default/files/resources/SCP_%20SURAT.pdf

^f Tapi Riverfront Development and Rejuvenation Project, <https://www.suratmunicipal.gov.in/Departments/ProjectsUnderPlanningTendering>

^g Conventional Barrage Project, Tapi Riverfront Development and Rejuvenation Project, <https://www.suratmunicipal.gov.in/Departments/ProjectsUnderPlanningTendering>

^h Surat Metro Rail project, <https://www.suratmunicipal.gov.in/Departments/ProjectsUnderPlanningTendering>

ⁱ Tapi Riverfront Development and Rejuvenation Project, <https://www.suratmunicipal.gov.in/Departments/ProjectsUnderPlanningTendering>

^j Tapi Riverfront Development and Rejuvenation Project, <https://www.suratmunicipal.gov.in/Departments/ProjectsUnderPlanningTendering>