ArmCTCN
Draft Roadmap

ArmCTCN is a climate technology platform that facilitates the accelerated transfer of environmentally sound technologies developed in Armenia for low carbon and climate resilient development and introducing it worldwide, as well as transfer of innovative technologies to Armenia.

ArmCTCN is receiving technical assistance from CTCN hosted by UNIDO and UNEP. by UNIDO Field Office in Armenia provides in kind support for smooth implementation of the technical assistance. . "Technology Transfer Association" (TTA) will act as Secretariat of ArmCTCN.

Background

ArmCTCN will start its activities by selecting four main sectors for project planning and development, which are*: **energy, industry, waste management and land use.***

Implementation of the project should start with several priority projects from the list of ***TNA projects***, such as,

- Installation of wastewater compact treatment plants and application of natural and hybrid treatment systems.
- Operation and Reissuance Organizational Technology for the Existing Lusakert Biogas Plant.
- Production and Usage of Photo luminescent Materials with Prolonged Afterglow.
- Production of New Type of Solar Water Heater (Entirely Plastic).

In addition, it would be useful to make a feasibility study of implementation of technologies developed ***outside of Armenia***, such as,

- Environmental monitoring: Diagnostic of the Sevan Lake`s hydro-chemical system with the GIMS-Technology use.
- Implementation of natural agricultural products obtained with ultra sound cavitations dispersion of peat to required nano-size particles, e.g. "Cavita Biocomplex" products.
- Plastic waste management: Effective collection and processing of municipal and industrial plastic wastes, their conversion into products useful for industrial production in everyday life (e.g. in cooperation with St.Petersburg Plastic Processing Plant).

Proposed Approach

The implementation of the ArmCTCN roadmap can be structured by taking five main steps. This structure will help to identify the essential activities of the ArmCTCN and to achieve specific goals.

The five steps of the roadmap policy cycle:

1. Target setting
2. Strategy
3. Development of Project Proposals
4. Implementation
5. Evaluation

- ***Target setting***

This step defines the impact the ArmCTCN should have. It identifies the experts and stakeholders involved in the consortium and network. Their involvement is important not only for target setting, but also for the further development of the ArmCTCN.

- ***Strategy***

The strategy includes budget assignment for the projects, time planning, development of supporting policies, such as economic incentives and development of the action plan. These elements are necessary to form the comprehensive, strategic policy planning.

- ***Implementation***

This step addresses implementation of the ArmCTCN project. Verification of the draft regulations by consortium members takes place in this phase as well. This secures its embedding and adoption to be a practical and realistic law that can be implemented with normal efforts.

- ***Monitoring and Evaluation***

Main activities of the ArmCTCN for project evaluation should be:

1. Creating a shared understanding of the projects,
2. Fostering project transparency to stakeholders and decision makers.
3. Impact assessment.
4. Creating a starter potential portfolio projects

Activities for the development and implementation of the Roadmap

Main activities of the ArmCTCN for project development are:

1. Creating a virtual digital platform of the ArmCTCN as a main tool for development and coordination of activities;

2. Using a virtual digital platform of the ArmCTCN for awareness raising on ideas and knowledge in climate change mitigation and adaptation, climate technology promotion

3. Fostering the implementation of the digital platform as a permanent discussion panel for Consortium members.

4. Using a virtual digital platform of the ArmCTCN for attracting new members interested in climate technologies acquiring

- *Financing*

Perspective idea of the ArmCTCN for project financial support is using opportunities of digital economy, including:

1. Cooperate with one of the available and reliable bank in Armenia

2. Creating an idea of the "green" accounts (bonds) for Consortium members and potential partners of ArmCTCN in climate technology transfer

3. Using of next mechanisms: block-chain, neuro-nets, artificial intelligence, smart contracts for targets according to the ArmCTCN concept and development

4. Further development of INDC financial mechanism and UNFCCC financial instruments.

5. Arm CTCN taking a role as a coordinator of "green" accounts (bonds) mechanism

Gender mainstreaming in the Technology Transfer

Gender equality and women's empowerment is a prerequisite to effective conservation, climate action and meeting the Sustainable Development Goals (SDGs). All international agreements, including Agenda 2030, the Paris Agreement, present new opportunities for engaging women and accelerating equitable action. From Nationally Determined Contributions (NDC) processes to biodiversity strategies and climate change gender action plans (ccGAPs), governments, businesses and civil society are now embracing gender-responsive solutions to address the world's most pressing development challenges.

Gender mainstreaming is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. This strategy will be used for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of both adaptation and mitigation projects to be developed under ArmCTCN. Particularly, gender balance in community-based adaptation and mitigation projects supports the vigorous and sustained participation of both women and men in all project aspects because successful projects require the participation, knowledge, and skills of all community members. The CTCN Gender Mainstreaming Tool will applied, so all activities of the new platform will take into account the gender mainstreaming aspect.

Following strategies could be applied while implementing the Roadmap:

Gender integration: Through the specialized help applying a gender perspective with all clearly planned gender equality objectives, with resources and activities connected to it. One of the goals of such activities could be impacting the results of the technical assistance.
Targeted gender activities: The long-term goals of gender equality can be contributed by targeting certain women's issues and groups. One such approach can be capacity building for women to participate in decision-making for climate technology. Another option can be to involve more women's groups in trainings of acceleration programmes in the field of renewable energy, energy efficiency, sustainable water management and other sectors, identified as priority in the AmCTCN Roadmap, and support start ups.

Proposed Activities and Roadmap Workplan

Activity 1

Identification of priority technologies. As a priority, the TNA technologies will be considered at first – Annex I.

1. Creating of a group of experts from among the participants of the Consortium for further work to identify priority technologies.

2. Criteria for the selection of experts in priority technologies: the possession of knowledge, skills, practical experience (package of competencies) and motivation.

3. The clarity of the description, formats, an agreement between the participants of the Consortium relative to identify priority technologies.

4. Identification of priority technologies (as a priority of TNA technologies) in accordance with the required and demanded package of competencies to implemented technology promotion projects.

Activity 2

Country Overview of existing projects on suggested technologies; Assessment of the national potential.

1. Continued cooperation with ministries and departments of the Republic of Armenia regarding country needs and knowledge staffing in climate change mitigation and adaptation, climate technology promotion.

2. Establishing direct working relationships with senior-level representatives of ministries and departments of the Republic of Armenia for coordination and assessment of the national potential in climate change mitigation and adaptation.

3. Expert assessment starting projects and deciding on the priority of their implementation

4. Develop concept of UNIDO's eco-industrial development or eco-indistrial parks park whichintegrates science, industry, social needs and nature protection to offer businesses perspectves for growth, improve eco-systems and foster innovation.

5. Creating in cooperation with universities “Inter-university platform for the facilitation of UNIDO Program of eco-industrial parks development” for the building of a new paradigm re-industrialization vis a vis climate change.

Activity 3

Indentifying the financing sources and projects’ implementation – Annex II.

1. Consultations with ministry of finance of the Republic of Armenia concerning the development of a mechanism for the release of “green” accounts (bonds) for supporting country needs in climate technology promotion.

2. Creating of a joint working group from among the representatives of the Consortium and the Ministry of finance for drafting the application of “green” accounts (bonds) as assistance for the development of climate technologies in climate change mitigation and adaptation conditions.

3. Using "green" financing mechanisms for the climate technology promotion of new possibilities of digital technology, artificial intelligence algorithms, artificial neural networks, smart contracts, etc.

Outreach and Communication

To promote the ArmCTCN roadmap, a public outreach and communication campaign will be developed with joint efforts and resources of the ArmCTCN.

Annex I

Technology Needs Assessment

	Mitigation		
	Technology name	***Status***	***Notes***
1	Combined production of useful thermal energy and electricity cogeneration, Small Scale Combined Heat and Power production technology	The result of this project is that it has been able to provide a flexibility to the technology. Now the energy-producing company can sell its electric and thermal energy at its discretion, on contractual basis.	In the framework of ArmCTCN, it is advisable to promote a large-scale implementation of technology in Armenia.
2	Improving Energy Efficiency in Multi-Apartment Buildings	The results of this project were used to confirm the technical regulation of energy saving and energy efficiency. (Decree of the Government of the Republic of Armenia No. 426-N of April 12, 2018)	Another result of the project is the compilation of the energy register of multi-storey buildings, the continuation of which is under the UNDP / GEF project.
3	Reactive Power Compensation Capability in the RA Electric Energy System	The project has been processed and concrete works on reactive power compensation will start in 2019	
4	Production of synthetic rubbers from butadieneinstead of usingnatural gas	The project has been terminated. “Nairit” plant is bankrupt. At present, there is no proposal from the Government.	It is advisable to interfere with the process within ArmCTCN
5	Production and Usage of Photoluminescent Materials with Prolonged Afterglow	New compositions of phosphors and their production technology are developed, which are ecologically pure and do not have any danger to the environment. Using of photoluminescent materials allows to make the glow-in-the-dark signs, designations, marking which don't demand power consumptions. Recently, LED marks appear on the market, each of which consume only 1/4 W power. However, considering that the number of such signs makes many thousands, Using of this materials leads to essential energy saving. The company has already made a number of prototypes of different	In the framework of ArmCTCN, it is advisable to promote a large-scale implementation of photoluminescent materials in Armenia. At this stage it will be required to carry out certification on compliance to the relevant standards, and to hold negotiations with the interested organizations and potential customers.

		signs, an experimental batches photoluminescent paints, and carried out a trial use of this products.	
6	Production of New Type of Solar Water Heater (Entirely Plastic)	The plastic water heaters scheme has been successfully implemented at the school of Kanchanut community but the school does not use it now. The problem is in management.	It is advisable to continue studying the issue to eliminate the obstacles.
7	Degraded Grassland Radical Improvement	The interest in the project was expressed by the "Mets Parni" community. At present, the testing of the degraded land is underway, based on the INDC's financial mechanism - the Climate Social Revolving Investment Fund.	This project can be illustrative and at the same time serve as an example of the combination of climatic technological mechanism with the climatic financial mechanism.
8	Sustainable Forest Management	The result of this project should be absolute understanding that natural wood is the main mechanism for continuous flow of moisture inland from the sea (scientific discovery of the year 2005). Priority actions should be aimed at preserving natural forests, with the total elimination of wood-industry in them, the prohibition of holding roads through forest. Wood-production should be translated at the plantation (allocated territory for the cultivation of business and consumer wood). Natural forest should be available only for natural recreation without any fuel motors.	The problem comes to financing. The solution could be by introducing the “green” accounts (bonds) financial mechanism under the governmental support. At this stage it will be required to carry out scientific-educational center of experts training on meteorology and biotic regulation. Such a center could be created in one of the universities as a member of the Consortium
9	Cultivation of Perennial Plants	There is interest to the project from Rind community and the two other rural communities.	The problem comes to financing. The solution could be by introducing the INDC financial mechanism.
10	Methane Emanation from Yerevan City Landfill for Electricity and Heat Production	The program is under the Clean Development Mechanism of the Kyoto Protocol, but not entirely. This proven prospective technology is hindered by the municipality.	It is advisable to study the subjective and objective reasons of the obstacles, and to give an appraisal within ArmCTCN.
11	Operation and Reissuance	The program has not lost its	It is advisable to refer to

	Organizational Technology for the Existing Lusakert Biogas Plant	importance, but there is no progress. The main obstacle is the insufficient tariff of electricity generated by cogeneration.	the project and continue the study within ArmCTCN.
12	Cleaning of Agricultural Lands and Prevention of their Further Degradation by Complex Processing of Artik Tuff Mine Wastes	The project results were used. An software application for the Kyoto Protocol Adaptation Fund has been developed as an adaptation program with mitigation by-effect.	The program is in its initial stage.
	Adaptation		
13	Windbreaks as climate change adaptation measure	This is a program to create a forest shelter-belt, which is topical, but the hassle is a lack of financial resources.	The solution of the problem could be by introducing the INDC financial mechanism.
14	Local melioration and low-volume drip irrigation for newly planted orchards	The technology is advantageous, the interest is obvious, should be continued with ArmCTCN support.	The solution of the problem could be by introducing the INDC financial mechanism.
15	Diversification of agriculture	Taking into account the rise in temperature and the tendency to climate aridity, the diversification of agriculture is inevitable.	It is expedient to have additional study and clarification, and to develop a special action plan.
16	Design of recirculating water system for fisheries	The technology was used, but there are difficulties due to its high cost.	The problem requires a complex study of the environment for this technology implementation.
17	Installation of wastewater compact treatment plants and application of natural and hybrid treatment systems	The technology is tested, the positive outcome is evident, but for widespread implementation there is a need to overcome managerial impediments.	Further study and solution of organizational water use issues is needed.
18	Diffusion and expansion of drip irrigation system	The technology is tested, the positive outcome is evident, but for a wide implementation it is necessary to improve technical solutions (pure water) and identify a financial resources.	The problem could be solved through the introduction of the INDC financial mechanism.

Annex II

Timeline and key milestones of the Road map

1-2 years - establishment of the ArmCTCN Consortium and Network

3-5 years – Institutional set up with legal status under the auspice of the "Technology Transfer Association"
7-10 years – ArmCTCN will become as Green ITPO, hosted by the Governmnt of Armenia and based on the public-private partnership (partnership agreements with universities, R&Ds, NGOs,academia, etc.) It will serve as financial mechanism and platform for attracting investments and creating sustainable basis for mobilizing green funds and resources for the adaptation and mitigation projects.

		2018									***2019***												***2019+***
	Actions	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***	
1	Preparation of application form, Preparation of ArmCTCN website																						
2	Approval of evaluation criteria (Impact potential, Needs of the recipient, Efficiency, etc.)																						
3	Reviewing/Identifying the priority products/ technologies with focus on TNA program outcome																						

		2018									2019												2019+
	Actions	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	Deliverables: Composition of the list of 2-3 pilot projects that uses technologies from and outside Armenia																						
4	***Round 1: Evaluation of the FIRST Application***																						
	• Checking the eligibility of submitted application • Initial review • Demo and interview • Final decision: In case of a positive decision the further funding track of application will be specified: ***Incubation*** or ***Acceleration***																						
5	***Round 2***: Business Plan / Action Plan development for the **1st** project																						

		2018									2019												2019+
	Actions	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	During the Incubation/Acceleration by ArmCTCN Secretariat and Consortium Members will provide support for the following works: Market study, Financial modeling, Mentorship, etc.																						
6	***Round 3***: Identification of potential financing sources for the **1st** project and sending an application																						
	Deliverables: Getting the approval and first tranche for the 1st pilot project that implements the technology of ***Armenian*** origin																						
7	***Round 4***: Starting of implementation of the **1st** project																						
8	***Round 1: Evaluation of the SECOND Application***																						

		2018									2019												2019+
	Actions	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	• Checking the eligibility of submitted application • Initial review • Demo and interview • Final decision: In case of a positive decision the further funding track of application will be specified: Incubation or Acceleration																						
9	***Round 2***: Business Plan / Action Plan development for the **2nd** project																						
	During the Incubation/Acceleration by ArmCTCN Secretariat and Consortium Members will provide support for the following works: Market study, Financial modeling, Mentorship, etc.																						
10	***Round 3***: Identification of potential financing sources for the **2nd** project and sending an application																						

		2018									2019												2019+
	Actions	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	Deliverables: Getting the approval and first tranche for the 2nd pilot project that implements the technology of ***non-Armenian*** origin																						
11	***Round 4***: Starting of implementation of the **2nd** project																						
12	***Continuous work***																						
	• Reviewing next submitted applications • Monitoring incubation/acceleration processes • Perfection of Centre's activity on the basis of the feedback from developers and stakeholders																						