



الجمهورية اللبنانية
قائمقامية كسروان
بلدية زوق مكايل
الرقم المالي: ٣٠٦٢٥٢
عدد

CLIMATE STRATEGY

Municipality of Zouk Mikael

Introduction

This Climate Strategy outlines how **Zouk Mikael** will reduce greenhouse gas emissions, strengthen climate resilience, and improve quality of life under Lebanon's current economic, energy, and governance challenges.

The Strategy aligns with Lebanon's Nationally Determined Contribution (NDC), C40 Cities' climate ambition and equity principles, Covenant of Mayors for Climate & Energy, ICLEI's Global Protocol for Community-Scale GHG Emissions (GPC) and UCLG's rights-based and locally driven development approach.

It recognizes municipalities as frontline actors in climate action despite limited fiscal autonomy and capacity.

1. Local Climate and Development Context

1.1 Climate Risks in Lebanon

Zouk Mikael is increasingly exposed to climate-related hazards, including intensifying heatwaves and urban heat stress; growing water scarcity and recurrent droughts that strain households, agriculture, and the tourism sector; heightened flooding risks from extreme rainfall events; escalating wildfires and land degradation; and mounting public health threats. These challenges are

further exacerbated by aging and climate-vulnerable infrastructure and declining public services, amplifying socio-economic and environmental risks across the city.

1.2 Energy and Economic Reality

Chronic electricity shortages have entrenched dependence on costly and polluting diesel generators, while the rapid yet largely unregulated expansion of solar PV systems reflects a fragmented energy landscape—prompting this Strategy to prioritize low-cost, high-impact, decentralized solutions that enhance reliability, affordability, and resilience.

2. Strategic Vision and Principles

Vision

A resilient, energy-secure, and inclusive municipality that protects its natural resources, supports livelihoods, and ensures dignity and well-being for all residents.

Guiding Principles

(Aligned with global networks but adapted to Lebanon)

- **Energy Security First** – Climate action must reduce reliance on diesel and improve access to affordable energy (Covenant of Mayors).
 - **Resilience Before Perfection** – Focus on practical adaptation actions given uncertainty and limited resources (ICLEI).
 - **Equity and Social Protection** – Prioritize vulnerable populations, including low-income households (UCLG).
 - **Municipal Leadership** – Act locally even when national systems are constrained (C40).
 - **Data-Light but Action-Oriented** – Use simplified data tools where full inventories are not feasible.
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3. Governance and Institutional Arrangements

3.1 Municipal Climate Governance

First, to designate a Municipal Climate Focal Point, and then to establish a Climate & Energy Working Group involving: Municipal departments, Local NGOs, Engineers and energy experts, and Community representatives.

3.2 Multi-Level and Network Engagement

The strategy will align with Lebanon's Nationally Determined Contribution (NDC) and national energy strategies, while actively referring to the Covenant of Mayors for the Southern Mediterranean/MENA region, ICLEI regional programs, UCLG-MEWA for peer learning and advocacy, and relevant donors and UN agencies operating in Lebanon.

4. Greenhouse Gas Emissions and Baseline

Given data constraints, Zouk Mikael municipality will focus on priority sectors:

- Lower electricity consumption
- Reduce reliance on diesel generators
- Promote the use of public transportation and other sustainable mobility alternatives
- Promote waste sorting and recycling
- Enhance and expand green spaces accessible to the public

Where data is unavailable, proxy indicators (fuel purchases, electricity bills, waste volumes) will be used.

5. Climate Goals and Targets by 2030

- Achieve **100% renewable energy for municipal facilities** and eliminate diesel generator dependence in municipal services

- Achieve **50% electrification of the municipal vehicle fleet**, including police and guard vehicles; to reduce fuel costs, emissions, and operational dependency on diesel
 - Increase **recycling rates to 15% of total waste generated**, strengthening resource recovery and reducing landfill dependence
 - Support household and business solar adoption with safety and quality standard
 - Enhance community wellbeing and environmental quality by creating **two new public green spaces** accessible to all residents
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6. Priority Action Areas

6.1 Decentralized Renewable Energy (Top Priority)

Actions

The strategy will deploy

- (1) Solar PV and battery systems across municipal buildings, water pumping facilities, and street lighting
- (2) Establish technical guidelines for safe and standardized solar installations
- (3) Implement low-cost building retrofits such as shading, insulation, and efficient appliances
- (4) Roll out public awareness campaigns on energy conservation

Benefits

These measures will reduce reliance on costly and polluting diesel generators, lower energy expenditures, and improve the reliability and continuity of essential services, while aligning with the Covenant of Mayors' energy and climate objectives.

6.2 Sustainable Mobility (Low-Cost Focus)

Actions

- (1) Install solar-powered charging stations for electric vehicles (EVs) at municipal premises to encourage EV adoption, reduce reliance on fossil fuels, and showcase sustainable mobility practices
 - (2) Improve walkability and pedestrian safety
 - (3) Traffic calming and shaded streets
 - (4) Support shared transport and electric two-wheelers where feasible
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6.3 Waste and Circular Economy

Actions

- (1) Waste reduction and separation at source
- (2) Improve the management of organic waste generated from ornamental tree pruning, fruit and vegetable residues, unused wood, and similar biodegradable materials.
- (3) Support recycling livelihoods

Benefits

These actions will reduce methane emissions, improve public health, and create local jobs, in line with ICLEI's circular economy guidance.

6.4 Climate Adaptation and Resilience

Actions

- (1) Urban greening and tree planting with native plants and/or drought-resistant species
 - (2) Expand and enhance green spaces that are accessible to the public
 - (3) Flood risk mapping and drainage maintenance
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6.5 Social Equity and Just Transition

Actions

- (1) Prioritize energy access for low-income households, schools and health centers
 - (2) Climate-related job training (solar installation, waste management)
 - (3) Inclusive planning with women, youth, and marginalized groups (UCLG rights-based approach)
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7. Financing and Implementation

7.1 Funding Sources

The strategy will leverage international donors and climate funds, UN agencies and development banks, public–private partnerships, and community-based financing models to mobilize resources and support implementation.

7.2 Implementation Phases

Short-term (1–2 years): Energy security, solar, LED lighting

Medium-term (3–5 years): Waste, mobility, adaptation projects

Long-term (5+ years): Integrated urban resilience and net-zero pathways

8. Monitoring, Reporting, and Transparency

Simple indicators:

- Diesel consumption reduced
- Solar capacity installed
- Households benefiting
- Waste recycled

Enhance transparency through public disclosure to build trust.

Conclusion

Despite Lebanon's unprecedented challenges, municipalities can lead climate action that improves daily life, strengthens resilience, and lays the foundation for long-term sustainability. This Strategy positions Zouk Mikael municipality as agent of recovery, not just adaptation.

Municipality Mayor

Elias Beainou

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