REPUBLIC OF ARMENIA
MINISTRY OF ENVIRONMENT

Implementation of Technology Action Plan: Armenia

UNFCCC Climate Change Dialogues 2020

From technology needs to climate action

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Technology Needs Assessment - II

- Financing source: **Global Environmental Facility**
- Senior Beneficiary: **Ministry of Environment of Armenia**
- Implementing Partner: **Environment Projects Implementation Unit**
- Duration: **2015-2017**
- Project objective: **Capacity building to support low carbon and climate change resilient development in Armenia**

Technology Needs Assessment Process

I Prioritization of technologies

Defining processes and techniques that are consistent with climate change mitigation and adaptation, consistent with national development goals and priorities

II Barrier analysis and enabling framework

Participatory and multi-criteria approach for root cause analysis by categories and defining solutions

III Technology Action Plan

Action Plans for each mitigation and adaptation technology, based on barrier analysis.

TAP includes responsible body, monitoring indicators, costing.

Fact sheets for selected technology based projects

Mitigation Technology Action Plan -14

Energy

- Small Scale Combined Heat and Power Production (CHP)
- EE in multi-apartment buildings. Registry creation.
- Industrial Energy Audit
- Reactive capacity (power) compensation in the grid
- Natural gas tariff structure

Land use

- Degraded Grassland improvement
- Sustainable Forest management
- New technology of cultivation of perennial plants

Ind-ustry

- Synthetic rubber production – shift from natural gas to butadiene (Chemical industry)
- Photo luminescent materials with long-term lighting
- Plastic solar water heaters

Waste

- Utilization of methane form landfill for electricity and heat production
- Lusakert biogas plant operation and reissuance (organizational technology)
- Tufa mining waste processing and agricultural lands to prevent their further degradation.

▲ - Cross-cutting technologies

TAP mitigation

	Energy	Status by 2020	Comments
1.	**Cogeneration, Small Scale Combined Heat and Power Production (CHP)**	Private investments in district cogeneration plants and Medical University complex	Result of TNA Phase I. *Further scaling is recommended under EU-Armenia Agreement implementation roadmap*
2.	**Energy efficiency in multi-apartment buildings, Registry creation**	The sub-project is included in the GCF funded project	On going from 2017
3.	**Industrial Energy Audit**	EU Project Resource efficiency for SMEs UNDP -Industrial energy management training conducted	*Is yet voluntary, for scaling the application regulations and incentive economic instruments must be introduced*
4.	**Reactive capacity (power) compensation in the electric energy system**	The Grid code 2019 stipulates installation of compensators for reactive power	Implemented
5.	**Natural gas tariff structure**	Discussions were held with regulator	*Pending*
6.	**Plastic solar water heaters**	Installations in rural areas	Tested and proved that price is significantly cheap and can be used for certain areas

Implementation examples

Cogeneration plant in Medical University complex

Implementation examples

Avan district heating cogeneration plant –
Private investment around 16,5 M USD
Supported by UNDP-GEF project

Plastic solar water heaters
“Khazer” NGO with OSCE funding

Adaptation Technology Action Plan

Agricul-ture

- Windbreaks
- Local melioration and low-volume drip irrigation for newly planted orchards
- Diversification of agriculture

Water

- Recirculating water system for fisheries
- Compact wastewater treatment plants and application of natural and hybrid treatment systems
- Diffusion and expansion of drip irrigation system

Adaptation Technology Action Plan

		Status by 2020	Comments
1.	**Windbreaks**	Included in the new Forest Programme	Included in the GCF –FAO project
2.	**Local melioration and low-volume drip irrigation for newly planted orchards**	Technologies piloted CRM-UNDP, Small Grants Programme, GIZ	Revegetation slopes in Chiva community for avoiding landslide
3.	**Tufa mining waste processing and agricultural lands to prevent their further degradation**	Project proposal is approved by Adaptation Fund	Is under implementation
4.	**Recirculating water system for fisheries**	USAID project in Ararat valley	Environmental regulations and permissions system is revised
5.	**Diffusion and expansion of drip irrigation system**	Started promotion for greenhouses and scaled for new established vineyards and orchards	From 2019 Government is subsidizing loans for irrigation system installations, as well as anti hail nets

TAP implementation

Sayat-Nova community – fish farm water reuse for 60 ha irrigation
USAID, ASPIRED Project

Waste water treatment pond – Parakyar community
Small Grants Programme

TAP implementation

Restoration and melioration of the meadows
EU –UNDP ClimaEast Project

Karbi Community, Aragatsotn marz
Intensive orchards installation – drip irrigation, anti hail nets

Private investments

Lessons from TNA process

Limited budget compared to impact on capacity building and partnership building

- Broad stakeholder involvement of experts, specialists from ministries, NGOs, communities, business people has strong awareness rising impact and creates base for dialogue and partnership
- Methodology used for prioritization of certain technologies has good capacity building impact
- Enhanced dialogues between specialists from different sectors contributes to defining cross-cutting technologies, as well increasing benefits and opportunities for the prioritized technology promotion
- Comparing the TNA phase I and Phase II – the application of TNA guidelines allow to avoid to some extent the subjectivity of prioritized technologies and define main barriers
- Networking with the CTCN-Armenia, consortia of scientific and applied institutions

Observations for future

- Involvement of private sector and local financial institutions on early stages of TNA prioritization stage can ensure feasibility of technology selection and application in future
- Consider identification of know-how and innovation ideas in developing countries and help in finding partners for further development and testing
- Consider parallel ongoing projects experience and findings, including barriers and shortcomings, avoid duplication of already on-going practices
- For each phase of TNA process developments under Convention, as well as available financial mechanisms/programmatic directions and new instruments as Green bonds, carbon taxing, PA Article 6, etc. must be considered
- The TNA process must be linked with NDC implementation plan and priorities

Thank you