AI for Everyday Climate Action & Hyperlocal Forecasting

Problem Statement

Climate change is driven by billions of small, high-emission actions individuals take daily—often without realizing it. Meanwhile, India lacks dense, real-time hyperlocal weather data critical for accurate forecasting and disaster preparedness.

This dual challenge—behavioral and data-driven—limits both personal climate action and institutional response. Without tools that guide sustainable choices and gather ground-level data, we risk worsening the crisis. Our solution proposes a dual-purpose AI mobile app to nudge users toward eco-conscious behavior and crowdsource weather inputs for climate resilience.

Target Audience & Context

This app targets everyday Indian citizens—students, office workers, homemakers, and commuters—who are aware of climate change but lack the tools to act meaningfully in real time.

These users already rely heavily on mobile phones and represent an ideal demographic for micro-intervention. Simultaneously, weather researchers, municipal agencies, and disaster response teams lack hyperlocal data that could vastly improve forecasts. Our solution empowers citizens and institutions simultaneously by bridging this critical information-action gap.

Use of Generative AI

Generative AI acts as a real-time sustainability coach, offering context-aware nudges based on user behavior and environmental factors. For instance, it may suggest a shared cab during a pollution spike or recommend turning off the AC on a breezy day.

Users can submit local weather information—like cloudy skies or rainfall—through voice or images, which the AI processes into structured data. Natural language models, vision APIs, and pattern recognition are used to identify context, making sustainability decisions easy, fast, and personalized.

Gamified micro-interactions, eco-quizzes, and conversational AI keep users engaged, creating habit loops that nudge users toward long-term climate responsibility.

Solution Framework

Our system is composed of two interconnected AI modules:

1. Climate Nudging Engine

- Tracks location, time, habits, and sensor input
- Provides real-time prompts to reduce high-emission actions
- Offers sustainable alternatives like walking, cycling, or delayed AC usage

2. Climate Data Crowdsourcing

- Users share weather data via voice or photos
- AI converts this into geo-tagged, structured input
- Data is stored securely and anonymized for modeling

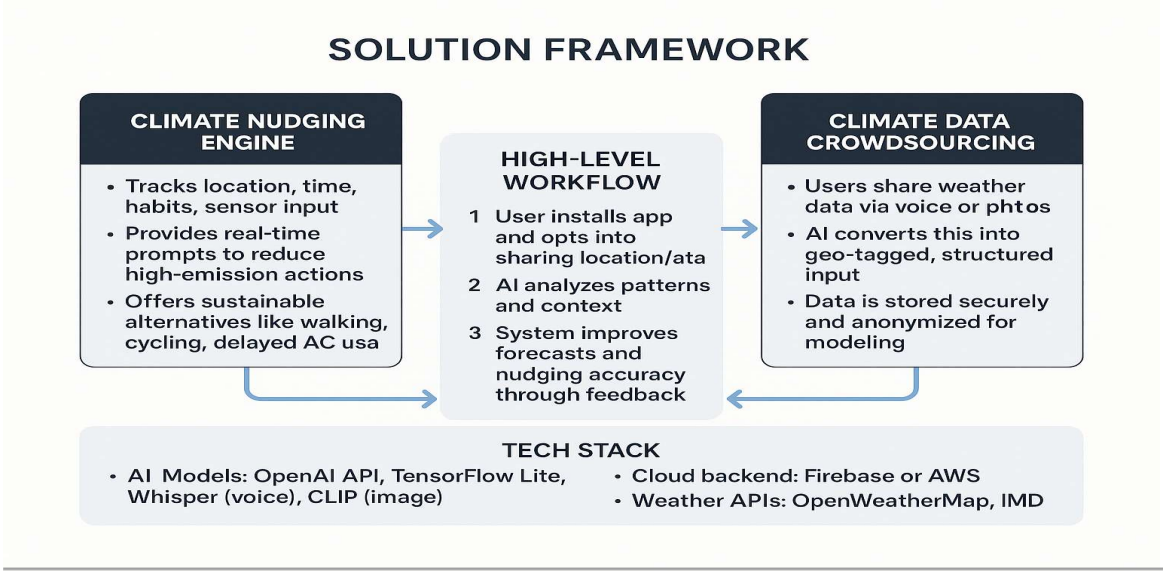
High-Level Workflow

1. User installs app and opts into sharing location/data
2. AI analyzes patterns and context
3. System improves forecasts and nudging accuracy through feedback

Tech Stack

- **AI Models**: OpenAI API, TensorFlow Lite, Whisper (voice), CLIP (image)
- **Cloud Backend**: Firebase or AWS
- **Weather APIs**: OpenWeatherMap, IMD

The two modules work together to close the loop between individual actions and community impact.



Feasibility & Execution

This solution is highly feasible using existing tools. An MVP can be built using:

- **Frontend**: Flutter or React Native
- **Backend**: Firebase / AWS
- **Voice & Image AI**: OpenAI Whisper and CLIP
- **Data Input**: Simple UI for users to report weather

Within 2–3 months, a pilot can be launched in Tier-1 or Tier-2 cities, covering alerts, image/voice-based data entry, and basic nudging. Crowdsourced feedback will refine system accuracy and usefulness.

Scalability & Impact

The app is designed for both technical and behavioral scalability. Technically, the cloud infrastructure allows seamless regional expansion. Behaviorally, once nudging habits are built, long-term carbon reduction follows.

Impact includes:

- Empowered climate-conscious citizens
- Accurate disaster alerts using user data
- Data that supports smart city planning
- Contribution to AI climate research

By partnering with NGOs, schools, and civic bodies, the app can scale as a national platform for environmental awareness and grassroots intelligence.

Conclusion & Bonus – Minimum Lovable Product

This dual-purpose app combines AI-powered nudging with crowdsourced climate sensing. It's simple, modular, and immediately useful.

With minimal investment, it can become a full-fledged product used by millions to improve forecasts, reduce emissions, and build awareness. With emotional intelligence, hyperlocal insights, and citizen science, this idea stands as both a business and a movement.