

Dhulikhel Municipality Recommendations and suggestions from CSOs towards a resilient and low-carbon city Policy Brief

Urbanization and Climate Change

Globally over 50% of the population lives in urban areas, and it is projected that 7 out of 10 people will live in cities by 2050¹. Four out of five cities (80%) report facing significant climate hazards, such as extreme heat (46%), heavy rainfall (36%), drought (35%), and flooding (33%)² and so does Nepal with rapid urbanization. Nepal is also projected to remain the fastest urbanizing country over the period 2018–2050, with a 2% urban growth rate³. However, this accelerated urban growth puts pressure on urban infrastructure and exacerbates the existing problems, making cities more vulnerable to the impacts of climate change.

Dhulikhel: Urbanization and Climate Change

Dhulikhel municipality, located at 1550m above sea level, is a picturesque town in the Kavrepalanchowk district, known for its scenic mountain view, culture, and history. The city is rapidly urbanizing with migration from neighbouring rural areas. Dhulikhel comprises 12 wards and has a total population of 33,726 (CBS, 2021) with a growth rate of 1.16% per year. The municipality's poverty rate dropped from 13% in 2001 to 2.47% in 2011, placing it among eight municipalities with rates below 5%.⁴

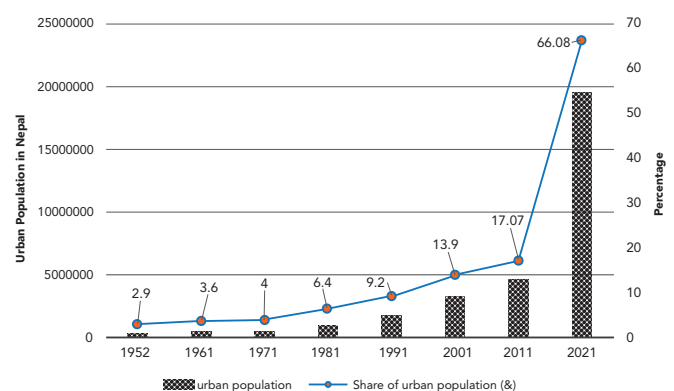


Fig: Urbanization Trend in Nepal, CBS (2021)

In July 2018, a farm which is a major supplier of flowers to the capital city was badly damaged by the floodwater in Punyamata River in Shrikhandapur, Banepa Municipality. Inadequate rainfall patterns have led to water scarcity in Dhulikhel. Recent research has shown a declining trend in annual precipitation and the stream flow of the Roshi River, a major source of drinking water for Dhulikhel's residents. According to a three-year study in Dhulikhel, climate impacts have manifested in the form of less and irregular rainfall, a decrease in wet spells, and drying of natural springs.

Policies Initiatives for a climate-resilient Dhulikhel

Dhulikhel Municipality's policy and program for FY 2079/80 focuses on infrastructure, education, health, agriculture, tourism, environment, and local governance. It outlines plans for road construction, school and health facility maintenance, agricultural projects, tourism promotion, environmental conservation, and enhancing local governance. The municipality is committed to improving residents' living standards through these initiatives, contributing to a resilient, low-carbon city.

Fossil Fuel Non-Proliferation Treaty: Dhulikhel is the first city in South Asia and Global South to endorse the treaty. This prominently reflects the city's commitment to climate-resilient and low-carbon cities. The Treaty is spurring international cooperation to end new development of fossil fuels, phase out existing production within the agreed climate limit of 1.5°C, and develop plans to support workers, communities, and countries dependent on fossil fuels to create secure and healthy livelihoods. Over 750 civil society organizations, 2,100+ scientists and academics, and 101 Nobel Laureates have endorsed the proposed treaty's three pillars.⁵

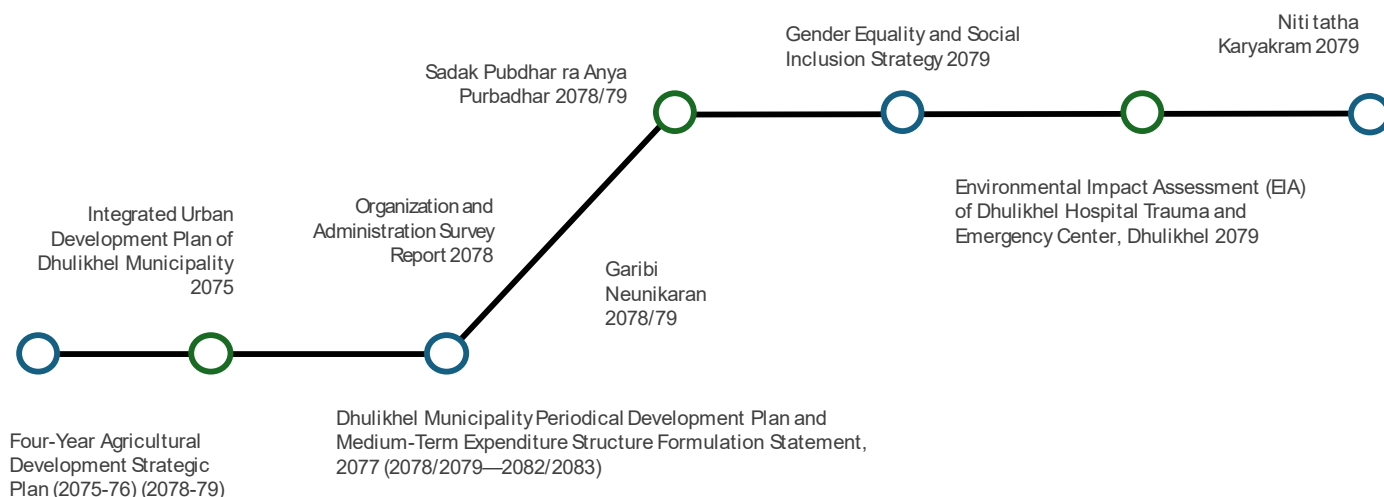
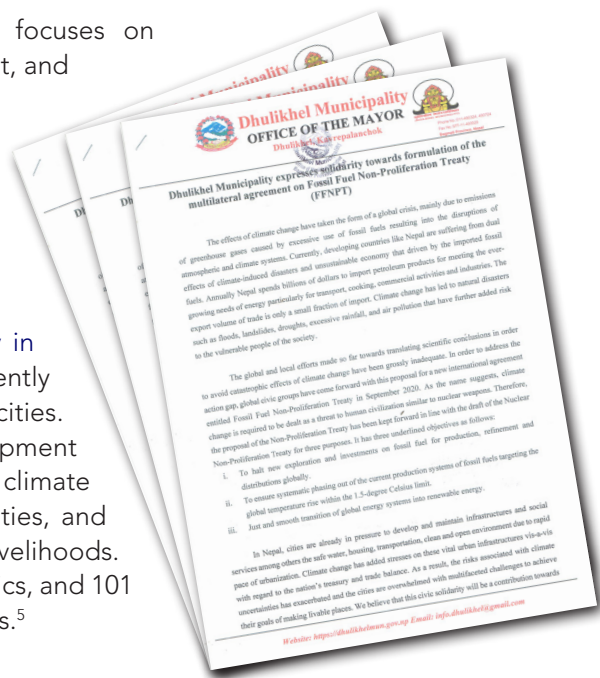


Fig: Plans and Policies of Dhulikhel

Water Security in Urban Water Governance: A Case Study of Dhulikhel Municipality, Kavrepalanchowk, Nepal 2018:⁶

The Dhulikhel Drinking Water Supply and Sanitation Users Committee (DDWSSUC) was formed in 1992 to address long-standing water scarcity in Dhulikhel. Initially, the Dhulikhel Development Board (DDB), with German assistance (GIZ), secured water from the Kalanti Bhumidanda VDC, completing a major project by 1992. The committee, initially composed of elites from Wards 2-5, lacked representation from Wards 1 and 6-9, causing disparities in water access and political influence.

Core wards (2-5), home to diverse social groups including many Newars, enjoy better water access, while fringe wards (1, 6-9) face severe shortages, higher poverty, and less political representation, leading to marginalization.

The Saptakanya spring is the primary water source, but with a daily demand of 23 million liters, only 13.83 million liters are supplied, and just 48% of households have direct piped connections. Core areas receive water for 7 hours a day, while fringe areas get only 4 hours.

Wealthier households and those with political connections have better water access, while poor and marginalized groups, including women and Dalits, struggle. Decision-making within DDWSSUC is dominated by powerful individuals from core areas, with limited input from marginalized groups, worsening inequities in water management.

Building a Climate-resilient Dhulikhel City: Policy Recommendations

Dhulikhel Municipality faces numerous challenges in its quest to become a resilient and low-carbon city. The municipality lacks comprehensive urban planning that integrates climate resilience and low-carbon strategies, leading to fragmented and reactive infrastructure development. Only 1% of the budget is allocated for SDG13 Climate and 1% for SDG11 Sustainable Cities and Communities, which is comparatively low and addresses the fact that there are existing challenges toward climate-resilient cities. Existing infrastructure often falls short in robustness, making it vulnerable to floods and landslides, which are normal in the municipality. The city's high dependence on non-renewable energy sources such as petrol and diesel exacerbates greenhouse gas emissions, while energy-efficient technologies and practices remain underutilized. Additionally, the transportation infrastructure is underdeveloped, causing increased reliance on private vehicles, which in turn has led to increased emissions and traffic congestion. Waste management practices in Dhulikhel are inefficient, contributing to environmental degradation and methane emissions from landfills with limited facilities for recycling and composting. Water management also poses significant challenges, with issues ensuring a sustainable water supply and inadequate stormwater management systems that result in urban flooding.

Public awareness about sustainable lifestyles and climate resilience is generally low, and there is a lack of educational programs to promote sustainable practices. Policy frameworks do not sufficiently integrate climate resilience and low-carbon initiatives, with gaps in implementation and enforcement. Further, the lack of coordination between governmental and non-governmental agencies further hinders coordinated action. Economic barriers also play a critical role, with financial constraints limiting investment in sustainable infrastructure and technologies. The local economy's dependence on traditional sectors adds to the difficulty of transitioning to a low-carbon economy.

To address these issues, it is crucial to mainstream climate resilience across all urban development sectors, ensure effective coordination among stakeholders, and enhance community participation and awareness. Aligning local initiatives with national climate policies can further strengthen Dhulikhel's resilience and contribute to broader climate goals.

- **Implement Green Infrastructure Projects and transit to clean energy:** Dhulikhel Municipality should prioritize the development of green infrastructure projects such as rooftop gardens,

urban parks, greenways, and walkable and cyclable cities. There is also a need to promote and shift towards clean cooking and transportation. Rooftop solar panel installation support can be a major initiative to transit towards clean energy in the municipality. By installing solar panels in each house and ensuring the use of clean cooking by 2030, the municipality can help achieve the targets of Nepal's 2nd Nationally Determined Contributions (NDCs). While doing so, the municipality will decrease air pollution within the city, reduce surface runoff during heavy rainfall, and protect biodiversity, thereby increasing the climate resilience of the municipality and also at the national level.

- **Promote Nature-based solutions and sustainable water management:** Given the challenges of water scarcity, the municipality should invest in nature-based solutions and sustainable water management, such as building ponds and bioswales, increasing green spaces and parks, rain-water harvesting, decentralized wastewater treatment plants, and water-efficient irrigation techniques, to address surface runoff/flooding and water scarcity. Additionally, conducting comprehensive water resource assessments to identify new sources and implementing water conservation measures can ensure a reliable water supply, especially during periods of drought.
- **Prepare climate-resilient plans to enhance Community-Based Disaster Preparedness and response:** The municipality should prepare a robust disaster management framework by 2025 which includes establishing early warning systems, conducting regular disaster response drills, and developing and strengthening community-based disaster preparedness programs. This is crucial to build resilience against climate-related hazards such as floods, landslides, and extreme weather events. This will also involve training community members in disaster response techniques, establishing early warning systems, and retrofitting vulnerable infrastructure to withstand natural disasters.
- **Promote sustainable climate-resilient and indigenous agriculture practices:** Promoting sustainable, climate-resilient, and indigenous agriculture practices is crucial for enhancing agricultural productivity and resilience against climate change impacts like erratic rainfall and pest outbreaks. Encouraging and training farmers to adopt methods such as crop diversification,

agroforestry, and soil conservation techniques can significantly improve their adaptability. Providing access to climate-resilient crop varieties and agricultural extension services further supports this transition. Indigenous agricultural practices, which are inherently climate-resilient and deeply rooted in community-based, culturally integrated approaches, also play a vital role in building a robust agricultural framework. According to the Food and Agriculture Organization (FAO), adopting such sustainable practices can increase yields by up to 79% in developing countries, underscoring their importance in achieving food security and environmental sustainability.

- **Foster Community-Led Eco-Tourism Initiatives:** Leveraging Dhulikhel's natural assets for eco-tourism development can diversify the urban economy while promoting conservation and climate resilience. The municipality should encourage the establishment of community-led eco-tourism enterprises, such as guided nature walks, birdwatching tours, and homestays, which can generate income for local communities while raising awareness about the importance of environmental stewardship and biodiversity conservation.
- **Waste management policy:** Open burning waste and lack of waste management pollutes land, air, and water, which creates health issues. The municipality should make it a policy to segregate the waste into 4 categories, a) Plastic waste; b) Biowaste; c) Glass products; and d) Aluminum and steel. This should be practiced in each settlement, house, rental apartment/room, and in the streets of the municipality. This will also make it easy to manage the waste when it is segregated, which helps to keep the surrounding area clean, and there will be no waste litter. The municipality can also generate income by managing the waste, as Dhankuta Municipality has recently set an example. **(Shared by Mayor of Dhankuta: 50 lakhs turnover, earning 10 lakhs from waste management, 22 lakh sales from waste)**

References

1. World Bank (2023) Urban Development Overview. <https://www.worldbank.org/en/topic/urbandevelopment/overview>
2. CDP (2022): Protecting people and the planet: Putting people at the heart of city climate action. https://cdn.cdp.net/cdp-production/cms/reports/documents/000/006/567/original/CDP_Cities_Protecting_People_and_the_Planet.pdf?1665068434
3. United Nations Department of Economic and Social Affairs. (2018). World urbanization prospects: The 2018 Revision. <https://population.un.org/wup/>
4. Dhulikhel Municipality, Nepal (2022) Voluntary Local Review. https://unhabitat.org/sites/default/files/2022/08/dhulikhel_2022_en.pdf
5. Dhulikhel in Nepal is first city in Global South to endorse the Fossil Fuel Non-Proliferation Treaty <https://fossilfuel treaty.org/dhulikhel>
6. Pokharel, K., Joshi, T., Adhikari, J., & Neupane, K. R. (2018). Water Security in Urban Water Governance: A Case Study of Dhulikhel Municipality, Kavrepalanchowk, Nepal. *New Angle*, 5(1), 32–48. <https://doi.org/10.53037/na.v5i1.10>

- **Evidence-based plans and policies and strengthening of the current plans and policies:** The municipality should prepare the proposals and project plans relevant to climate and urban resilience ahead of time to bid on grants and applications when they are available.

By implementing these recommendations, Dhulikhel Municipality can strengthen its climate resilience efforts, mitigate the adverse impacts of climate change, and create a more sustainable and vibrant community for its residents.

Key Messages

- **Building resilience together:** Dhulikhel's journey towards climate resilience requires collaborative efforts from all stakeholders—government, communities, and businesses. By working together, we can create a more resilient and sustainable future for our city.
- **Acting locally, impacting globally:** The actions we take in Dhulikhel to address climate change not only benefit our community but also contribute to global efforts to combat climate change. Every small step counts towards building a more resilient and sustainable world.
- **Adaptation measures for community preparedness:** Climate change is already impacting Dhulikhel, but adaptation measures such as rainwater harvesting, sustainable urban planning, nature-based solutions, and community-based disaster preparedness can help us build resilience to future challenges.
- **Sustainable development for a better tomorrow:** Integrating climate resilience into urban development is essential for ensuring a better quality of life for current and future generations in Dhulikhel. Let's embrace sustainable practices and build a resilient and prosperous city for all.



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