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# EASTERN ANATOLIA CLIMATE ADAPTATION PLAN

## ADAPTATION AND IMPLEMENTATION ACTIONS

**PRESENTATION 2025**

**START NOW**



More Information  
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# INTRODUCTION

**Eastern Anatolia is highly vulnerable to climate change effects including rising temperatures, droughts, floods, and shifting precipitation patterns. Urgent adaptation is needed across all sectors.**







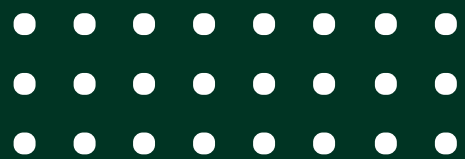
# KEY CLIMATE RISKS IN EASTERN ANATOLIA

**Drought and Water Scarcity:** Longer dry periods and higher evaporation threaten rivers, lakes (e.g., Lake Van's shoreline has retreated over a kilometer), and headwater runoff—projected to decline by up to 55 % by century's end.

**Flash Floods and Landslides:** Intense rain-on-snow or cloudbursts cause rapid river rises and slope failures, as seen in Muş (July 2024), damaging farmland and infrastructure.

**Snowmelt Variability:** Warmer winters mean more rain than snow, earlier melt-offs, spring floods, and reduced summer streamflow—undermining agriculture and hydropower scheduling.

**Extreme Cold Events:** Despite overall warming, sudden cold-air incursions still strike (temperatures below  $-30^{\circ}\text{C}$ ), demanding continued winter-proofing of homes, pipes, and roads.







# CLIMATE-RESILIENT WATER RESOURCES AND DROUGHT MANAGEMENT ADAPTATION ACTIONS

Water shortages, droughts, and earlier snowmelt impact agriculture and urban supply. Urgent management improvements are needed.

- Integrated Water Resources Management (IWRM)

Establish basin-level coordination to balance surface water, groundwater, and ecological flows under changing runoff.

- Enhanced Water Storage

Build small/medium reservoirs and revive traditional cisterns and ponds to capture wet-season flows for summer use.

- Water Conservation & Efficiency

Promote drip/sprinkler irrigation, fix urban and rural network leaks, and drive public “Save Every Drop” campaigns.

- Drought Early Warning & Response

Deploy real-time monitoring stations and a Drought Warning Index to trigger pre-emptive measures (boreholes, rationing, tanker deployments).

- Watershed Protection & Restoration

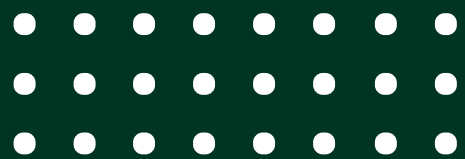
Afforest degraded uplands, build check dams and terraces, and implement rotational grazing to enhance infiltration and slow runoff.





## KEY INSTITUTIONS INVOLVED

- State Hydraulic Works (DSİ)
- DAP Regional Development Administration
- Meteorological Service (MGM)
- Ministry of Agriculture and Forestry
- Provincial Governorates & Water Coordination Board
- Local Water User Associations & Farmers' Cooperatives
- Iller Bank & Municipal Water Utilities







# ACLIMATE-SMART AGRICULTURE & FOOD SECURITY

- Eastern Anatolia's farming systems—centered on cereals, sugar beets, legumes, and livestock—are under pressure from deeper droughts, erratic rainfall, temperature extremes, and emerging pests.
- Building resilience requires drought-tolerant crops, efficient water use, adaptive decision-making, strengthened livestock systems, and financial safety nets.

## ADAPTATION ACTIONS

- Drought-Resilient Varieties & Crop Diversification
- Introduce fast-maturing, water-efficient wheat, barley, and drought-hardy legumes (lentils, chickpeas, sorghum).
- Efficient Irrigation & Rainwater Harvesting
- Deploy drip/sprinkler systems, revitalize farm ponds and cisterns, and promote contour plowing and mulching to retain soil moisture.
- Adaptive Planting Schedules & Climate Services
- Provide location-specific forecasts and advisories; update sowing and harvest calendars to align with shifting weather patterns.
- Livestock & Pasture Adaptation
- Reseed rangelands with drought-tolerant grasses and legumes, build pasture water points, establish fodder banks, and promote climate-resilient breeds.
- Crop Insurance & Safety Nets
- Expand TARSİM coverage for drought and extreme-weather losses; subsidize premiums and activate cash-for-work or direct aid during severe shocks







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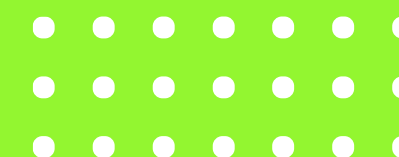


## ADAPTATION AND IMPLEMENTATION ACTIONS

- Diversify Energy Sources with Renewables
- Boost Energy Efficiency & Climate-Adaptive Building Design
- Strengthen and Climate-Proof Energy Infrastructure
- Integrate Adaptation into Energy Governance and Planning (SECAPs)
- Accelerate Deployment of Solar, Wind, and Smart Grid Systems
- Retrofit Existing Buildings for Energy Efficiency
- Promote Local Energy Planning and Capacity Building
- Public-Private Partnerships and Innovative Financing

### Key Institutions Involved

- Ministry of Energy and Natural Resources
- Turkish Electricity Transmission Corporation (TEİAŞ)
- İller Bank and Regional Development Agencies
- Ministry of Environment, Urbanization & Climate Change
- Municipalities and Provincial Administrations







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# PUBLIC HEALTH

## Adaptation Actions and Implementation Actions

- Heat Health Action Plans should be developed and implemented.
- Healthcare infrastructure should be climate-proofed. Disease surveillance and vector control systems should be expanded and strengthened.
- Emergency preparedness for health should be enhanced. Food and nutrition security should be ensured through targeted interventions.
- Heatwave warning and response protocols should be activated promptly.
- Healthcare facility resilience should be upgraded.
- Disease surveillance systems should be expanded and modernized.
- Emergency health response capacity should be enhanced.
- Nutrition monitoring and support programs should be implemented.
- Climate-health risk assessments should be developed and regularly updated.
- Community engagement and telemedicine should be leveraged effectively.

## Key Institutions Involved

- Ministry of Health
- Meteorology General Directorate (MGM)
- AFAD (Disaster and Emergency Management Authority)
- Provincial Health Directorates
- Turkish Red Crescent (Kızılay)
- Municipalities and Provincial Administrations
- Veterinary Services & Agricultural Agencies
- Universities and Research Centers







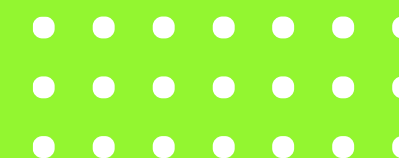
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# CLIMATE-RESILIENT URBAN INFRASTRUCTURE AND HOUSING

## Urban Water Management & Flood Risk Reduction

- Urban flood management and drainage systems should be upgraded  
Flood-prone neighborhoods should be mapped, and drainage infrastructure should be expanded to prevent stormwater overflow.
- Nature-based flood mitigation measures  
Reforestation, wetland restoration, and green buffer zones should be used to reduce surface runoff and complement structural protections.
- Water supply and sanitation systems  
Protective measures should be taken to guard against drought impacts and flood-related contamination risks.





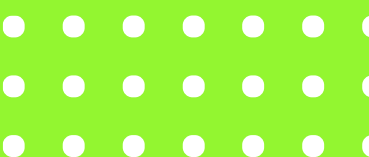


### Building Safety & Land-Use Regulation

- Building codes should be updated to address climate risks.
- Older buildings should be retrofitted to withstand floods, extreme temperatures, and freeze-thaw cycles.
- Construction in high-risk zones should be restricted.
- Informal settlements should be relocated, and safe, affordable housing solutions should be provided.

### Resilient Transportation Infrastructure

- Transportation infrastructure should be assessed and redesigned.
- Roads, bridges, and railways should be made resilient to floods, landslides, and temperature extremes to ensure continuity of access.







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### Heat-Resilient & Green Urban Design

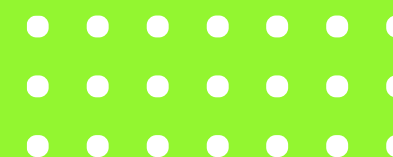
- Heat-resilient and green urban design principles should be applied.
- Cities should increase green spaces, use reflective materials, and adopt water-sensitive urban design strategies.

### Integrated Climate-Resilient Urban Planning

- Integrated climate-resilient urban planning should be carried out.
- Urban master plans should include climate hazard maps, disaster risk reduction strategies, and sustainable water management principles.

### Key Institutions Involved

- Ministry of Environment, Urbanization and Climate Change (MoEUCC)
- Provincial Municipalities and Local Governments
- State Hydraulic Works (DSİ)
- Ministry of Transport and Infrastructure
- Public Works Departments (Belediye Fen İşleri)
- Neighborhood Councils (Muhtarlıklar)
- Academic Institutions and Engineering Associations





# ECOSYSTEMS AND BIODIVERSITY CONSERVATION







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## ADAPTATION ACTIONS FOR SUSTAINABLE ECOSYSTEMS AND BIODIVERSITY CONSERVATION

### Expand and Connect Protected Areas

- Increase the coverage of protected areas across diverse ecosystems and altitudinal gradients to support species migration.
- Designate new conservation zones and establish ecological corridors, particularly around vulnerable habitats like wetlands and uplands.

### Restore Degraded Ecosystems

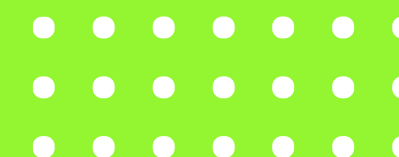
- Reforest degraded areas using native, climate-resilient species.
- Restore grasslands and wetlands with drought-tolerant vegetation and create water retention structures to improve ecosystem services.

### Conserve Climate-Resilient Genetic Resources

- Establish seed banks and breeding programs for drought-tolerant crops and hardy livestock breeds.
- Promote both in-situ and ex-situ conservation to preserve genetic diversity in the face of climate change.

### Promote Community-Based Natural Resource Management

- Empower local communities to co-manage forests, grasslands, and water resources using traditional knowledge and sustainable practices.
- Form local committees for activities such as rotational grazing and protection against illegal logging or poaching.







### Establish Adaptive Monitoring and Research Systems

- Set up a regional Climate Ecology Observatory for long-term monitoring of ecological change, habitat shifts, and species responses.
- Integrate citizen science and academic research to inform adaptive conservation strategies.

### Enhance Climate-Resilient Land-Use Planning

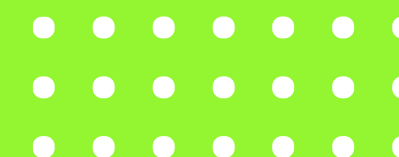
- Integrate biodiversity considerations into land-use policies to prevent habitat fragmentation.
- Promote ecosystem-based planning that supports wildlife mobility and natural buffers against climate impacts.

### Develop Ecosystem-Based Livelihood Strategies

- Support nature-based livelihoods such as eco-tourism, sustainable forestry, and non-timber forest products to reduce pressure on ecosystems.
- Train local communities in climate-smart agriculture and resource-efficient practices.

### Strengthen Institutional and Policy Frameworks

- Update national and local biodiversity strategies to reflect climate adaptation priorities.
- Foster inter-agency collaboration and allocate dedicated funding for ecosystem resilience initiatives.







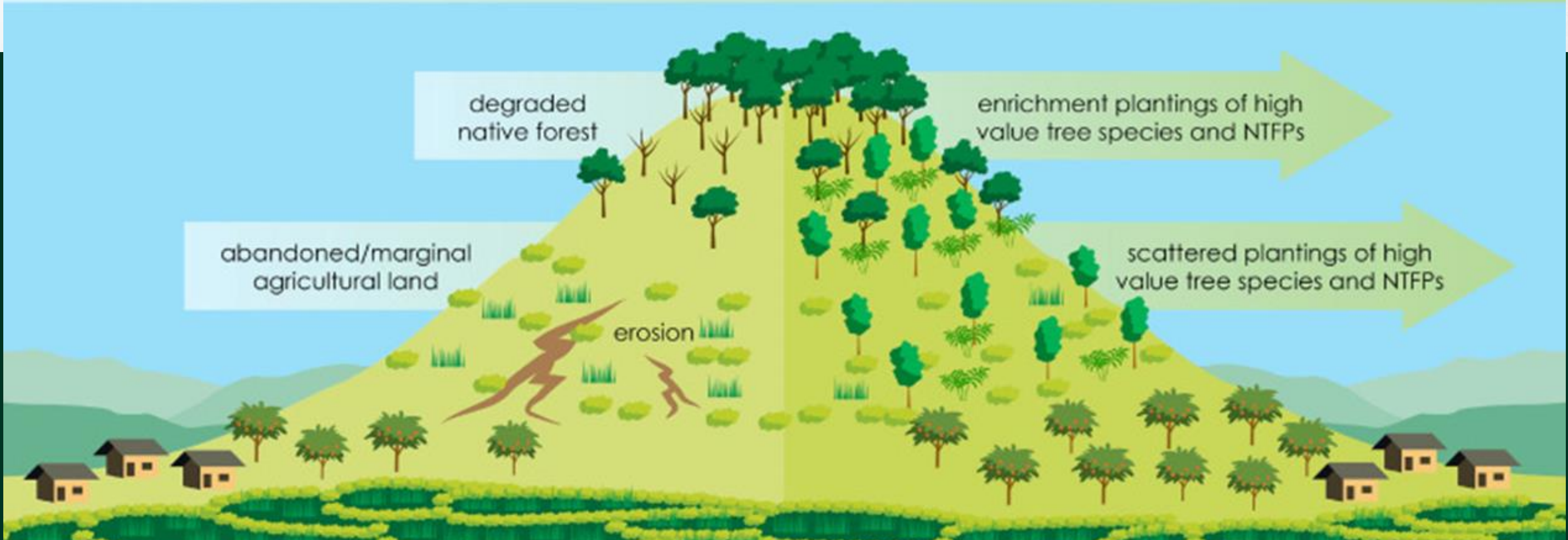
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BEFORE

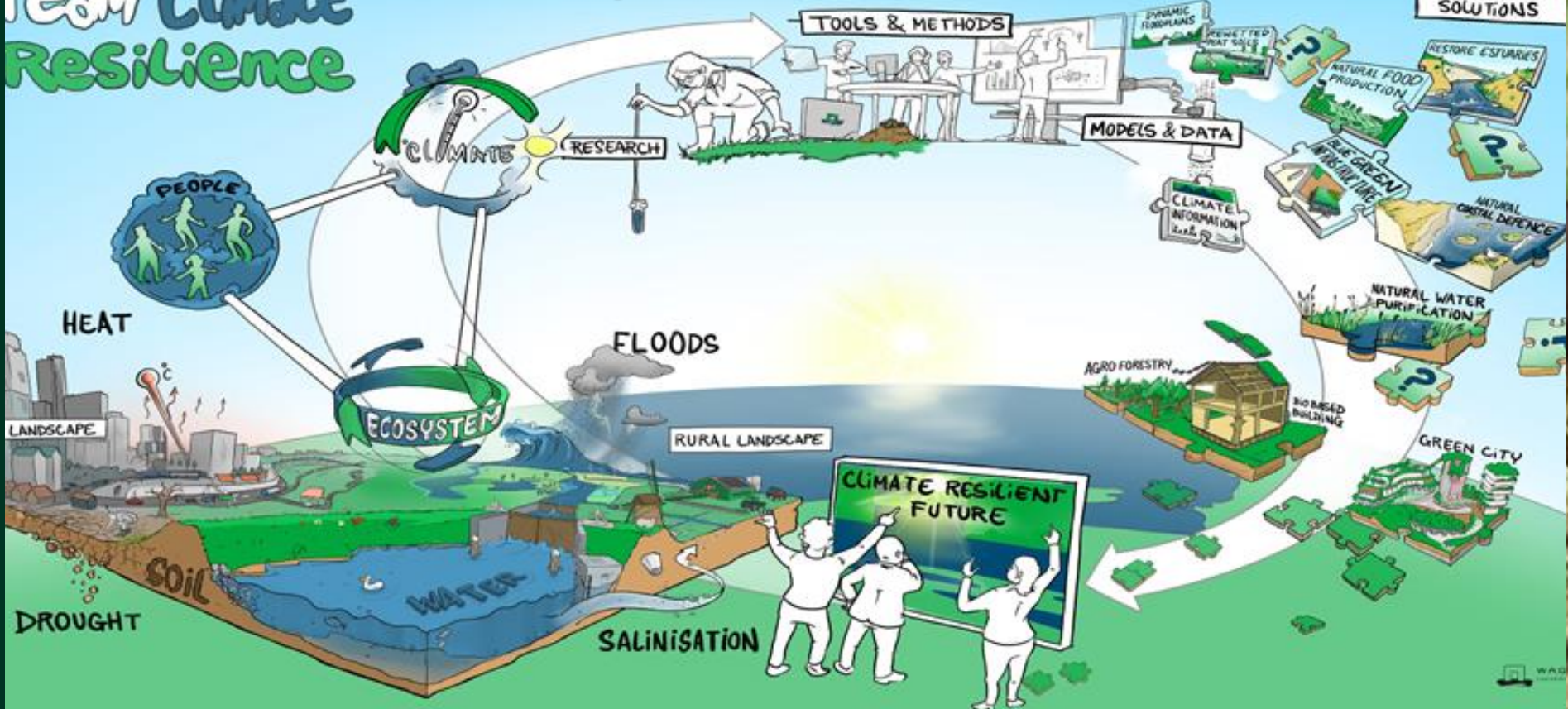
Restoration of Degraded Ecosystems

AFTER



Team Climate  
Resilience

Conserving Climate-Resilient Genetic Resources



Community-Based Natural  
Resource Management





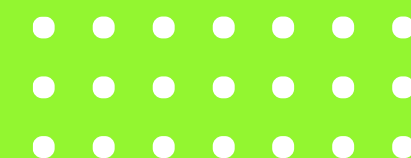


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# CONCLUSION

- A resilient Eastern Anatolia requires shared commitment to climate action.
- Together, we can safeguard communities, ecosystems, and sustainable development.





# THANK YOU FOR YOUR ATTENTION

*"Together, we can contribute to a sustainable future"*

Questions & Discussion

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