Nepal

Technical Assistance: Customized weather and climate information system for climate-resilient agriculture
Location: Regions of Rainas (Lamjung), Ramprasad Rai (Bhojpur), Malangwa (Sarlahi). in Nepal
Solution: Weather forecasting tool based on AI-generated data
UNEP CTCN grant: USD 142,750

Farmers in Rainas, Nepal. © All photos: UNEP-CTCN/Miranda Rikki Tasker

- Communities in mountainous regions are increasingly vulnerable to climate-induced hazards such as landslides and floods. This project develops and tests a platform to translate weather data into simple, farmer-friendly language to support climate-resilient farm management, piloted in three municipalities. It also supported capacity-building of government agencies and farmers, and the installation of the API at Nepal's Agricultural Information and Training Center.

Objectives

- To improve resilience of farmers in Nepal's mountainous regions by implementing an Application Programming Interface (API) to automatically generate and disseminate location-specific, customized 3-day weather forecasts to farmers, communicated using low technology tools.
- The project targets local communities, particularly smallholder farmers and vulnerable households.

Social Impact

- The project directly supported 150 farmers.
- Among these, 44 are female and 40 are youth
- 12 government/NGO officials were trained to sustain and scale up the system.
- Indirect beneficiaries: Institutions, communities and private sector are better equipped to interpret and use agro-meteorological information to develop climate resilience in agriculture.

Adaptation Impact

- **Enhanced agricultural resilience**:
- Reduced guesswork and risk by farmers.
- Better sowing, irrigation, fertilizer timing.
- Increased confidence and willingness to remain in agriculture.
- Contributes to community resilience by reducing migration pressures.

- **Reduced vulnerability to**:
- Droughts
- Floods
- Extreme weather
- **Strengthens climate-informed agricultural planning:**
- Planting, irrigation, fertilizer application, pesticide use, harvesting.

- **Improved Livelihoods**:
- The project supports improved livelihoods by increasing agricultural productivity and food security, which are critical for the well-being of rural communities in Nepal's mountain regions.

Other Co-Benefits

- **Supports Nepal's national adaptation goals, by:**
- Improving localized early warning access through SMS/WhatsApp/email delivery.
- Improving weather-risk forecasting in vulnerable agro-ecological zones.
- Reducing economic loss from weather misjudgments.
- Enhancing resource-use efficiency (water, agricultural inputs).
- Strengthening local food security, rural market stability and overall farming resilience by improving preparedness for climate-induced shocks.
- Boosting rural economic activity by enhancing productivity and reducing climate-related shocks.
- Promoting inclusive access to data through low-tech communication channels.

Replication Potential

- The project entails solutions that are conducive to replication in other mountainous regions in Nepal as well as in other countries.

Innovation & Technology

- **Technical innovation**
- A custom-made API system
- Automated generation of customized 3-day forecasts, location-specific.
- Forecast accuracy improvements
- Improved temperature and precipitation forecasts across regions.

- **Communication & delivery technology**
- Multi-channel dissemination:
- SMS (primary and most accessible), WhatsApp, email, web portal
- System installed at AITC, ensuring national ownership.

Key Figures

- **USD 142,750 project budget**
- **162 total beneficiaries, including 150 farmers and 12 officials**
- **Gender: 44 women, 118 men**
- **Youth: 40 beneficiaries**
- **10 Stakeholder Working Group members**
- **The project contributed to the following SDGs:**

For more information, visit CTCN-AFCIA

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